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## OF MANAGEMENT AND BUSINESS RESEARCH: C

### Finance



Vietnamese Commercial Bank

The Impact of Monetary Policy

Highlights

A Detailed Analysis on FMCG

Contracts on Financial Performance

Discovering Thoughts, Inventing Future

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# The Impact of Monetary Policy on Insolvency Risk at Vietnamese Commercial Banks

By Mai Thi Phuong Thuy

*Van Lang University*

**Abstract-** The study assesses the impact of monetary policy on Vietnamese commercial banks' insolvency risk during the 2008-2017 period, with balanced panel data for 30 commercial banks in Vietnam. Results from the study show that an increase in the M2 money supply creates an increase in the Z index, which means a reduction in the risk of insolvency. The expansionary monetary policy increases real estate prices, collateral value, and bank capital, resulting in higher asset value for the bank. As a result, both deposit growth and credit growth in the economy have positive signs; therefore, the activity of commercial banks results in efficiency and improved profit, reducing the risk of insolvency. This result is consistent with the Borio and Zhu (2012) reports.

**Keywords:** *monetary policy; insolvency risk; system GMM method.*

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Mai Thi Phuong Thuy

**Abstract-** The study assesses the impact of monetary policy on Vietnamese commercial banks' insolvency risk during the 2008-2017 period, with balanced panel data for 30 commercial banks in Vietnam. Results from the study show that an increase in the M2 money supply creates an increase in the Z index, which means a reduction in the risk of insolvency. The expansionary monetary policy increases real estate prices, collateral value, and bank capital, resulting in higher asset value for the bank. As a result, both deposit growth and credit growth in the economy have positive signs; therefore, the activity of commercial banks results in efficiency and improved profit, reducing the risk of insolvency. This result is consistent with the Borio and Zhu (2012) reports.

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## I. INTRODUCTION

When the economic situation experiences volatility with frequent crises, the insolvency risk of commercial banks is of interest to researchers. Studies by Laeven, L., Levine, R., 2009, Mohamed Aymen Ben Moussa (2015) show that insolvency risk not only has serious consequences on the existence of a bank but also affects the stability of the national monetary and financial market. Therefore, ensuring solvency is very important to the existence and development of banks. Solvency means the ability to immediately satisfy customers' demand for money withdrawals at any time. Banks' insolvency will create economic gloom. This was proved by how the insolvency of banks such as Lehman Brothers, Merrill Lynch ... and many other large companies in 2008 caused the US economic downturn and global economic crisis.

Empirical studies on the impact of monetary policy on bank insolvency risk present different results such as: The change in reference interest rate decreases when the central bank implements the expansionary monetary policy which affects the behavior of deposit customers, banks face difficulties in mobilizing business capital and risk tolerance gets reduced. Studies by Laeven, L. & Levine, R., (2009) shows that low interest rates make the profit-seeking goals of banks more difficult to implement, which cause investment activities to become more adventurous. According to Rajan (2006) and Borio and Zhu (2012), regulation of monetary policy makes banks adjust their

financial leverage, which will affect risk valuation and the real level of bank risks. In addition, according to Agur, I. & Demertzis, M. (2012), Dell'Ariccia & Marquez (2009), Dell'Ariccia (2014), lower interest rates when implementing expansionary monetary policy may reduce adverse options in the financial market and thus undermine banks' efforts to supervise and monitor capital loans. Delis & Kouretas (2011) show that for eurozone countries, expansionary monetary policy significantly increases banks' insolvency risk, especially for banks with lower capitalization and more off-balance sheet items. Jiménez (2014) found that following monetary expansion, banks in Spain increased credit for borrowers who are less credit solvent.

In developing countries, the experience in economic strengthening, financial liberalization, and crisis handling is still passive. Monetary policy is often used for many purposes, such as inflation control, exchange rates stabilization and economic growth promotion, but the underlying balance between price stability and financial stability has been overlooked. On a different note, banks still account for a large part of the financial system in these countries and act as the main financial source in the economy. Therefore, increased insolvency risk may have more adverse effects than risks in countries where banks account for a smaller share in the financial system (Kashyap, AK & Stein, JC, 1995).

In Vietnam, ensuring the solvency of the commercial banking system is one of the important goals of the banking industry. In recent years, the merger, acquisition and restructuring of banks have been extremely active, with priority given to dealing with weak credit institutions; deploying merger, consolidation and acquisition of credit institutions on the voluntary principle; increasing charter capital and handling bad debts of credit institutions, gradually restructuring operations, governance and administration. That helps the Vietnamese commercial banking system to increase solvency. This action, however, is only to resolve the consequences but can't really solve the causes of the risk of insolvency. The management of monetary policy instruments in the face of the commercial banking system's redundancy or shortage of liquidity will help reduce insolvency risk. Therefore, the impact of monetary policy on insolvency risk is important not only for optimal policy adjustment but also for long-term financial stability and economic growth of Vietnam.

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## II. THEORETICAL BASIS

### a) Theoretical Basis

There have been several studies in the world about measuring the insolvency risk in the banking sector through bankruptcy risk assessments such as Laeven & Levine (2009); Houston et al. (2010); Demirgüç-Kunt & Huizinga (2010)... Minghua Chen et al. (2017) proposing the calculation of Z-index as follows:

$$Z - score = \frac{ROA_{i,t} + EA_{i,t}}{\sigma(ROA_{i,t})}$$

In which:

$ROA_{i,t}$ : represents the ratio of return to bank  $i$ 's average total assets in year  $t$

$EA_{i,t}$ : represents the ratio of average equity to bank  $i$ 's total assets in year  $t$

$\sigma(ROA_{i,t})$ : standard deviation of bank  $i$ 's ROA in year  $t$

Minghua Chen et al. (2017) argued that the above Z-index calculation shows the bank's ability to accept insolvency risk as measured by the standard deviation of ROA, which reflects the income fluctuation. Specifically,  $\sigma(ROA_{i,t})$  is calculated by the standard deviation of the return on average total assets over a 3-year period, usually taking  $t$  to  $t-3$ , this method allows time changes in the denominator, avoiding change in Z-score to be adjusted only by the variation in banks' profitability and capitalization (Paligorova, T. & Santos, J. C., 2012; Borio, C. & Zhu, H., 2012). The bank's capitalization is assessed by the EA coefficient, which is the equity to total assets that measures the level of financial leverage use, explained as the number of standard deviations according to which profit must be reduced to compensate for the replacement in the bank's equity ratio (Lastra, R. M & Schiffman, N, 1999), the Z score can be considered as a reversal of the bank's insolvency probability. A higher Z-score indicates a reduction in insolvency risk, a higher level of bank stability, or in other words, a lower Z-score indicates a higher level of bank's bankruptcy risk. Because the Z score is very high, the study applied logarithmic levels ( $1 + Z$  point) to smooth the high Z values (Borio, C., Zhu,

H., 2012). The use of  $\ln(1 + Z\text{-score})$  as a Z-score is simply to avoid Z-score cut at zero level (Minghua Chen et al. 2017), so the author demonstrates  $\ln(1 + Z\text{-score})$  as the Z score in the research paper.

Z-score also has some limitations when used for measuring the bank's insolvency risk. The most important limitation is that Z-score is based entirely on accounting data. Therefore, if banks intentionally change the data on the report, Z-score may provide an overly positive assessment of the insolvency probability. In addition, Z-score considers stability in banks separately and can ignore the risk that a collapsed bank could cause damage to other banks in the system. The advantage of Z-score is that it allows comparison of the insolvency risk in many groups of banking and financial institutions with different ownerships or operational goals. In this study, the Z-score calculated by Minghua Chen et al (2107) is to measure the insolvency risk of Vietnamese commercial banks in the period of 2008-2017 for the reasons mentioned above.

### b) Model

In order to assess the impact of monetary policy on the insolvency risk of commercial banks, previous studies mainly presented models with explanatory variables representing some unique characteristics of banks such as scale and capital structure, capitalization capacity, while macroeconomic conditions, institutional quality and policy transparency affecting this impact are still limited. For example, high market transparency in banking operations reduces the risks associated with monetary-banking policies, implying policy for planners to carefully determine the right level of policy instruments in the banking industry. Or, a move towards greater policy transparency is also encouraged as additional monetary policy instruments to reduce the insolvency risk for banks when monetary policy is loosened (Brissimis et al., 2014. Jiménez et al., 2014).

Based on the developed research hypotheses, to determine the impact of monetary policy on the insolvency risk of Vietnamese commercial banks, the author built a research model based on studies by Minghua Chen et al. (2017), as follows:

$$Risk_{i,t} = \beta_0 + \beta_1 Risk(i, t - 1) + \beta_2 MP_t + \beta_3 INF_t + \beta_4 LERNER_{i,t} + \beta_5 INC_{i,t} + \beta_6 GRO_t + \beta_7 INS_t + f_i + \varepsilon_{i,t} \quad (1)$$

The study considers additional variables in the model ( 2) below to consider the impact of monetary

policy on the insolvency risk of commercial banks as regards changes in institutional quality:

$$Risk_{i,t} = \beta_0 + \beta_1 Risk(i, t - 1) + \beta_2 MP_t + \beta_3 INF_t + \beta_4 LERNER_{i,t} + \beta_5 INC_{i,t} + \beta_6 GRO_t + \beta_7 INS_t + \beta_8 MP_t * INST + f_i + \varepsilon_{i,t} \quad (2)$$

In which:  $Risk_{i,t}$ : Insolvency risk of commercial banks;

$MP_t$ : Monetary policy of Vietnam including rediscount interest rate (MP-I1);  $CR_t$ : credit growth rate of the economy;

$FXI_t$ : Foreign exchange reserve growth rate;  $SM_t$ : Growth of money supply M2;

$INF_t$ : Inflation rate;  $GRO_t$ : GDP growth rate;  $INC_{i,t}$ : Bank income diversification;  $LERNER_{i,t}$ : The competition level of commercial banks;  $INS_t$ : Institutional quality

### III. METHODOLOGY AND DATABASE

#### a) Database

The study used panel data for 30 commercial banks in Vietnam. According to statistics of the State Bank of Vietnam as of December 31, 2017, the number of commercial banks was 44 including state-owned commercial banks, joint-stock commercial banks, 100% foreign-owned banks and joint-venture banks. However, some banks do not have enough data during the research period, so to ensure the balanced panel data, the author chooses 30 commercial banks with complete data as presented above. In addition, according to the data of the State Bank of Vietnam as of December 31, 2017, the total assets of 44 commercial banks were VND 8,719,726 billion. Meanwhile, the total assets of the 30 commercial banks used by the author as of December 31, 2017 were VND 6,131,649 billion, accounting for 70% of the total assets of commercial banks. Therefore, 30 commercial banks selected by the

author ensure representation of commercial banks in Vietnam.

The data used to measure each bank's risk and characteristics is taken from banks' annual financial statements for the 2008-2017 period via their official websites, [cafe.vn](http://cafe.vn) site.

#### b) Methodology

In this model, the existence of problems such as error autocorrelation, as well as the model dynamism represented by lagged dependent variables (endogenous variable problem), will deflect the results of the estimation. The panel data model is called the linear hierarchical panel data model, with these current issues. It is possible to estimate the linear dynamic panel data model using GMM tool. Specifically, this study conducted model regression using Arellano & Bond's System GMM method (1991). This method is commonly used in estimates of data from linear dynamic panels or panel data with endogenous phenomenon, heteroskedasticity and autocorrelation.

### IV. EMPIRICAL RESULTS AND DISCUSSION

**Panel 4.1:** Estimation results of the impact of monetary policy through rediscount interest rates on the insolvency risk of Vietnamese commercial banks

ZSCORE	(1)	(2)
L1.ZSCORE	0.7332959***	0.7330487***
MP_I1	-77.6337***	
MP_I1*INS		-136.0426***
LERNER	-67.31281***	-67.88617***
INC	-5.837649	-6.101499
GRO	-4.069882	0.0312943
INF	17.60018**	18.33111**
INS	142.714***	150.1159***
AR (1) p-value	0.000	0.000
AR (2) p-value	0.430	0.420
Hansen p-value	0.158	0.179
Number of groups	30	30
Number of instruments	12	12
Second stage F-test p-value	0.000	0.000

\*\*\*statistically significant at 1%; \*\*statistically significant at 5%; \*statistically significant at 10%

Source: Calculation results by STATA 12.0 software

The results of the estimation show that the rediscount interest rate variable (MP I1) regression coefficient is statistically significant and negative at -77. This shows that Z index will be increased when the rediscount interest rate decreases, which means insolvency risk will decrease. Explaining this result, it can be seen that the rate of rediscount is the interest rate applied when banks are refinanced by the SBV in the form of discounting commercial papers or valuable papers not yet due. If the expansionary monetary policy is implemented by lowering the rediscount interest rate, commercial banks find it easier to access capital than

before, the risk of insolvency is then reduced. On the other hand, expansionary monetary policy is often applied during periods of recession or to achieve targets for economic growth by stimulating consumption to increase the economy's capacity to produce. It will create a positive impact in the context of macroeconomic policies stimulating growth, facilitating business easiness for businesses and commercial banks, increasing profits and reducing the risk of insolvency. This result is in line with Alessandri & Nelson studies (2015); Agur & Demertzis (2012); De Nicolò et al (2010).

**Panel 4.2:** Estimation results of the impact of monetary policy through credit growth on the insolvency risk of Vietnamese commercial banks.

ZSCORE	(1)	(2)
L1.ZSCORE	0.7621012***	0.7635814***
CR	10.70238**	
CR*INS		18.6333**
LERNER	-53.14439***	-54.05944***
INC	-7.891961	-8.096692
GRO	10.46436	13.69072
INF	-4.309509	-3.966301
INS	91.13384***	87.87678***
AR (1) p-value	0.000	0.000
AR (2) p-value	0.284	0.285
Hansen p-value	0.183	0.190
Number of groups	30	30
Number of instruments	21	21
Second stage F-test p-value	0.000	0.000

\*\*\*statistically significant at 1%; \*\*statistically significant at 5%; \*statistically significant at 10%

Source: Calculation results by STATA 12.0 software

The loan growth variable (CR) regression coefficient is statistically significant and positive at 10. This shows that the Z index will increase when credit grows, meaning a decrease in insolvency risk. Credit growth can raise the risk of banks becoming insolvent. The change in direction of the impact of credit growth on Vietnamese commercial banks' insolvency risk can be explained as policy management is consistent with the economy's level of development when implementing the expansionary monetary policy by expanding credit growth. Therefore, the situation in which the total volume

of money supply increases excessively in circulation is less likely to occur, this will stimulate the business sector to develop production, enhance debt repayment capability, promote economic growth and reduce inflation. Credit growth for commercial banks helps to generate income from loans, increase market share and grow other relevant services and utilities, thus reducing the risk of insolvency for commercial banks. This result is consistent with the Minghua Chen et al. (2017) studies.

**Panel 4.3:** Estimation results of the impact of monetary policy through the growth of foreign exchange reserves on the insolvency risk of Vietnamese commercial banks

ZSCORE	(1)	(2)
L1.ZSCORE	0.7789841***	0.7793681***
FXI	38.17569**	
FXI*INS		67.14772**
LERNER	-71.34752***	-71.11823***
INC	-18.347***	-18.32496***
GRO	134.0334*	132.8164*
INF	21.01131*	21.28813*
INS	139.7416***	209.3562***
AR (1) p-value	0.001	0.001
AR (2) p-value	0.186	0.182
Hansen p-value	0.128	0.128
Number of groups	30	30
Number of instruments	14	14
Second stage F-test p-value	0.000	0.000

\*\*\*statistically significant at 1%; \*\*statistically significant at 5%; \*statistically significant at 10%

Source: Calculation results by STATA 12.0 software

The regression coefficient of the foreign exchange reserves growth variable (FXI) is 38 statistically significant and positive. This shows that when foreign exchange reserves increase, Z index will be increased, meaning a decrease in insolvency risk. This result can be explained by the fact that the SBV intervened in the foreign exchange market by

purchasing foreign currencies in the market; thus the increase in foreign currency reserves will create an increase in domestic money supply in the market, presenting an expansionary monetary policy, banks can access capital more easily, the insolvency risk is decreased. This result is consistent with the studies by Ghosh et al. (2016); Minghua Chen et al. (2017).

*Panel 4.4:* The estimation results of the impact of monetary policy through M2 money supply growth on the insolvency risk of Vietnamese commercial banks

ZSCORE	(1)	(2)
L1.ZSCORE	0.7012158***	0.7013728***
SM	9.456087**	
SM*INS		15.99276**
LERNER	-44.88975***	-44.71353***
INC	103.5786**	103.3254**
GRO	112.0558**	109.486**
INF	-2.606349	-2.290335
INS	130.5677***	126.3688***
AR (1) p-value	0.000	0.000
AR (2) p-value	0.803	0.805
Hansen p-value	0.107	0.102
Number of groups	30	30
Number of instruments	13	13
Second stage F-test p-value	0.000	0.000

\*\*\*statistically significant at 1%; \*\*statistically significant at 5%; \*statistically significant at 10%

Source: Calculation results by STATA 12.0 software

The regression coefficient of the M2 money supply growth variable (SM) is 9.4 statistically significant at 5% and positive. This indicates that an increase in M2 money supply will result in an increased Z-index, meaning a decrease in insolvency risk. The increase in M2 money supply shows that the monetary policy is expanded, reducing the insolvency risk of commercial banks. The expansionary monetary policy creates an increase in real estate prices, the value of collateral, and bank capital, resulting in increased bank asset values. As a result, deposit growth and credit growth in the economy both have positive signs, commercial banks' activities thus bring about efficiency and achieve better profit, reducing the insolvency risk. This result is consistent with studies by Borio & Zhu (2012).

## V. CONCLUSION

An expansionary monetary policy by reducing rediscount interest rates or refinancing interest rates, expanding credit limits, growing foreign exchange reserves or growing State Bank of Vietnam's M2 money supply would impact asset prices and thus affect Vietnamese commercial banks' insolvency risk. The expansionary monetary policy increases the value of customer assets as well as bank assets and income, thereby improving profits and business performance

and strengthening risk endurance capacity. Moreover, when the SBV introduces an expansionary monetary policy that provides Vietnamese commercial banks with easier access to SBV loans through cheap refinancing interest rates and rediscount interest rates, asset prices at commercial banks rise and thus allow them to increase net capital supply. This effect reduces Vietnamese commercial banks' insolvency risk.

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# Potential Users' Acceptance of Sharī'ah- Compliant Precious Metal Backed Crypto Currency: A Malaysian Perspective

By Faeyz M. J Abuamria & Mousa A. M Ajouz

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**Abstract-** Recent developments in crypto currency have heightened the emerge and development of new form of money generally and crypto currency particularly. This development has reach to the precious metal which is historically known as a money. Reusing precious metal as a money by benefiting from crypto currencies technology is perceived to be an innovation in the current payment system that abandoned precious metal as a money since 1973. Therefore, the major aim of this research is to investigate in the potential users' tendency to adopt a Sharī'ah-compliant precious metal backed crypto currency. The methodological approach adopted in this study is a quantitative method using questionnaires that was built based on the original model of innovation diffusion theory which consists of five factors. The analysis was conducted based on data elicited from 92 questionnaires using PLS-SEM. Overall, the results indicate that four out of the five constructs that specified to affect the adoption of PMBC were statistically significant. 50.4 percent of the differences in adoption of PMBC can be explained by the structure model provided by this research.

**Keywords:** *sharī'ah – compliant, precious metal, crypto currency, malaysia, adoption model.*

**GJMBR-C Classification:** *JEL Code: F65*



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RESEARCH | DIVERSITY | ETHICS

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**Abstract-** Recent developments in crypto currency have heightened the emerge and development of new form of money generally and crypto currency particularly. This development has reach to the precious metal which is historically known as a money. Reusing precious metal as a money by benefiting from crypto currencies technology is perceived to be an innovation in the current payment system that abandoned precious metal as a money since 1973. Therefore, the major aim of this research is to investigate in the potential users' tendency to adopt a Sharī'ah-compliant precious metal backed crypto currency. The methodological approach adopted in this study is a quantitative method using questionnaires that was built based on the original model of innovation diffusion theory which consists of five factors. The analysis was conducted based on data elicited from 92 questionnaires using PLS-SEM. Overall, the results indicate that four out of the five constructs that specified to affect the adoption of PMBC were statistically significant. 50.4 percent of the differences in adoption of PMBC can be explained by the structure model provided by this research. Just over half of the respondents (63.35) reported that they are willing to use PMBC in their future transaction. It is recommended that further empirical investigations to be undertaken using alternative theories and methods.

**Keywords:** *sharī'ah – compliant, precious metal, crypto currency, malaysia, adoption model.*

## I. INTRODUCTION

At the beginning of 2007 international financial crisis, critics analysed different approaches to transfer value that decentralised, trust-less currency, that is not reliant on central authority (Maurer et al., 2013; Mullan, 2014). Therefore, on 3 January 2009, Satoshi Nakamoto presented the first crypto currency in the world which called Bitcoin (Nakamoto, 2008). The market of crypto currency has grown-up and developed unsteadily and promptly over a short-term since the launch of Bitcoin (Farell, 2015). As early as 2020, more than 2518 varied type of crypto currencies were emerged as never happened before, with a market valued exceeded USD260 billion (Coin Market Cap, 2020).

Although crypto currencies customarily and Bitcoin specifically have appeared to solve the problems created by fiat money, it had only partly resolved the problem. However, it boosted other issues and challenges, on the contrary crypto currencies were preferred targets for risk-takers, manipulators and illegitimate business which led to disastrous instabilities in its value. For examples, in 18 of December 2017 the value of one Bitcoin has radically plummetedduring 6 days from UDS 19,298 to USD 13,206 (Coin Market Cap, 2020). Currently 2 July 2020 the one Bitcoin is trafficked at USD 9,099 which show the huge instabilities in its value. Moreover, it has been found that crypto currencies have many Sharī'ah concerns, which derived some countries to ban some of these currencies (Al-Qaradaghi, 2018; Islamic Economy Forum, 2018).

These topics were encouraging to examine other options by developing valuable metal backed crypto currency to overcome the instability of value. Precious metal has been conserved its value, as confirmed by history, that metal stayed steady and trusted by economy (Abdullah, 2016b). Generally speaking, the idea of precious metal backed crypto currency PMC is an electronic representation of physical precious metal held offline in a safe cellar as users are circulating the encrypted electronic units. Basically, it offers efficient and protected online methods to sale, buy, hold, spend, earn, send and redeem gold and silver (Ajouz et al., 2020b). Until the written of these lines there almost 111 different type of assets backed crypto currency has introduced in various countries and jurisdictions (James, 2020). Interestingly enough, two of these companies such as Hello Gold and One Gram Coin have been approved to be Sharī'ah-compliant (Hello Gold, 2018; One Gram, 2018).

Presenting of precious metal backed crypto currency is supposed to be an innovation among the world's payment system (Ajouz et al., 2020a; Yusuf et al., 2013). This is because after the downfall of the Bretton Woods system in the early 1970s, the precious metals were not used as a currency and the concept of crypto currency has only arose in early 2009. Therefore, it is essential to examine the potential users' views to understand from demand viewpoint if the potential users are willing to adopt precious metal backed crypto currency based on innovation diffusion theory (IDT).

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This paper is arranged as follows: it first starts with the introduction of the paper, then it presents the review of related literature followed by the used methodology of the study. The last section presents discussion and the findings of the study followed by a conclusion and some recommendations.

## II. LITERATURE REVIEW

### a) *Relative Advantage*

Relative advantage refers to “the extent by which an innovation is perceived as better than the idea it replaces” (Rogers, 2003:229). Precious metal as a money has proved its capability to preserves wealth and value throughout long run. Given their stability, gold and silver can perform vital role as a money, at the same time precious metal can protect from inflation and ensure price stability (Abdullah, 2016a; Ajouz et al., 2020b; Meera, 2002, 2004). As a result, this study hypothesizes that:

$H_1$  Relative advantage of using precious metal backed crypto currency will have a positive effect on its adoption.

### b) *Compatibility*

Compatibility refers to “the extent by which an innovation is perceived as being compatible with the current values, needs of possible adopters and past experiences” (Rogers, 2003: 240). PMBC could be compatible with the lifestyle of current generation, values and socio cultural beliefs, this mainly because gold and silver are money by itself, and the desire to accumulating them did not fade away (Ajouz et al., 2020a). Therefore, this research proposes that:

$H_2$  Compatibility of using precious metal backed crypto currency will have a positive effect on its adoption.

### c) *Anxiety*

Anxiety refers to “the extent by which an innovation is perceived as relatively difficult to use and understood” (Rogers, 2003: 257). The complexity factor in PMBC mainly associated with the precious metal (Ajouz et al., 2020a; Yusuf et al., 2013). According to Yusuf et al., (2013: 100-101), there are three main challenges obstruct implementing gold dinar as a currency that are exchange risks, price volatility and political risk. As a result, this research proposes that:

$H_3$  Anxiety of using precious metal backed crypto currency would have a negative effect on its rate of adoption.

### d) *Trialability*

Trialability refers to “the extent by which an innovation may be experimented with on a limited basis before adoption” (Rogers, 2003: 258). PMBC is a completely different form of money which individuals are used to. Potential users need to experiment the

consequences of PMBC before choosing to use or adopt it (Ajouz et al., 2020a; Karahanna et al., 1999). Hence, giving potential users the opportunity to try PMBC would enhance the adoption process. Because of this, this study hypothesizes that:

$H_4$  Trialability of using precious metal backed crypto currency will have a positive effect on its adoption.

### e) *Observability*

Observability refers to “the degree to which the results of an innovation are visible to others”. Thus, some ideas are easy to observe, described and communicate among society members about theses inventions, whilst other inventions are much difficult to be observed or described by a society members (Rogers, 2003: 258). Thus, the usage rate of any new invention would increase significantly if the potential adopters are able to easily able to observe and described the value added by the new payment mechanism which is PMBC (Ajouz et al., 2020a; Yusuf et al., 2015). Therefore, this study hypothesizes that:

$H_5$  Observability of using precious metal backed crypto currency will have a positive effect on its adoption.

## III. MATERIALS AND METHODS

This research was conducted in Klang Valley, Malaysia. The potential users are the primary target respondents who are the economic active residents in Klang Valley. The study also adopted a judgement sampling as a sampled frame, where the selection criteria were mainly based on their uses of electronic payment procedure either debit or/and credit cards, mobile payment online banking, crypto currency, or electronic money. In addition, they are aged above 20 years, permeant residents or residents of Klang Valley, this criterion is similar to the one used by Yusuf et al. (2013). Given that, with five percent margin error and 95 percent of confidence level, the minimum sample size that was recommended by Hair et al. (2016: 20) for this type of research is 50. Using a self-administered and trained enumerator, a total of 110 questionnaires were distributed to selective potential users in Klang Valley. Eighteen questionnaires were not included in the data analysis because they did not meet the selection criteria adopted in this research. Therefore, 92 questionnaires were analyzed.

The demographic results obtained from the 92 respondents showed that around 51.1 percent of the respondents are male, and the rest (48.9%) are female. Interestingly, the younger generations who aged between 20 years and 40 year are dominated on the sample with 90.3%, while only 9.7% of the respondents above 41 years. The Malaysian society is very well known for its ethnic compositions which were reflected in the sample, as such majority of the respondents were Muslims (62.3%), Buddhist present 25.0%, while 3.3 and

1.3 percent Hindus and Christians respectively. The themes of monthly income showed that more than 80% of the respondents are from middle-class income who have less than RM5, 000 per month, meanwhile around 19.6% earn above that per month. In term of distribution of the respondents by educational level, majority of the respondent (87%) are well educated where they are holding at least diploma certificate or higher certificate, while the rest are having school education. The demography profile of the respondents revealed their belong to different occupation categories encompassing 40.2% are self-employed, while 40.2% are working in civil servants and private sector, followed by students who present 12%, and 7.6 are still looking for opportunities.

## IV. RESULTS

### a) The measurement models

The fit of hypothesized model was evaluated based on confirmatory factor analysis through partial least squares (PLS) in Smart-PLS 3 (Ringle et al., 2015). The 92 sampled data collected from potential users of Sharī'ah-compliant precious metal backed crypto currency. As suggested by (Hair et al., 2016), the assessment of the model was conducting for indicator reliability, internal consistency, as well as convergent and discriminant validity.

First of all, indicator reliability was conducted according to (Hair et al., 2016) criteria, where each indicator must have outer loadings of 0.70 or greater. Some items were eliminated because they were not qualified by this criterion, the remaining items (shown in Fig 1) were having outer loading between 0.70 and 0.92, and all the indicators were statistically significant at 0.00. These results indicate that the instrument is having indicator reliability. Secondly, Cronbach's alpha and

composite reliability were used to evaluate the internal consistency reliability. The results of Cronbach's alpha for all constructs were between 0.728 and 0.865. Additionally, the results of composite reliability for all constructs were between 0.849 and 0.912. Accordingly, the above results represent an acceptable internal consistency reliability according to (Hair et al., 2016) criteria.

According to the validity evidence, the validity of hypothesized model was established using convergent and discriminant validity. Firstly, average variance extracted (AVE) was carried out to ensure convergent validity. The results of AVE were above 0.50 indicating that the convergent validity was established according to (Hair et al., 2016) criteria, where the value of AVE were between 0.598 and 0.775. Whilst discriminant validity was evaluated based on three approaches which are observing the cross loading of the items, Fornell-Larcker criteria, and heterotrait-monotrait ratio of correlations (HTMT) criteria (Hair et al., 2016, 2019). Firstly, by evaluating the items and construct loading and cross loading, it shows that all items and construct in their respective items and construct have factorial and construct loads higher than any other items and construct which indicate the establishment of discriminant validity based on loading and cross loading criteria, and Fornell-Larcker criteria (Chin, 1998). Secondly, by evaluating the results of discriminant validity based on HTMT criteria, it was found that all results of construct were below 0.85, and all the indicators were statistically significant from 1, which according to (Kline, 2011) criteria achieve the discriminant validity. All in all, the results of the hypothesized measurement model are satisfactory which can be used in the structural model analysis to test the hypothesis of this research.

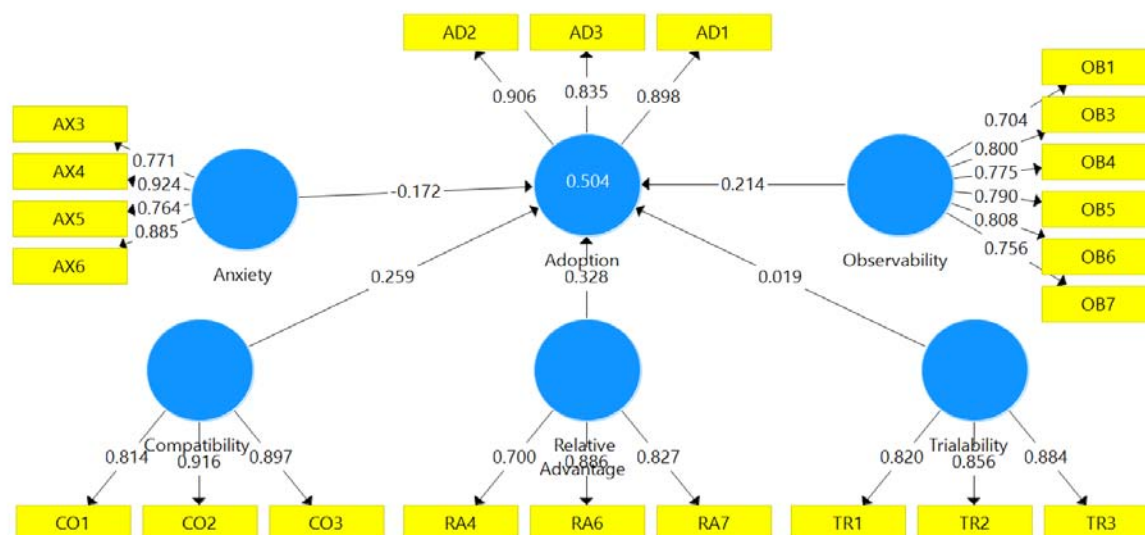


Figure 1: PLS-SEM with the values of the t-tests obtained via the Bootstrapping module



b) *The structural model: Assessing Adoption of Precious Metal Backed Crypto Currency*

It is apparent from Table 1 below that there was a significant positive correlation between adoption of PMC and relative advantage where the  $\beta = 0.322$ ;  $t = 3.073$ ,  $P < 0.05$ . The result indicates that the potential users believe they will have relatively advantages by using and adopting of PMC in their daily transactions. In addition, on average, compatibility was shown to have positive correlation on the adoption of PMC as  $\beta = 0.261$ ;  $t = 2.356$ ,  $P < 0.05$ . The respondents found to be believing in PMC to compatible with their current values, needs and past experiences. However, a negative correlation was found between anxiety and adoption of PMC, where the hypotheses found supported with a negative sign as was expected where  $\beta = -0.177$ ;  $t = 2.136$ ,  $P < 0.05$ . This means that the

more difficulty and complexity attached to the precious metal backed crypto currency the less users' willingness to adopt it in their future transaction. Further statistical tests revealed a positive effect of observability on adoption of PMC as  $\beta = 0.215$ ;  $t = 2.475$ ,  $P < 0.05$ . The potential users found to be able to observe the results and gains of adopting PMC.

Unexpectedly, there were no significant differences between trial ability and adoption of PMC where  $\beta = 0.030$ ;  $t = 0.220$ ,  $P > 0.05$ . According to Yusuf et al. (2015) giving potential users the chance to try PMC before full adoption will increase their willingness to adopted PMC completely in the future, but such a relationship was not confirmed by the collected data. However, testing the hypothesis using Kruskal-Wallis Test was found to be statistically significant as Chi-Square = 18.977; 4, Asymp. Sig < 0.05.

Table 1: PLS-SEM Results: Path Coefficients of the Adjusted Model

Hypotheses	Relationship	Std Beta	Std Error	T-Value	Decision
H <sub>RA</sub>	Relative Advantage -> Adoption	0.322	0.107	3.073	Supported
H <sub>CO</sub>	Compatibility -> Adoption	0.261	0.110	2.356	Supported
H <sub>AX</sub>	Anxiety -> Adoption	-0.177	0.081	2.136	Supported
H <sub>TR</sub>	Trialability -> Adoption	0.030	0.087	0.220	Not Supported
H <sub>OB</sub>	Observability -> Adoption	0.215	0.086	2.475	Supported

## V. CONCLUSION

The present research was designed to determine the factors that influencing the adoption of Sharī'ah-compliant precious metal backed crypto currency. This study has found that generally four out of the five constructs were found to be statistically significant where relative advantage, compatibility and observability found to be positively influencing the adoption of PMC, while only anxiety was negatively influencing the adoption of PMC. Surprisingly, only trialability was found not statistically significant based on the collected data. The second major finding was that 50.4% of the differences in adoption of PMC were explained by the structure model proposed in the current study. The results of this investigation also showed that around 63.55% of the respondents are willing to adopt PMC in their future transaction.

The exploratory results of hypotheses found that four out of the five constructs were found to be statistically significant. Therefore, it is suggested that other research should be conducted using confirmatory methods. In addition, the current investigation was limited to use innovation diffusion theory (IDT) in Malaysia. Further studies, which use other theories are therefore suggested.

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# Opportunités de Financement et Evolution des Activités Agro-Pastorales à L'ouest Cameroun 1980-2003

By Kouosseu Jules & Mafotsing Fokwa Paule

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**Abstract-** Western Cameroon has been the subject of strong changes in agricultural practices, which mainly results from the coffee decline and the economic crisis that has raged since 1985. The peasants have abandoned the cultivation of coffee to convert to other activities. For this, they needed funding; because now left to their fate. This work deals with the role of financing in the evolution of agro-pastoral activities in western Cameroon between 1989 and 2003. What are the different funding opportunities that have contributed to the evolution of agro-pastoral activity in western Cameroon during this same period?

The financial liberalization of the 1990s had an impact on the emergence of agro-pastoral activities in western Cameroon. The oral, archival, written sources and the multidisciplinary approach have made it possible to obtain the following results: the history of agricultural financing, the various activities and the place of credit institutions in their emergence in western Cameroon.

**Keywords:** *economic crisis, financing opportunity, agricultural activities, evolution.*

**GJMBR-C Classification:** *JEL Code: G00*



OPPORTUNITESDEFINANCEMENTETEVOLUTIONDESACTIVITESAGROPASTORALESALLOUESTCAMEROUN19802003

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RESEARCH | DIVERSITY | ETHICS

# Opportunités de Financement et Evolution des Activités Agro-Pastorales à L'ouest Cameroun 1980-2003

Kouosseu Jules <sup>α</sup> & Mafotsing Fokwa Paule <sup>σ</sup>

**Résumé-** L'Ouest Cameroun a été l'objet de fortes mutations dans les pratiques agricoles, qui résultent principalement de la déprise caféière et de la crise économique qui sévit depuis 1985. Les paysans ont abandonné la culture du café pour se reconverter vers d'autres activités. Pour se faire, ils avaient besoins de financement ; parce que désormais laissé à leur propre destin. Ce travail traite du rôle du financement dans l'évolution des activités agro-pastorales à l'Ouest Cameroun entre 1980 et 2003. Quels sont les différentes opportunités de financement qui ont contribué à l'évolution des activités agro-pastorales à l'Ouest Cameroun pendant cette même période?

La libéralisation financière des années 1990 a impacté dans l'éclosion des activités agropastorales à l'Ouest Cameroun. Les sources orales, Archivistiques, écrites et l'approche pluridisciplinaire ont permis d'obtenir les résultats suivants :l'historique du financement agricole, les différentes activités et la place des établissements de crédit dans leur éclosion à l'Ouest Cameroun.

**Mots clés:** crise économique, opportunité de financement, activité agricole, evolution.

**Abstract-** Western Cameroon has been the subject of strong changes in agricultural practices, which mainly results from the coffee decline and the economic crisis that has raged since 1985. The peasants have abandoned the cultivation of coffee to convert to other activities. For this, they needed funding; because now left to their fate. This work deals with the role of financing in the evolution of agro-pastoral activities in western Cameroon between 1989 and 2003. What are the different funding opportunities that have contributed to the evolution of agro-pastoral activity in western Cameroon during this same period?

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## I. INTRODUCTION

Après vingt-cinq années de croissance ininterrompue basée sur l'exportation du café, mais aussi sur la mainmise de l'Etat dans les cultures de rentes, le Cameroun est confronté depuis le milieu des années 1980, à une grave crise

économique<sup>1</sup>. C'est dans ce contexte que les paysans de l'Ouest Cameroun mettent en œuvre de nouvelles stratégies de production et de vente pour accroître leurs revenus et améliorer leurs conditions de vie<sup>2</sup>. Pour ce fait, ils se sont tournés vers les IMF institutions des micro finances qui font leur apparition sur la scène nationale dès les années 1992<sup>3</sup>. Le mouvement coopératif camerounais ayant connu depuis les années 1960, un ensemble de réformes dont la plus récente, celle de 1992 a abouti à la promulgation de la loi n°92/006 du 14 Août 1992 relative aux sociétés coopératives et aux mutuelles et la publication de son décret d'application n°92/455/PM du 23 novembre 1992<sup>4</sup>.

La libéralisation financière a entraîné un développement sans précédent de plusieurs activités ainsi que le développement des micro finances et coopératives à l'Ouest Cameroun. Celles-ci ont motivé les paysans à travers principalement l'octroi des crédits et des ventes groupées. Ces institutions de micro finances revalorisent les activités jadis pratiquées dans la localité. Groupées en deux grand bloc, on distingue d'une part, les financements publics qui sont ceux orchestrés par l'Etat à travers le FONADER, et d'autre part, privés tels que, la mutuelle communautaire et de croissance (MC<sup>2</sup>), les sociétés coopératives d'épargne et de crédit. C'est dans ce contexte que nous étudions les opportunités de financement et l'évolution des activités agropastorales à l'Ouest Cameroun entre 1980 et 2003. Dès lors qu'elles ont été les différentes opportunités financières dans l'évolution de l'agriculture

<sup>1</sup> Ngaptue J. N., « le maraichage et le vivrier marchand comme solution à la crise caféière dans la région de Foumbot ? », Thèse de Doctorat en Géographie, Université de Yaoundé 1.

<sup>2</sup> Tchouamo, I. R., « Les impasses des stratégies de substitution chez les planteurs de l'Ouest Cameroun », In COURADE Georges In *Le village Camerounais à l'heure de l'ajustement*, Paris, Karthala, 1994.

<sup>3</sup> Loi n°92/006 du 14 août 1992 relatives aux sociétés coopératives et aux groupes d'initiatives communes. Ces derniers et leurs unions sont des organisations autonomes et privées qui appartiennent à leurs membres. Elles sont administrées, contrôlées et financées par ceux-ci. Leurs activités se déroulent sans l'intervention de l'Etat sous réserve de la présente loi et son décret d'application ou des conventions librement consenties et réalisables

<sup>4</sup> Depuis lors, pour adapter le cadre juridique des sociétés coopératives et des groupes d'initiative commune à l'évolution du contexte économique, de nombreux modificatifs ont été adoptés autant sur le plan législatif que réglementaire.

à l'ouest Cameroun entre 1980 et 2003 ? La présente étude se donne pour but de présenter l'historique du financement agricole à l'Ouest Cameroun avant la crise et de présenter le rôle de la libéralisation financière dans le secteur agropastoral à partir des années 1990 et son impact.

## II. HISTORIQUE DU FINANCEMENT AGRICOLE À L'OUEST CAMEROUN: LE FINANCEMENT PUBLIC

Devant l'impossibilité d'obtenir des garanties suffisantes de la part des populations rurales, mais désireux de diffuser le crédit à grand nombre de paysans sans grandes ressources monétaires, le crédit du Cameroun mit au point, dès 1954, un instrument coopératif décentralisé, la coopérative de crédit Mutuel (C.C.M)<sup>5</sup>.

La première C.C.M se constitua en 1955 à Bafou, village Bamiléké, choisi par le crédit du Cameroun. L'année suivante, à la demande de l'administration, celui-ci suscita la création d'autres mutuelles dans la région suite aux résultats obtenus à Bafou qui étaient satisfaisants. C'est ainsi que le crédit du Cameroun fut rapidement amené à prendre des initiatives en de nombreux points du pays Bamiléké<sup>6</sup>. Les C.C.M ont pour objet de fournir des prêts à court terme en vue de l'acquisition d'engrais, semences, produits à moyen terme pour favoriser l'extension des plantations et l'achat de matériel agricole. L'organisation des coopératives de crédit mutuel permet aux petits planteurs de l'Ouest camerounais, ne détenant qu'un simple droit d'usage sur le sol, d'accéder au crédit et donc d'améliorer ou d'agrandir sa plantation<sup>7</sup>.

Après les indépendances, la modernisation de l'économie passe d'avantage par l'interventionnisme, y compris dans le secteur agricole. Si l'agriculture a toujours apporté une importance à l'économie des pays en développement, son sort a toujours provoqué des débats sur le type d'agriculture à promouvoir et les formes de financement à mettre en place<sup>8</sup>.

La politique agricole s'inscrivait dans les six plans quinquennaux de développement socio-économique établis par l'Etat. Dans chacun de ces plans quinquennaux donc, l'agriculture ressort comme un des principaux éléments sur lequel devait se baser le

développement économique du pays<sup>9</sup>. Les objectifs de ces plans étaient centrés sur le secteur agricole ainsi que les stratégies de développement rural. Le deuxième plan quinquennal a même été baptisé "*plan du paysan*". Les buts visés ont été globalement les mêmes durant les quatre premiers plans quinquennaux<sup>10</sup>.

Ces plans procédaient pour la distribution des finances, par la création des organismes financiers tels que : La Banque Camerounaise de Développement (BCD) créée en 1960<sup>11</sup>, du Fonds National pour le Développement Rural (FONADER) en 1973, de la Caisse Agricole du Cameroun (CAC) et du Fonds d'Investissement de Micro Réalisations Agricoles et Communautaires (FIMAC)<sup>12</sup>.

La distribution sectorielle de la BCD montre que le taux de crédit est passé de 110 à 4769 million de FCFA respectivement entre 1963 à 1972, et le FONADER a son tour, est parti d'un pic de crédit environ 91,5% à 37,5% respectivement entre 1979/1980 et 1983/1984<sup>13</sup>. Ce qui voudrait tout simplement dire que la question du financement agricole à l'Ouest Cameroun est effectivement un avantage pour le développement des activités agropastorales à l'Ouest Cameroun quoique l'aide de l'état soit en diminution progressive, du à la crise économique.

La crise des années 1980 et la libéralisation du financement des activités du monde rural ont permis de repenser l'importance du financement en milieu rural<sup>14</sup>. On assiste dès les années 1990, à la création de plusieurs établissements financiers, relatives à la loi N° 092/006 du 14 août 1992 favorisant la création des sociétés coopératives et des groupes d'initiatives communes et le décret du 23 novembre 1992 fixant les modalités d'application de la loi précitée<sup>15</sup>. Ces dispositions institutionnelles libéralisent le secteur du financement rural et ouvrent les portes à une nouvelle génération de financiers au rang desquels les institutions de microfinance (IMF)<sup>16</sup>. C'est ainsi que

<sup>5</sup> Gosselin G., *L'Afrique désenchantée : sociétés et stratégies de transition en Afrique tropicale*, Paris, éditions antropos Vol. I, 1978, p85.

<sup>6</sup> Ibid P86

<sup>7</sup> Fongang G., « les organisations de productions en Afrique de l'Ouest et du Centre: attentes fortes, dures réalités, le cas du Cameroun », rapport du pays, septembre 2012.

<sup>8</sup> Foko E., « les transformations des systèmes d'épargne rurale avec la crise dans l'ouest du Cameroun », in Courade Georges, le village camerounais à l'heure de l'ajustement, Paris, Karthala, 1994 p 358.

<sup>9</sup> Bella H., « situation du secteur agricole camerounais depuis 1960 » mémoire de master soutenu à l'institut sous régionale de la statistique et d'économie appliquée, 2009.

<sup>10</sup> Foko E., « les transformations des... » p360.

<sup>11</sup> Tchekoté H, Kuété M et Fouda M T, « Elite urbaine et microfinance en milieu rural, entre espoir et désillusion: une analyse à partir des paysanneries de l'Ouest-Cameroun » in J. G.Elong Jean (dir.), *L'élite urbaine dans l'espace agricole Africain ; exemples camerounais et sénégalais*, Paris, L'Harmattan, 2012, p43.

<sup>12</sup> P. Mafotsing Fokwa, « Déprise Caféière et Reconversion Economique au Village Baméka à l'Ouest Cameroun 1980-2003 », mémoire de Master en Histoire, Université de Dschang, 2018, p 91.

<sup>13</sup> Takwa suifon zebulion, « agriculture and national developement planning in cameroon 1960-1990: An historical perspective », History Thesis, Univesity of yaoundé1, 2011.

<sup>14</sup> H. Tchekote, « Désengagement de l'Etat, développement de la microfinance et problématique du financement de la production agricole au Cameroun ». in 2<sup>ème</sup> journée de recherche en sciences sociales. INRA/SFER/CIRAD, Lille, France, 2008.

<sup>15</sup> H. Tchekoté, M. Kuété et T.Fouda Moulende, « Elite urbaine et microfinance ... » p 44.

<sup>16</sup> Ibid p 45.

naissent à l'Ouest des formes traditionnelles de la microfinance (tontines) et des microfinances à l'instar des Camccul et les MC2.

### III. LES DIFFÉRENTES ACTIVITÉS AGROPASTORALES AVANT LA LIBÉRALISATION FINANCIÈRE

L'économie rurale de la Région de l'Ouest est, depuis longtemps, basée sur la mise en valeur agricole et pastorale. Dans les années 1960, celle-ci était orientée vers la production des cultures commerciales, vivrières et l'élevage sur des terres dont l'accès était relativement facile.<sup>17</sup>

#### a) l'élevage et l'agriculture

L'élevage n'est pas une activité nouvelle sur les hauts plateaux de l'Ouest Cameroun. L'homme selon la coutume s'occupait de l'élevage des chèvres, moutons et poulets, dont la vente constituait l'essentiel de ses ressources propres par ailleurs, les cochons étaient élevés par les femmes, mais vendus par l'homme au profit du ménage. Ce système a été profondément bouleversé par l'introduction massive de la culture du café, qui a accaparé tous les efforts des hommes, au détriment de l'élevage qui a été délaissé. Il assurait pourtant aux habitants des revenus substantiels et conférait au propriétaire un certain prestige.

Mais dans les années 1960, les cultures d'exportation étaient encore les plus privilégiées par l'Etat. Malgré que l'élevage soit une activité économique traditionnelle qui a de tout temps été pratiquée sur les hautes terres de l'Ouest Cameroun, le développement de cet élevage nécessitait la construction des maisons entourées par les haies vives et des clôtures faites en bambous<sup>18</sup>.

Cette élevage était pratiquée dans le but de la commercialisation, et quelques fois pour la dote de jeunes filles. Il s'agit entre autre de l'élevage des chèvres, moutons, des poules<sup>19</sup>.

Avant l'introduction des cultures industrielles d'exportation à l'Ouest Cameroun, les paysans de cette région pratiquaient une agriculture basée sur la production des cultures vivrières. Cette agriculture a occupé une place de choix dans l'évolution de la société bamiléké traditionnelle<sup>20</sup>. Il s'agissait d'une agriculture de subsistance, destiné essentiellement à l'autosuffisance alimentaire. La pratique et le développement de cette agriculture répondaient à une organisation bien déterminée: Les cultures lourdes,

c'est-à-dire le bananier, le palmier, le raphia, étaient réservées exclusivement aux hommes, tandis que les cultures légères, comme les arachides, le haricot, le maïs..., étaient réservées aux femmes.

Ngoufo sogang Théodore le justifie à travers ces propos : « la femme était proposée au travail de la terre et à diverses formes d'activités, essentiellement domestique »<sup>21</sup>. ce qui nous pousse donc à dire que l'agriculture a toujours fait partie de la vie quotidienne des paysans de l'Ouest Cameroun. Néanmoins, l'art et l'artisanat n'étaient pas en reste.

#### b) L'art et l'artisanat

L'art et l'artisanat ont joué un rôle considérable dans la vie économique et sociale des Bamilékés.

En effet, l'art et l'artisanat n'étaient pas considérés comme une activité créatrice du beau. Ils avaient tout d'abord une fonction utilitaire et quelques fois symbolique. L'artisanat est essentiellement à vocation utilitaire. Les objets fabriqués sont utilisés au quotidien : calebasses, marmites, mortiers, assiettes, corbeilles, sacs en raphia, greniers en bambous de raphia. L'artisanat sacré, statues et masques, ainsi que l'artisanat d'ornement, calebasses perlées, tabourets, statuettes perlées, fibre de raphias teintés, queues de cheval<sup>22</sup>.

Parlant de l'art, il s'agit principalement de la sculpture et la poterie. Le matériel principal des sculpteurs était le bois, mais pas n'importe lequel, il s'agit d'un bois de bonne qualité, dur, assez compact et dense. Il sèche assez vite et ne se fend pas une fois taillé.

Jouant un rôle fondamental dans l'évolution sociale des paysans, les réalisations sculpturales sont entre autre des trônes royaux dans la chefferie, des masques et des statuettes pour des cérémonies magico-religieuses, les instruments de musique (tambours, balafons, flutes) pour les danses traditionnelles<sup>23</sup>.

La poterie ou céramique était une activité aussi pratiquée à l'Ouest Cameroun. Elle était l'apanage des femmes et était destinée avant tout à la fabrication des objets de premières nécessités. Les hommes n'étaient pas en reste dans cette activité<sup>24</sup>. C'est ce qui explique cette phrase de L.P Harter<sup>25</sup> : « il existe une poterie d'art, réservée aux hommes qui se sont réservés le droit de

<sup>21</sup> Ngoufo S. T., « la caféiculture et le développement du mouvement coopératif dans le bamboutos, essai d'histoire économique et sociale, Mémoire de Maîtrise en histoire, université de Yaoundé, 1991, P13.

<sup>22</sup> Kuetche Kamte, D., « impact socio-économique et environnemental de l'exploitation des raphiales à Bansa dans l'arrondissement de penka-michel », Mémoire de DIPES II en Géographie, Yaoundé I, 1998, p66.

<sup>23</sup> Kenfack Zang, R., « les mutations économiques et sociales...p33

<sup>24</sup> Fongang, J. P., *Bameka : une communauté en voie d'émergence*, Paris, l'harmattan, 2012,254

<sup>25</sup> Harter, L. P., *rois et sculpteurs de l'Ouest Cameroun, la panthère et la mygale*, Paris, éditions Karthala, 1997, p39...

<sup>17</sup> Entretien avec monsieur Fongang Jean Pierre... le 20 mai 2018 à Bamendjou.

<sup>18</sup> Dongmo, J. M., *le dynamisme bamiléké, (cameroun)*, vol1, la maîtrise de l'espace agraire, Yaoundé, CEPER 1981, P162

<sup>19</sup> Ibid

<sup>20</sup> Harcsch, O. E., *les petits agriculteurs détiennent la clé du succès*, selon le NEPAD, 2004.



façonner les pipes et certains plats, pots à usage rituel et magique » c'est dire qu'il existait en région bamiléké, deux types de poteries: une poterie pour la fabrication des objets à caractère rituel et traditionnel. Le matériel principal utilisé était l'argile<sup>26</sup>.

L'agriculture, l'élevage, l'artisanat ont créé des liens d'amitié pour renforcer la cohésion économique à l'Ouest Cameroun malgré que ces activités étaient archaïques.

#### IV. LES DIFFÉRENTES OPPORTUNITÉS DE FINANCEMENT DES ACTIVITÉS AGROPASTORALES APRÈS LA LIBÉRALISATION DU FINANCEMENT EN 1990

La Nouvelle Politique Agricole (NPA) a d'avantage augmenté les problèmes du monde rural. En effet, cette politique se caractérisant par: le désengagement de l'Etat, la privatisation des entreprises publiques chargées du développement agricole, la responsabilisation des paysans et la libéralisation des prix de productions agricoles, ont déconnecté le développement du monde rural de celui du secteur agricole<sup>27</sup>. Les principaux axes économiques sur lesquels se sont centrés les paysans de l'Ouest après la déprise caféière sont entre autres l'apiculture, l'exploitation des raphiales, l'agriculture et l'élevage. Les études consacrées à la raison de leur choix et préférence ont montré que: Les activités dont les paysans ont déposé leur dévolu, avaient en commun une raison qui était la capacité de consommer directement leur produits, sans nécessité d'échange avec le monde extérieur, ou une transformation industrielle, contrairement aux cultures et activités d'autrefois qui étaient pour la plus part destiné au marché mondial<sup>28</sup>.

Le paysan de 1980 est différent du paysan de 1960, il faut le convaincre d'entrer dans l'économie marchande et cette économie peut se développer à son profit dans le secteur de l'agro-pastoral<sup>29</sup>. Ce secteur est considéré comme le socle incontournable du développement durable. Il est également bien connu que le monde rural, tire l'essentiel de ses revenus dans l'agropastoral. Ce secteur qui a un poids considérable à l'Ouest Cameroun, en ce qu'elle occupe 60% à 70% de

la population active<sup>30</sup>. La plupart des paysans à l'Ouest Cameroun qui avaient abandonné l'élevage des chèvres, porcs, poules...ont fait chemin retour. D'autres se sont lancés dans les cultures vivrières et maraichères.

Après vingt-cinq années de croissance ininterrompue basée sur l'exportation du café, mais aussi depuis 1977 sur la rente pétrolière, le Cameroun est confronté depuis le milieu des années 80, à une grave crise économique<sup>31</sup>. C'est dans ce contexte que les paysans de l'Ouest Cameroun, buttés financièrement à cause du désengagement de l'Etat dans le secteur agricole, mettent en œuvre de nouvelles stratégies de production et de vente pour accroître leurs revenus et améliorer leurs conditions de vie<sup>32</sup>. Ils se sont donc reconvertis pour la plupart à la culture maraichère, l'intensification de l'exploitation des raphiales, l'élevage, l'apiculture et bien d'autres. Mais pour se faire, ils ont besoin de financement.

#### V. LES FINANCEMENTS PRIVÉS

##### a) Les tontines

A l'ouest Cameroun la tontine « tchoua'a » est un service d'épargne et de crédit en numéraire ou en nature. Pour ce qui est de la tontine numéraire, un groupe d'individus convient de se réunir de manière périodique. Ils cotisent à chaque séance une somme d'argent qu'ils remettent à un membre tiré au sort séance tenante ou selon un calendrier établi à l'avance<sup>33</sup>. Le montant cotisé dépend du confort financier des membres. Il varie de quelques centaines à plusieurs milliers de francs cfa. Quand chacun bénéficie à son tour de cotisation, le cycle recommence. C'est grâce à ce système, que les individus ont parfois acheté des terres ou louer pour l'agriculture des parcelles de terres<sup>34</sup>. Les tontines ont ainsi constitué un système de financement agropastoral à l'Ouest Cameroun.

##### b) Les mutuelles

A partir de 1986, et suite à la crise économique, l'Etat camerounais s'est désengagé du secteur agropastoral au profit de la société civile et d'autres opérateurs privés. C'est dans ce contexte «d'abandon»

<sup>26</sup> Ibid

<sup>27</sup> Fouda M T, « Les mécanismes de financement en milieu rural Camerounais: une analyse des déterminants de la demande de services financiers des ménages » Thèse de Doctorat en sciences économiques, Université de Versailles Saint-Quentin-en Yvelines, 2003.

<sup>28</sup> Tchekote H, « Désengagement de l'Etat, développement de la microfinance et problématique du financement de la production agricole au Cameroun ». in 2<sup>ème</sup> journée de recherche en sciences sociales. INRA/SFER/CIRAD, Lille, France, 2008.

<sup>29</sup> Cinquième plan quinquennal de développement économique, social et culturel, ministère de l'économie, minresi 1981-1986.

<sup>30</sup> Ibid...p62

<sup>31</sup> Ngaptue J.N., « le maraichage et le vivrier marchand comme solution à la crise caféière dans la région de Foumbot ? », Thèse de Doctorat en Géographie, Université de Yaoundé 1.

<sup>32</sup> Tchouamo, I. R., « Les impasses des stratégies de substitution chez les planteurs de l'Ouest Cameroun », In COURADE Georges In *Le village Camerounais à l'heure de l'ajustement*, Paris, Karthala, 1994.

<sup>33</sup> Megnidjio Nguetsa Christelle, « Banques rurales et tontines : complémentarité ou compétition dans le développement rural ? cas de l'arrondissement de Bafoussam Ouest-Cameroun » Mémoire de Master en territoire-développement environnement, Université de Dschang, 2009, p9.

<sup>34</sup> Lelart M., « l'épargne informelle en Afrique. Les tontines Béninoises » Revue Tiers-monde, vol 30, n°118, 1989, p 275.



des masses rurales pauvres à leur propre sort que les MC<sup>2</sup> voient le jour, grâce au dynamisme et à l'ingéniosité de l'élite urbaine et traditionnelle de l'Ouest Cameroun<sup>35</sup>.

#### ➤ La MC<sup>2</sup> de Baleng

Cet établissement de microfinance a un rôle reconnu dans l'éclosion des activités agropastorales. Quelques données extraites des archives des MC<sup>2</sup> de Baleng et de Baham, indiquent la participation de cette mutuelle dans l'évolution agropastorale allant parfois de 3000000 fca jusqu'à 6000000 fca respectivement entre les années 2001 et 2003.

#### ➤ La MC<sup>2</sup> de Baham

Ici, le taux de financement allant des années 1995 à 2003 est estimé en moyenne à 154015700 Fcfa. Ces données comportant les chiffres des MC<sup>2</sup> de Baleng et Baham, présentent l'évolution de crédit depuis la création de ces structures jusqu'en 2003 dans cette structure. A partir du total de ces sommes, nous pouvons dire de cette évolution croissante des chiffres que les paysans y trouvent leur compte. La MC<sup>2</sup> dans le village de Baham au Cameroun par exemple en est une bonne illustration près de 80% de la population active travaille dans l'agriculture et l'élevage<sup>36</sup>. Compte tenu de l'importance du secteur agropastoral dans la vie des populations de Baham, l'absence d'une structure d'épargne et de crédit susceptible de financer les projets s'y avérait préoccupante<sup>37</sup>.

### c) Impact du financement des activités agropastorales

#### ➤ L'amélioration des conditions de vie et de l'habitat

L'amélioration des conditions de vie des paysans de l'Ouest Cameroun est une conséquence évidente de la création des fonds spécialisés dans la région. Un fait majeur de cette amélioration des conditions de vie est l'amélioration des conditions de santé. Les maladies qui étaient monnaie courante chez les paysans n'étaient de plus en plus qu'un triste souvenir. Car les différentes activités économiques entreprises au village leurs ont permis de se rendre dans les centres de santé et dispensaires<sup>38</sup>.

La libéralisation des finances a entraîné un changement significatif dans les styles de constructions. L'habitat est l'un des domaines où éclate le mieux

l'originalité des Bamiléké<sup>39</sup>. A l'Ouest autrefois, toutes les cases se ressemblaient et se présentaient sous la forme d'un parallépipède à base carrée surmontée d'un cône débordant sur les côtés. Les murs en bambou étaient bourrés de boue consistant comme en forêt avec un toit en chaume comme en savane.

Ensuite, les paysans ont construit des maisons en brique de terre battue qui comportent désormais plusieurs chambres à la différence de celle construite avant l'introduction de la caféiculture<sup>40</sup>.

De plus en plus, l'idée de bâtir une maison moderne recouverte de tôles hantait certains paysans à tel point qu'ils n'hésitaient pas à s'investir d'avantage dans leurs différentes activités afin d'obtenir des revenus financiers considérables. Ainsi, les revenus liés à la vente des différents produits ont permis aux paysans de l'Ouest de se doter d'habitations somptueuses. Comme le fait remarquer monsieur Fofack Robert<sup>41</sup>: « Au village Baméka par exemple, les maisons étaient faites en nattes; elles n'existent plus on se construit maintenant avec les tôles, battants en fer et bien fait. Bref, tous construisent des maisons modernes ».

Si la libéralisation financière a permis aux paysans d'améliorer d'une part leurs conditions de vie et d'autre part de modifier leur habitat, elle leur a également permis d'améliorer les productions et d'avoir une sécurité alimentaire.

#### ➤ La sécurité alimentaire et la diversification de la production

L'ouest Cameroun jouait une certaine autosuffisance alimentaire. Le FONADER, le FIMAC et les MC<sup>2</sup> avaient contribué à cette sécurité en permettant un accroissement des revenus de la population rurale composée essentiellement des paysans et en augmentant la production agricole<sup>42</sup>. Cette sécurité alimentaire s'est traduite par la disposition des aliments de qualité en quantité à tout temps pour tous les individus. Tout est cultivé dans l'Ouest Cameroun et cette production alimentaire a toujours permis de satisfaire les besoins de consommation locale et parfois nationale<sup>43</sup>.

grâce au financement, les paysans achètent des semences de qualités sélectionnées et de diverses variétés sont mises à leurs dispositions grâce aux conseils et aux formations. Leurs techniques culturales ont connu une amélioration dont la conséquence est l'augmentation considérable de leur production de maïs, passant de 1,3t/ha en 1999 à 2,9t/ha en 2003 Dans le département de la Menoua, de 5,7t/ha de tomate en 1999 à 13t/ha en 2003, de 11 bovins par tête en 1999 à

<sup>35</sup> Tsogbou D.L., « Mutuelle communautaire de croissance (MC2) et de développement rural à Baham (Cameroun) » in Gestion partagée et développement communautaire en Afrique Noire, n° 221, 2003, P69..

<sup>36</sup> Tsogbou D.L., « Mutuelle communautaire de croissance (MC2) et de développement rural à Baham (Cameroun) » in Gestion partagée et développement communautaire en Afrique Noire, n° 221, 2003, P72..

<sup>37</sup> Ibid 73

<sup>38</sup> Guimkeu R. A., « Le programme national de vulgarisation et de recherche agricole: Etude historique et apport dans le département de la Menoua (19882002) », Mémoire de Master d'histoire, Université de Yaoundé 1, 2005.

<sup>39</sup> Kenfack Zang, R., les mutations économiques et sociales...P83.

<sup>40</sup> Ibid p84

<sup>41</sup> Entretien avec monsieur Fofack Robert...le 07/03/018, à Bamendjou

<sup>42</sup> Archives de la région de l'Ouest, rapport de la commission financière 1996, MINAGRI 1997.

<sup>43</sup> Guimkeu R. A., « Le programme national de vulgarisation...

17 en 2003<sup>44</sup>. Depuis la baisse du revenu du café, l'élevage repart: de 1988 à 1991, le cheptel porcin a été multiplié par 5 dans les 30 % d'exploitations qui s'y consacraient et qui avaient, 34 porcs en moyenne<sup>45</sup>. L'élevage de la volaille a progressé, passant de 200 à 360 têtes pour les fermes concernées. Par ailleurs, si le nombre de caprins progresse de 32 %, l'élevage du lapin s'accroît, passant de 8 à 20 par éleveur. L'apiculture fait une timide apparition avec deux régions d'abeilles à l'Ouest après l'installation d'une dizaine de ruches<sup>46</sup>.

#### ➤ L'apiculture

Notons qu'au départ l'apiculture traditionnelle était la plus pratiquée dans la localité. Ces apiculteurs sont également pour la plus part constitués des éleveurs et agriculteurs. Contrairement à l'agriculture, les ruches n'ont pas besoins d'être placées sur des terres fertiles pour produire du miel ce qui rend l'apiculture accessible à tous, même aux personnes disposant que des ressources minimales car, il suffit pour celui-ci, juste de disposer des outils essentiels à savoir : l'enfumeur, le masque complet et un voile<sup>47</sup>, si l'on n'a pas d'outils de traitement, apporter les cires d'abeilles dans un laboratoire approprié où il y aura sans doute les outils principaux suivant : un maturateur, un pressoir et un dépressoir<sup>48</sup>.

Dans la région, l'apiculture est divisée en trois volets : D'abord les amateurs, qui utilisent les ruches empiriques (faites en paille), et les récoltes sont faites de manière traditionnelle. Ensuite, les apiculteurs modernes, qui demandent que les ruches soient fabriquées de manière moderne. Et enfin les professionnels. Cette dernière catégorie fabriquait plusieurs ruches, créait des méthodes modernes et faisait de ça leur métier, il s'arrangeait à ce que les ruches soient occupées toute l'année<sup>49</sup>.

Pour un rendement efficace, des séminaires de formation étaient organisés par des intellectuels dans le domaine dont l'un des bénéficiaires, monsieur Oumbé, qui avait été formé en Israël en 1999. De même, des jeunes du village sont formés en apiculture, cependant, pour toutes ces activités, ils ont juste besoins de se diriger vers des structures de financement avec des projets conçus à l'avance en ce qui concerne les fonds étatiques et des garanties principalement en ce qui concerne les IMF.

<sup>44</sup> Archives de la région de l'Ouest, rapport des activités MINAGRI 2003, MINAGRI Ouest 2004.

<sup>45</sup> ADMM (non classées), rapport de la commission de constat de l'arrachage et de la replantation des parcelles du caféier Arabica dans le département de la Mifi, août 1985.

<sup>46</sup> Ibid

<sup>47</sup> Entretien avec monsieur Oumbé...le 08/03/018 à Bafoussam

<sup>48</sup> <http://encouragerl'apiculture.alim'agri.transition.agro-ecologique.apiculture> consulté en ligne le 27/04/018.

<sup>49</sup> Entretien avec monsieur Oumbé...le 08/03/018, à Bafoussam

## VI. CONCLUSION

Rendu au terme de ce travail, il était question de montrer la place des opportunités financières dans l'évolution des activités agropastorales à l'Ouest Cameroun entre 1980 et 2003. Il en ressort que depuis 1954 le Cameroun a mis sur pied un instrument coopératif décentralisé, la coopérative de crédit Mutuel (C.C.M). Elles avaient pour objet de fournir des prêts à court terme en vue de l'acquisition d'engrais, semences, produits à moyen terme pour favoriser l'extension des plantations et l'achat de matériel agricole. S'en suivent dès les indépendances les différents plans quinquennaux de développements socio-économiques et après, la crise économique et caféière qui matérialisent le désengagement de l'Etat du secteur agropastoral dans les années 1980, c'est la libéralisation financière (1990). Il faut dire que l'impact de tous ces organismes financiers est remarquable ; ceci à travers par exemple l'augmentation de la production de 1,3t/ha en 1999 à 2,9t/ha en 2003 dans le département de la Menoua, de 5,7 t/ha de tomate en 1999 à 13t/ha en 2003, de 11 bovins en 1999 à 17 en 2003. En raison aussi des différents taux de financement accordés aux paysans par la MC<sup>2</sup>. Depuis 2003, l'Etat avec les services du Ministère de l'Agriculture et les programmes-projets de développement agricole, reprend une certaine place. Il s'agit du Document de stratégie pour la réduction de la pauvreté (DSRP) qui prévoit le financement de l'économie. Dès lors, du constat fait partant de nos études pouvons-nous dire de manière certaine qu'au fil du temps, l'histoire ne s'est pas répétée ?

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# Evaluation of the Effects of Forward Contracts on Financial Performance of Listed Multinational Companies in Kenya

By Mark Onchari, Asenath Moabe & Mactosh Onwonga

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**Abstract-** The aim of the study was to evaluate the effect of forwards contracts on the financial performance of multinational companies in Kenya. The study used descriptive and cross-sectional research designs. The population consisted of nine companies listed at Nairobi securities exchange under the banking sector and one from the energy sector. The sample size of this study was three companies. Purposive sampling was applied to arrive at the sample size of three Multinational companies. Secondary data was collected from published annual financial reports for ten years from 2009-2018. Descriptive and inferential methods were applied to analyze the obtained data. The findings of the analysis were presented using tables and figures. The study found out that forward contracts had a positive correlation with the financial performance of multinational companies. The study concluded that forwards had direct and statistically insignificant effects on financial performance.

**Keywords:** derivatives, forward contracts, financial performance, multinational companies, return on asset.

**GJMBR-C Classification:** JEL Code: G00



EVALUATION OF THE EFFECTS OF FORWARD CONTRACTS ON FINANCIAL PERFORMANCE OF LISTED MULTINATIONAL COMPANIES IN KENYA

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RESEARCH | DIVERSITY | ETHICS

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## 1. INTRODUCTION

Forwards contracts refers to an agreement or contract between a buyer and a seller to exchange financial assets at a pre-determined price at pre-determined future date. Forward contracts are utilized by market participants to lock in prices, an exchange rate, and interest rates on a specific date against fluctuations. This gives buyers opportunity to continue their uninterrupted operations. Forward contracts hedge against financial risks hence give firms protection (Njoroge, Matumo & Maina, 2013).

Forwards provides a cover over foreign exchange perils in Serbia. However, their application and fluctuations of forex rates does not have a positive relationship. This is because, only big outfits participants in the use of forward contracts to protect themselves. These firms apply forward contracts on a continuous basis while considering their business cycles not changes in forex rates. Despite the use of forward contracts, many smaller firms does not apply them because of lack of clear regulation, handful developed firms, awareness of their benefits by many companies and neglecting the management of forex rates risk by other players in the financial sector. Hence, high forex rates movements does not underlie the use of forward

contracts by many firms in Serbia (Djenic, Avric & Barjaktarovic, 2012).

Forwards contracts are preferred by many exporters in Uganda (62%) to any other tool of managing forex risk. In comparison, most exporters who use forward contracts to protect themselves came from agro-processing industry, which accounts for 78.5% of the forwards applied in forex risk control as opposed to 44 % of the users manufacturing industry. On the other hand currency futures, currency option and insurance risks are fairly used but at a low rate. Use of forwards contracts to control foreign currency perils had a direct relationship with profit margin before tax of firms involved in exporting products in Uganda (Mbabazize, Daniel & Ekise, 2014).

Participating forward contracts cushions firms and investors against unfriendly changes in forex rates either at the time of entering PFC agreement or at the date of finding out the PFC (cut off time) or pre-determined rate at maturity. PFC, also are capable of being doctored to specifically meet the needs of their customers. Foreign exchange forward contracts overs protection to its users against fluctuations in forex rates for the period of the agreement .Forward contracts are able to give assurance in terms of rates at which you will trade currencies. Accordingly, this helps firms and individuals using it to cushion themselves against volatility in foreign currencies. Hence, at maturity, you get the amount you agreed as per rate. Also, forward contracts cushions users against uncertainty in cash flows, provision of tailored products like maturity date and hence, gives an opportunity to plan for payment in foreign denominated currencies early enough (WBC, 2017).

### a) Statement of the Problem

The application of forward contracts contributes immensely towards increased financial performance of multinational companies. Multinational companies are hard hit by financial perils due to their nature of their operations hence they apply under obligation to keep tabs on these risks which affects their profitability. Overall profit after tax in 2012 was 16,007 million (annual reports, 2012). In 2016 the profits after tax was 8843million (annual reports, 2016). The profits after tax declined tremendously by 7164 from 2012 to 2016.

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Accordingly, such decline in profits was attributed to the usage of derivatives in multinational companies in Kenya.

#### b) *Objective of the study*

This study focused on the following specific objective:

- i. To examine the effect of forward contracts on the financial performance of listed multinational companies in Kenya.

#### c) *Research hypothesis*

$H_{01}$ : Forward contract has no significant effects on financial performance of listed multinational companies in Kenya.

## II. THEORETICAL REVIEW

### a) *International Fisher Effect Model*

The International Fisher theory was developed and named after its pioneer, the U.S economist Irving Fisher (1867-1947) in the year 1930. The International Fisher model applied market interest rate as opposed to inflation to give reasons behind the periodic changes in the exchange rates over time. According to the international Fisher model, fluctuations in exchange rates are offset by interest rate changes .i.e. the value of a country's currency with high interest rates will depreciate as compared to the one whose tariffs are relatively low. The Fisher theory is of the view that actual interest rates amongst countries are equal because of arbitrage opportunities available amongst financial markets that involve capital income and out flows. Higher IR insinuates higher inflation rates. The difference between nominal interest rates between countries depicts exchange rate volatility. In principle, international Fisher theory says that, interest are low in a country whose currency is appreciating, and high in depreciating currencies, to balance currency benefits and losses (Madura, 2010).

International Fisher model was limited by availability of interest differential amongst countries, existence of additional costs like transportation costs, taxes, asymmetry of information among others. Like in the PPP theory, international Fisher theory doesn't give a crystal clear indication that the interest rates differential is responsible for future currency changes (Kimani, 2014).

This model was relevant because, in pre-setting of prices and date at which derivatives must exchange hands, the level of IR and forex rates are taken account. High interest rates mean devaluation of currency and hence MNCs must enter into derivatives contracts when interest rates are favorable to hedge against unseen losses as a result of devaluation of currencies among countries. Accordingly, investor will shift their wealth from economy to another with favorable interest rates in a process called arbitrage.

### b) *Empirical Review*

#### i. *Forward contacts and Financial Performance*

Roon, Nijman and Werkeras's study (as cited in Vargas and Kessakorn, 2013), evaluated the performance of applying forward contracts to hedge currency risk in international stock portfolio case of US investors. This study was hinged on well advanced markets within G5 countries, such as France, Germany, Japan, UK and USA. The study also applied regression analysis to examine hedging performance in three distinct cases. Findings of this study showed that to combat risks statically using currency forwards cannot enhance the performance of portfolio performance for those investors in the US who also has investments in other G5 countries. The further found out that hedging with strings attached that like current interest rate spread leads tremendous increase in the performance of portfolios.

Mittal, Khakhar and Mittal (2015), did a study on the hedging an effective tool for Risk Management. The study focused on efficiency of forward contracts on hedging against chosen Indian companies to manage currency exchange risk. To attain its aims, the study banked on the following objectives: to get understanding on how forwards are used to hedge, to examine how efficiently forward contracts can be utilized to curb risks of currency exchange, to get the insights on the current techniques used to hedge foreign exchange risk and to find out the effectiveness of applying derivative tools by chosen Indian companies to hedge. This study also applied descriptive Study. Secondary data was extracted from annual statements between 2013-2014. The sample size for this study was 100 companies that were earmarked using convenient sampling method. The study found out that forward contracts are widely used by companies under study thanks to the stability it brings on total risk arising out of the volatility of forex rates.

Yin and Han (2011), did a study on the pros and cons of forwards in international portfolios hedging. The aimed at found out why and when forwards can be used over options. They found out that maximum application of forward contracts can outshine the using protective put on hedging against foreign exchange. They further found out that forwards in the main ought to use to hedge as compared to other strategies thanks to its effectiveness.

Hasan (2015), assessed how importer companies hedge against forex risk exposure using forwards and floating techniques to reduce importing expenses. This study banked on the following objectives to achieve its targets constant profit margins, natural hedging and forwards contracts to achieve its objectives. In this study also, secondary data from the costs of international online retail store was used. Collected data was analyzed using Pearson chi-

squared. The study established that the application of forwards contracts to hedge foreign exchange risk led to overall decrease in the daily transaction costs.

### III. METHODOLOGY

A research design is the plan, structure, strategy and techniques to be used by the researchers to get answers to the research questions and to control variance. Dooley (2007) defines a research design as the scheme, outline or plan that was applied to come up with answers to research problems. This study adopted a descriptive and cross section research designs. Mugenda (2009), descriptive design is used to describe a phenomena aiming at obtaining data for to hypotheses testing or provide answers to questions showing progress of designs studied.

The target population for this study was 9 listed companies. 8 companies were listed under banking sector and 1 MNC listed under energy sector out of which a sample size was obtained. These MNCs have been active in Kenya from 2009 to 2018 and they use all the four financial derivatives.

The sample size for this study was 3 MNCs 2 in form the banking sector and 1 from the energy sector in Kenya. This study adopted purposive sampling technique. According to Suheyli (2015), if objects in the population are homogeneous, purposive sampling technique can be used. Hence, the study applied

purposive sampling technique to obtain sample size of 3 MNC that are using forward contracts.

Purposive sampling was applied to select a sample size of firms that used all four financial derivatives. Thus two firms were selected from the banking sector. Other six firms listed under the banking sector who didn't apply all four financial derivatives were eliminated from the sample size. Under energy sector, only one firm applied all four financial derivatives. Purposive sampling was applied to select it for the study. Banking on these reason, this study applied purposive sampling technique to select a sample of 3 MNCs: 2 from banking sector and 1 from energy sector to refer to the entire population.

Data applied in the study was obtained from secondary data sourced from published annual financial reports for each outfit. Annual reports accessed for 10 years (2009 -2018).

The data analysis was though mean and standard deviation. Correlation analysis was done establish the linkage between independent variable and dependent variables.

Correlation, simple and multiple regression analyses were employed to establish the relationship between independent variables and dependent variable. Forward contacts was the independent variable and financial performance of MNCs is dependent variable. The regression was used to establish the relationship between independent variable and dependent variable.

### IV. RESULTS AND DISCUSSIONS

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	9.649	7.225		1.335	.218
	FORWARD	.024	.045	.186	.537	.606

a Dependent Variable: Financial performance  
Source: (FR 2009-2018)

From the table above, the study discovered that forward contracts had a statistical insignificant effect on financial performance.  $r = 0.024$ ,  $t = 0.537$ ,  $p\text{-value} = 0.606 > 0.05$ . Taking other factors be constant at zero financial performance would be 9.649. Also the study found out that use of forwards contributed to 24% change in financial performance of MNCs other determinants explained 76% of financial performance. This meant the increase in the application of forwards contracts would insignificantly upscale profitability. Hence, use of forwards contracts had insignificant and hence, up scaling use of forwards enhanced performance. This findings are similar to (Limo, 2014) who found out forward exchange contracts are more often applied by companies to combat financial risks. Simple regression model was  $Y = 9.649 + 0.024X$ .

Further Correlation analysis identified that forward contracts had positive relation with financial of companies.

#### Hypothesis Testing

$H_{01}$ : Forward contracts has no significant effects on performance of multinational in Kenya.

The established that forward contacts has a direct but insignificant effect on the financial performance  $r = 0.024$ ,  $t = 0.537$ ,  $p\text{-value} = 0.606 > 0.05$ . This insinuated that use of forward contracts would affect profitability but not to the greater extent. Hence the hypothesis was accepted in its null form. According (Mbabazize, Daniel and Ekise, 2014), applying forwards contracts to curb foreign currency perils had a direct relationship with profit margin before tax of firms involved in exporting products in Uganda

## V. CONCLUSION AND RECOMMENDATION

The aim of the study was examine effect of forward contracts on financial performance of multinational companies in Kenya. The findings of the study indicated that forward contracts had direct but insignificant effect on financial performance. This meant that increased application of forwards, would improve financial performance however not the greater extent. According to Yin and Han (2011), maximum application of forward contracts can outshine the use of protective put options on hedging against foreign exchange. They further found out that forwards in the main ought to use to hedge as compared to other strategies thanks to its effectiveness.

## VI. CONCLUSION

The study concluded that forward contracts had a direct but insignificant effects on financial performance. Hence, a variation in the usage of forwards by a single unit would lead to a small change in financial performance of listed Multination in Kenya.

## VII. RECOMMENDATION

The study recommended that companies should apply forwards contracts to manage financial risks since it will contribute to their growth even its small. Further, the study recommended that since Forwards are OTC derivatives, that exchange of forwards should be electronic. This will make it easily accessible to many Multinationals hence improving their performance.

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## Financial Slack and Firm Performance: Evidence from Africa

By Demis Hailegebreal Hailu, Man Wang, Abdurahman Aliyi Ibrahim  
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**Abstract-** This study explores the relationship between financial slack and firm performance using a sample of firms in African countries. This study employed a split sample analysis to unmask the real picture of slack and performance nexus. We also used a baseline sample (using 923 firms) analysis to show how the result is ambiguous. By using 530 African firms (212 high and 318 low financial firms), this study found that while high available slack has adverse effects, low available slack has a favourable impact on firm performance. However, the study confirms while high potential slack has a positive influence, low potential slack hurts African firms' performance. These results depicted that while agency theory offers a strong prediction when dealing with high available slack, the resource-based theory provides a reliable forecast when dealing with high potential slack. This study finally suggests the application of split-sample analysis in studies like this.

**Keywords:** Africa, Financial slack, Firm Performance.

**GJMBR-C Classification:** JEL Code: F65



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# Financial Slack and Firm Performance: Evidence from Africa

Demis Hailegebreal Hailu <sup>α</sup>, Man Wang <sup>σ</sup>, Abdurahman Aliyi Ibrahim <sup>ρ</sup> & Misraku Molla Ayalew <sup>ω</sup>

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## 1. INTRODUCTION

The resource-based theory highlighted that firms are a bundle of resources that drive sustainable competitive advantage and superior performance (Barney, 1991). That is, rent discrepancies derived performance differences, attributable to a resource having intrinsically different levels of efficiency in the sense that they enable firms yielding a better return. From the perspectives of resource-based theory, organizational resources are thought to safeguard a firm at the times of environmental turmoil, lessens the conflict among employees, and boost firm performance. In short, the resource-based theory, *Ceteris paribus*, depicted that organizational slack drive firm performance. However, the agency theory (Jensen & Meckling, 1976) argued that organizational slack is unproductive and accumulates because of poor management. This theory deals with the delegation relationship between principals and agents — the principal delegates specific tasks and decisions to an agent based on an explicit or implicit contract. However, the principal-agent relation is always incomplete due to

limited information, unable to predict the future, and high cost of the entire agreement. Thus, the action taken by the agent might adversely influence the welfare of the principal. Also, agency theory argued that organizational slacks are inefficient and accumulated due to poor management or utilization of resources that might, in turn, hinder the firm's competitive advantage, thereby yield low performance.

Following the conflicting argument of the resource-based and agency theories, the management literature gives a great emphasis on the influence of organizational slack on firm performance. Accordingly, prior studies explore the impact of organizational slack on firm performance using a sample of firms (1) in developed countries such as US (Daniel, Lohrke, Fornaciari, & Turner Jr, 2004; United Nations, 2015; Wiersma, 2017; Zamfir, 2016), Sweden (Page, 2010), Europe (Gral, 2013), and (2) in emerging countries such as China (Chen & Miller, 2007; Liu, Ding, Guo, & Luo, 2014; Peng, Li, Xie, & Su, 2010; Yang & Chen, 2017) and India (Altaf & Shah, 2017).

However, as far as we know, there is no study, in the area, conducted using a sample of African firms. Moreover, previous studies are very general. Most of the prior studies explored the vague association between financial slack and firm performance (Altaf & Shah, 2017; De Carolis, Yang, Deeds, & Nelling, 2009; George, 2005; B.-N. Kim, Lee, Wi, & Lee, 2017; S. Lee, 2011; Wan & Yiu, 2009). We argued that a different level of financial slack affects firm performance differently. However, these studies failed to explore the impact of different level of financial slack on firm performance. We are aware that prior studies tried to explore the curve-linear relationship between financial slack and firm performance (Huang & Chen, 2010; Justin Tan, 2003; Zhong, 2011). These studies used the square or and cube values of financial slack to denote high financial slack. However, we believed that these square and cube values of financial slack are not real figures, thereby might mislead the result. The current study thus contributed to the literature by investigating the slack-performance nexus using sample firms in the developing region (Africa). This study further contributed to the literature by unmasking the real picture of slack-performance nexus via split sample analysis. We believed that the result of this study provides essential managerial implications and future research directions.

The Osiris and the World Bank databases are the sources of the data for this study. The *Osiris*

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*database* offers both financial and non-financial firm-level data of 1285 firms in 33 African countries, allowing us to extract the necessary firm-level data. The study excluded the financial institutions considering their slack accumulation might be unique and may affect the result. Thus, the study used a sample of non-financial firms. This study further excludes non-financial firms that have no the required data for ten years; from 2007 to 2016. The availability of data determines the study period. The study also excludes firms that did not report R&D investment in the last ten years. The final sample then included 923 firms in ten African countries covering a period from 2007 to 2016. For the split sample analysis, we draw a sample of 530 firms with high and low financial slacks. The bank deposit to GDP (a measure of banking sector development), the stock market capitalization to GDP (a proxy of stock market development), and annual GDP growth rate (a control variable), and governance indicators (control of corruption, regularity quality, and the rule of law) are obtained from the *World Bank database*.

Like previous studies, this study started by investigating the vague relationship between financial slack and firm performance. We used the word "vague" to show that prior studies examine the slack-performance nexus without considering the effects of different levels of financial slack (e.g., high and low) on firm performance. Therefore, the result is unclear (vague). We started the investigation using 923 samples of African firms. This sample encompasses all sample firms with high financial slack, low financial slack, mixed financial slack, and overlapped financial slack. Then we split the sample into two groups— high financial slack and low financial slack. To do so, we excluded firms with overlapped and mixed financial slack. By overlapped financial slack, we mean that firms' financial slack above and below the regional average during the study period. Some firms 'financial slack is laid down above and below the regional average across years. Some other firms have high available slack and low potential slack while others have low available slack and high potential slack. We used the phrase "mixed financial slack" to denote these firms (firms with high available slack and low potential slack and firms with low available slack and high potential slack). It is challenging to classify firms with overlapped financial slack and mixed financial slack as "high" or "low" financial slack. Thus, we dropped firms with mixed and overlapped financial slack, and we draw a final sample of 530 firms encompassing 212 firms with high financial slack and 318 firms with low financial slack.

To alleviate the potential effects of outliers on the result, we winsorized all variables (except governance indicators) at the 1<sup>st</sup> and 99<sup>th</sup> percentile of their distribution. We employed robust Ordinary Least Square (OLS) regression model following Hausman fixed-random specification test and Breusch-Pagan

Lagrange multiplier (LM). To check whether the main result is sensitive or not, we did robustness checks using alternative firm performance measures and regression model. We started our analysis with descriptive statistics. The descriptive statistics depicted that there exists a heterogeneous financial slack and firm performance across the countries. Following the descriptive statistics, we employed the heteroscedasticity and multicollinearity tests. There exists a heteroscedasticity problem, and we used a robust OLS regression model to remedy this problem. We applied the Variance Inflation Factors (VIF) to assess the presence of multicollinearity, but it is not an issue in the model. Thus, all variables are retained in the model.

The overall regression result shows that available slack and firm performance (Tobin's q and ROA) have a significant negative association and potential slack has a significant positive correlation with firm performance (Tobin's q and ROA). Based on this overall regression (vague) result, it is difficult to confirm the arguments of theories. It is also difficult to generalize that available slack has an adverse effect, and potential slack has a favourable impact on firm performance. Because the result does not show the link between different level financial slacks and firm performance and masks the real picture of slack-performance nexus, we understand from this that this vague result has to be explored using different levels of financial slack. We thus did a split sample analysis that explores the high slack-performance and low slack-performance nexus and unmask the real pictures slack-performance nexus. The result shows that high available slack has a strong negative association with firm performance, while low available slack has a strong positive correlation with firm performance. This result implied that agency theory generates strong perdition when dealing with high available slack. The result further shows that while high potential slack has a strong positive association, low potential slack has a weak negative association with firm performance. This particular result implied that the resource-based theory offers strong prediction when dealing with high potential slack (i.e., low debt-equity ratio).

## II. HYPOTHESIS DEVELOPMENT

### a) *Available slack and firm performance*

According to Sharfman, Wolf, Chase, and Tansik (1988), available slack refers to resources such as cash and cash equivalents that a firm can redeploy in a short time. Both the behavioural and the resource-based theories argued that such slack provides buffers that can absorb dynamic environments, resolve conflicts, and improve the firm's innovativeness. These all collectively drive sustainable and superior firm performance. Several empirical studies confirm the perspectives of behavioural and resource-based theories by showing that available slack has a positive

association with firm performance. A positive relationship between available slack and firm performance can be viewed in different ways: greater resilience to external shocks, mitigating organizational conflicts, and enhancing innovation and performance. Available slack is a buffer from the external environment, protecting firms from a negative influence on their performance for three major reasons. First, available slack mitigates disruption in internal business operation, increases the firm's efficiency, by absorbing external environmental shocks (Thompson, 1967a). Second, available slack allows the firm flexible in handling fluctuations in response to a dynamic environment (Sharfman et al., 1988). The following empirical studies prove these facts.

By employing a meta-analysis, Daniel et al. (2004) examined the relationship between financial slack and firm performance. The study was conducted based on 88 samples from 66 studies (N=54,249), and the result depicts a positive correlation between available slack and firm performance. Taking a sample of the European pharmaceutical industry during the financial crisis of 2007 to 2010, Gral (2013) explored the financial slack and corporate performance nexus. The study investigated the role of financial slack to boost performance during environmental turmoil (during the financial crisis). This study, in particular, confirms that available slack used as a cushion during an economic downturn or crisis. The author found a positive correlation between available slack and performance during the world financial crisis from 2007 to 2010. This result supported the viewpoint of the resource-based and the behavioural theories in that; firms use financial slack to improve their performance during environmental hardship.

Similarly, By taking a sample of Bulgarian firms, Rafailov (2017) investigated the financial slack and firm performance nexus. The study confirms that financial slack served as a buffer that protects firms in an uncertain and dynamic environment. Moreover, this study implies that financial slack lessens conflicts in the firm, enhances innovations, and improves a firm's long-term growth. The result shows a positive association between financial slack and performance, particularly for small firms. This study further found a weak non-linear linkage between financial slack and firm performance, suggesting that dominantly, financial slack has a positive influence on the Bulgarian firms' performance.

Based on the perspective of resource-based and agency theory, S. Lee (2011) investigated how financial slacks influence firm performance by using a panel data set of 1852 U.S. firms from 1990 to 2008. The result shows a positive financial slack and performance association, confirming the resource-based theory. Similarly, incorporating the behavioural and institutional viewpoints, again, Vanacker, Collewaert, and Zahra (2017) explored "Slack resources, firm performance, and

*the institutional context*" using a large dataset of 162,633 private firms of 26 European countries. This study proposed a country's legal frameworks that influence executives' deployment of slack resources. Notably, the authors investigated the moderating effect of creditor and employee rights on the link between slack and performance. The study found that financial slack improves performance at diminishing rates. The study further found that it has a more positive effect on performance in countries with weaker credit rights than human slack. This study finally suggested that excess financial slack enhances performance, mainly when firms operate in countries with weaker creditor rights.

Using longitudinal data on 900 private firms from 1994 to 1997, George (2005) investigated the correlation between financial slack and performance. The authors have drawn a sample with diverse industries, such as five technology-intensive and five nontechnology-intensive industries. The author extended the argument of behavioural and resource constraint theories of the firm regarding public firms' performance to private firms. While behavioural theory argued that excess available slack drives firm performance, the resource-constraint theory explains that firms with fewer available slack are more likely to be efficient as they find ways to leverage and stretch their available resources. The study suggested a combination of behavioural and resource constraints arguments are necessary to explain the slack-performance association in privately owned firms.

An influential article entitled "*From Crisis to Opportunity: Environmental Jolt, Corporate Acquisitions, and Firm Performance*" has studied by Wan and Yiu (2009) and published in *Strategic Management Journal*. This study integrates the external environmental situation into the investigation of corporate attainments during an environmental shock that alters the levels of environmental generosity. The authors emphasized the Asian economic crisis, particularly in Hong Kong and Singapore, by arguing, compared to other countries in Asia, fewer firms in Hong Kong and Singapore were bankrupted during the crisis. The authors further argued that these two countries are highly similar in economic, institutional, and cultural features. The study period covers 11 years from 1994 to 2002 and 48 firms from Hong Kong and 30 firms from Singapore. This study suggested that available (unobserved) slack improves a firm's performance and accentuate the positive association between corporate acquisition and firm performance at the time of environmental turmoil. However, this study found that available slack has a negative influence on firm performance and makes the acquisition-performance linkage more negative before and after environmental shocks.

Similarly, Paeleman (2012) has studied "*the interaction between the financial and human slack and its influence on performance*" of French firms. The

authors used longitudinal data from 733 ICT firms. This study analyzes the interaction effects of the financial and human slacks based on the integration of slack in the Emergent Stage and later stages of development of firms. This measure reflects the available slack. The result of this study demonstrates that having high levels of available slack is determining firm performance. Using a panel data set of 450 software firms, Latham and Braun (2009) investigated the correlation between financial slack and firm performance during the economic recession from 2001 to 2003. The result depicted that firms with more available slack confirmed a more rapid rate of performance decline in the early phase of economic downturn, but later on, in the recession, they demonstrated a quick rate of performance recovery. This result supported the viewpoints of behavioural theory that organizational slack serves as a cushion during environmental turmoil.

Recently, B.-N. Kim et al. (2017) have explored "*the effect of slack resource on firm performance and innovation*" based on the behavioural and pecking order theories using 53 Korean listed pharmaceutical firms for over five years (from 2010 to 2015). The result confirms the behavioural theory by finding a positive influence of available slack on performance.

Several studies further confirm the arguments of agency theory. Agency theory argued that high available slack is a source of management inefficiency and agency problems that hinder investment and innovation and provides managers with opportunities to involve in excessive diversification, empire-building, and on-the-job shirking (Jensen & Meckling, 1976). Also, available slack encourages unreasonable investment by management in personal projects that are unrelated to the owner's interests. The following empirical studies confirm these arguments. For instance, De Carolis et al. (2009) investigated "*Weathering the Storm: The benefit of resources to high-technology ventures navigating adverse events*" using the total of 104 events representing 57 US and Canada public biotechnology companies (25% of publicly traded biotechnology companies) from 1992 to 2003. The authors hypothesized that slack buffers the firm from the negative impact of adverse events. The result shows that the influence of slack on the ability of a firm to weather adverse events is not endogenously determined. More specifically, the study revealed that an increase in the current ratio (available slack) increases the negative impact of an adverse event (inconsistent with the hypothesis developed). Therefore, the result confirmed agency theory, that the existence of available slack amplifies (creates agency problem), rather than lessens, the impact of the adverse event.

Similarly, Altaf and Shah (2017) have studied slack and performance nexus in India. This study investigated the influences of various forms of slack

(financial, human resources, and innovation slacks) on the firm's performance. The study covers a panel dataset of 426 Indian firms for five years, from 2011 to 2015. The result of this study confirms agency theory by confirming a negative linkage between available slack and performance. This suggested that firms need to strengthen corporate governance to improve the commitment of available slack (lessens agency problems). It also suggested that managers should realize that "the resource allocation decision is a zero-sum game—keep in mind the opportunity cost of slack resources and deploy resources based on cost-benefit analysis."

Moreover, Stan, Peng, and Bruton (2014) argued that most prior studies on slack have inclined to study private firms in developed economies such as the US. Thus, they investigated the influence of slack on the performance of state-owned enterprises (SOEs) in emerging economies. The argument of this study extended that the behaviour of SOEs is questionable since they prioritize goals such as social welfare and full employment in a different way than their private (POEs) counterparts do. The author further argued that the difference between SOEs and POEs impacts their sources and use of slack because of the ownership, budget constraints, and agency relations. The authors then developed an institutional change life cycle model to investigate the slack-performance linkage of SOEs. One of the propositions of this study is that excess unabsorbed (available) slack adversely influences the performance of SOEs, as it weakens their strategic response to environmental changes. Their argument for this proposition is, the presence of absorbed slack allows SOEs to buffer their technical core and, however, bring them a false sense of safety, because of the immediate availability of resources to deal with potential problems. Hence, management becomes reluctant and irresponsive to external demands and fail to adapt to a dynamic environment.

Furthermore, previous studies also show keeping the optimum level of available slack improves firm performance. Such studies found a non-linear relationship between available slack and firm performance and suggest that various levels of available slack might affect performance differently. For instance, too much available slack leads to managerial miss behaviour and aggravates agency problems, while too little available slack hurts the firm's exploitation of investment opportunities (Triantis, 2000). Thus, both too much and few available slacks inhabit firm performance, which leaves the optimum level of slacks are having a favourable impact on firm performance. For instance, using survey data, Zhong (2011) explored the association between slack and firm performance in China. The author used survey data from 47 pharmaceutical and chemical firms operating in Henan

province, and 50 individuals (intermediate managers, senior managers, general managers, presidents, and others) answered the questionnaires. The study found a complex curvilinear available slack-performance nexus. Mainly, the available slack and performance exhibited an inverse N-shape association. The result broadly demonstrates the curvilinear association differs depending on industry conditions and slack resources. The result implies that keeping optimum available slack is favourable to the firm's performance; however, little and much slack inhibits firm performance. This study finally suggested the essentials of further investigations into intervening factors influencing the slack-performance nexus.

We inclined to the argument of agency theory due to the following reasons. Our study is conducted using African sample firms, and the agency problem might be substantial in Africa, where there are relatively weak corporate governance and an underdeveloped financial system. In Africa, the lack of effective regulatory and institutional frameworks, the lack of transparency and market discipline are the primary obstacles of good corporate governance (Rossouw, 2005). Besides, the financial system development still lags compared to other regions in the world (Hailu, 2019). The agency problem with the weak corporate governance and underdeveloped financial system will lead to unproductive use of available slack by the management of the firm. Prior studies also confirmed the argument of agency theory (Altaf & Shah, 2017; De Carolis et al., 2009; B.-N. Kim et al., 2017; Stan et al., 2014).

The practical implication of agency theory is that slack downsizing will lead to economic efficiency. Similarly, studies have shown that keeping a low level of available slack promotes firm performance (Nohria & Gulati, 1996). Besides, Geoffrey Love and Nohria (2005) explore the performance consequence of slack downsizing entitled "*Reducing Slack: The Performance Consequences of Downsizing by Large Industrial Firms, 1977–93*". This study was conducted using the 100 largest U.S. industrial firms from 1977 to 1993. The author conceptualized downsizing as an effort to slack reduction and confirmed that slack downsizing is more likely to lead to better performance when firms have high available slack.

Likewise, emphasizing on high-tech IPOs, Mousa, Marlin, and Ritchie (2013) examined configurations of slack and its performance implication. The study included 172 U.S. IPOs over five years (2001–2005) with average total assets of \$220 million and 1,410 employees. The authors used cluster analysis to identify the configuration that leads to a reduction in sample size to 162 IPOs. The study developed five configurations. The first configuration includes high slack firms with innovational slack focus, and the

second configuration comprises firms with low overall slack. While the third configuration includes average slack firms with no focus, the fourth configuration contains firms with little slack. The fifth configuration comprises young firms with high financial and managerial slack. The study measured available slack using working capital and cash reserves. The study thus suggested the presence of a distinct configuration of available slack and associated performance differences among configurations. That is, different available slack configurations are linked with various levels of performance. Notably, configuration 2 with the lowest levels of available slack demonstrated a higher level of performance. However, configuration 5, with the highest level of available slack, showed a lower level of performance. In short, this study found that a low level of available slack is associated with better firm performance.

In conclusion, the above arguments show that while high available slack harms, low available slack improves firm performance. Considering the weak corporate governance and the underdeveloped financial system in Africa, we thus developed the following hypothesis.

*Hypothesis 1: High available slack has a negative relationship with firm performance, but low available slack has a positive relationship with firm performance.*

#### *b) Potential slack and firm performance*

Behavioural and resource-based theories consider potential slack as a promoter of firms' competitive advantage, thereby positively influencing performance. These theories further argued that potential slack improves firm performance by eliminating goal conflicts, embodying a cushion in a hostile environment, playing a stabilizing role, maintaining sustainable competitive advantage, and promoting a firm's innovativeness. More importantly, these theories argued that potential slack influences management decisions to continue or not to continue innovative projects that possibly produce competitive advantage and superior firm performance. Moreover, the more potential slack resources a firm has, the easier it is for the firm to handle unforeseen internal and external shocks that maintain successful innovation (Barney, 1991; Cyert & March, 1963). That is, firms cannot achieve a competitive advantage and superior performance without such slacks (Barney, 1991; Cyert & March, 1963; Thompson, 1967b). Several empirical studies confirmed these arguments.

A meta-analysis of Daniel et al. (2004) on the relationship between financial slack and firm performance shows an important performance implication of potential slack. The study was conducted based on 88 samples from 66 studies (N=54,249) and found a positive potential slack and performance nexus.



Moreover importantly, this study found that studies controlling for industry-relative performance demonstrated a strong positive potential slack-performance relationship than those not including these controls. Again, they found that studies using lagged financial slacks did not indicate a robust positive slack-performance nexus than those employing the current year slack. Finally, this study highlighted that the essentials of further research into exploring the influencing factors affecting the slack-performance relationship.

Similarly, Gral (2013) explored the financial slack and corporate performance nexus. The study investigated the role of financial slack to boost performance during environmental turmoil (during the financial crisis, between 2007 and 2010). The result confirmed a positive potential slack and performance nexus, suggesting potential slack used as a cushion during an economic downturn or crisis. This result supported the viewpoint of the resource-based and the behavioural theories in that; firms use potential slack to improve their performance during environmental hardship. Also, Rafailov (2017) examined slack and performance nexus by using Bulgarian firms. The study confirms that potential slack served as a buffer that protects firms in an uncertain and dynamic environment. Moreover, this study implies that potential slack lessens conflicts in the firm, enhances innovations, and improves a firm's long-term growth. This study demonstrated a positive association between potential slack and performance, particularly for small firms. This study further found a weak non-linear linkage between potential slack and firm performance, suggesting that dominantly, potential slack has a positive influence on the Bulgarian firms' performance.

Using 218 U.S. listed manufacturing firms, Wiengarten, Fan, Lo, and Pagell (2017) have studied, *"The differing impacts of operational and financial slack on occupational safety in varying market conditions."* The GMM regression result of this study found that a decline in potential slack harm workers; however, this effect declines when firms hold higher levels of potential slacks. The result implied that firms with high potential slack could better cope with increased coupling because they can quickly address problems. The result further indicated that potential slack makes a firm to be able to restore a state of reliability when external jolt trickles down the operational level. Thus, holding appropriate potential slack can reduce the negative safety implications of effort to increase efficiency.

Based on the resource-based and agency theory, S. Lee (2011) investigated how financial slack affects firm performance. The author used the FGLS regression and Granger causality test, and the result found a positive potential slack and performance association. The result thus supported the resource-based theory by finding a positive influence of potential

slack on performance. Similarly, based on the behavioural and institutional viewpoints, Vanacker et al. (2017) examined slack, resource, firm performance, and the institutional context. This study proposed a country's legal frameworks that influence executives' deployment of slack resources. The result shows that potential slack improves performance at diminishing rates. The result further indicates that potential slack has a more favourable impact on the performance of firms in countries with weaker credit rights. This study finally suggested that excess potential slack enhances the performance of firms operating in countries with weaker creditor rights.

This study argued that different levels of potential slack might have various influences on firm performance. The existing literature operationalized potential slack as a debt to equity ratio (Bourgeois III, 1981; Hailu, 2019). This kind of slack indicates the ability of a firm to secure resources with the structure of external financing—debt and equity financing. The employment of such slack resources involves the firm incurring future expenses (cost of borrowing) and, in turn, influences the firm value or performance (Geiger & Cashen, 2002).

The debt-equity ratio explained the financing decision of firms. The firm's financing decision may also affect its value. For instance, high debt-level (low potential slack) may lead to a decline in performance that ultimately brings about bankruptcy (Ukaegbu & Oino, 2014). Beside, Fama and French (2002) argued that excess debt (low potential slack) leads to higher agency costs that lower firm performance. However, as potential slack increases (i.e., a decline in a debt-equity ratio), it is difficult to imagine that undisciplined experimentation will happen since it is not currently available resources within the firm. That is, unlike high available slack, high potential slack is not exposed for unproductive (unreasonable) investment. Hence, we developed the following hypothesis.

*Hypothesis 2: High potential slack has a positive relationship with firm performance, but low potential slack has a negative relationship with firm performance.*

### III. DATA AND METHODS

#### a) Data

The source of firm-level data is the *Osiris* database. This database provides financial and non-financial data for firms in 33 African countries, among others. This database allows us to obtain necessary data related to financial slack, R&D investment, financial performance, and other control variables, such as firm size and firm growth. The source of the country-level data is the World Bank database. The World Bank database provides the bank deposit to GDP (%) and stock market capitalization to GDP (%) of countries in the world from 1960 to the present. The countries'



annual GDP growth rate and the governance indicators (control of corruption, regularity quality, and the rule of law) are also obtained from this database.

We have passed through different steps to draw the final sample of this study. *First*, we exclude financial institutions such as banks and insurance companies by considering their slack accumulation might be unique. Therefore, the sample is drawn from the non-financial firms operating in Africa. *Second*, we exclude those firms that have no data for the last ten years, from 2007 to 2016, because this study covers ten years based on data availability. *Third*, firms with missed values of net income, total sales, total assets, current assets, current liabilities, total liabilities, equity, and R&D expenditures are excluded. The final sample thus comprises 923 firms in ten Africa countries for ten years (2007 to 2016).

This study categorized firms as high and low financial slack firms for split-sample analysis based on the level of their financial slack. The extant literature defined financial slack as a resource over the minimum requirement in the firms (Bourgeois III, 1981; George, 2005; Nohria & Gulati, 1996). However, existing literature did not explicitly determine how much is the excess slack resources in the firm. It is difficult to specify the resource above the minimum requirement of firms due to different characteristics of firms such as the industry engagement, operation, size, and age, among others.

Therefore, as far as we know, there is no standard (benchmark) to categorize financial slack as high and low. Due to the lack of such parameters in theories and existing literature, we used the regional average financial slack as a benchmark to classify firms as high and low financial slack firms. The regional average available slack and potential slack are 2.1 and 0.75, respectively (see Table 5.1). The current ratio is the measure of available slack, and an increase in this ratio indicated a rise in available slack (Bourgeois III, 1981). Therefore, we classify firms with current ratio (cr) greater or equal to the regional average (i.e.,  $cr \geq 2.1$ ) as "high available slack" firms and firms with current ratio below the regional average (i.e.,  $cr < 2.1$ ) as "low available slack" firms.

The operational definition of potential slack is different from the available slack. The debt-equity ratio is the measure of potential slack. A decrease in the debt-equity ratio indicated that an increase in the potential slack and vice versa (Bourgeois III, 1981). Thus, we categorize firms with debt-equity ratio (de) below the regional average (i.e.,  $de < 0.75$ ) as "high potential slack" firms and firms with debt-equity ratio equal to and higher than the regional average (i.e.,  $de \geq 0.75$ ) as "low potential slack firms." Therefore, firms with available slack greater or equal to 2.1 and potential slack less than 0.75 are high financial slack firms. In contrast, firms with available slack less than 2.1 and potential slack greater or equal to 0.75 are low financial slack firms.

We have passed the following procedures to categorize firms as a high and low financial slack group of firms. First, we screened out firms with overlapped financial slack. By "overlapped financial slack," we mean that a single firm's available and potential slack is below and above the regional average during the study period, and it is difficult to group such firms either under a high or a low financial slack category. Thus, we excluded firms with overlapped financial slack. Second, we filtered out firms with mixed financial slack. We found a single firm with high available slack and low potential slack or low available slack and high potential slack. We, thus, used the phrase "mixed financial slack" to denote firms with high available slack and low potential slack and low available slack and high potential slack. It is also difficult to classify such firms under a high or a low financial slack group of firms because they have mixed financial slack. We are also concerned that including such firms in the split sample will mislead the result at large. We thus excluded firms with mixed financial slacks.

Based on these criteria, we dropped 393 firms from the overall sample (i.e., from a sample of 923 firms). The final sample, thus, become 530 firms comprising 212 high financial slack firms and 318 low financial slack firms. The split sample analysis, hence, is based on 212 high and 318 low financial slack firms—a total of 530 firms.

#### b) Sample distribution

We classified the sample across countries and industries. Table 1 presents a sample distribution. Panel 'A' of Table 1 reports a sample distribution across sample countries. A total sample of this study is 923 non-financial firms in ten African countries. Accordingly, 295 firms (32 percent) of the sample firms are Egyptian, accounted for the largest number. The second-largest, 222 firms (24 percent) of the sample are South African firms. The third-largest, 127 (14 percent), are Nigerian firms. Also, 84 firms (9 percent), 71 firms (8 percent), 52 (6 percent), and 30 firms (3 percent) of the sample are Kenyan, Moroccan, Tunisian, and Ghanaian firms. The smallest, 2 percent and 1 percent of the sample firms are Zambian and Tanzanian and Ugandan firms, respectively. Panel 'B' of Table 2 presents a sample distribution across industries. We classified industries into 12 industry groups based on the Global Industry Classification Standard (GICS). The first-largest, 151 firms (16 percent) of sample firms, are engaged in Services. The second-largest, 136 firms (15 percent) of the sample are manufacturing firms. From a total sample, 106 firms (12 percent) and 86 firms (9 per cent) are Construction and Food & Beverage firms, Trade & Investment, and Energy industries, respectively. Also, 73 firms (8 per cent), 58 firms ( 6 per cent), 50 firms (5 per cent), 44 (5 per cent), 35 firms (4 per cent), and 19 firms (2 per cent) of the sample firms are Transport,

Agriculture, Media & Entertainment, Hotel & Tourism, IT & Telecom, and Health care firms respectively.

*Table 1: Sample distribution*

Panel A: Sample distribution across countries			Panel B: Sample distribution across industries		
Country	Number of firms	Percentage	Industry	Number of firms	Percentage
Egypt	295	32	Service	151	16
South Africa	222	24	Manufacturing	136	15
Nigeria	127	14	Construction	106	12
Kenya	84	9	Food & Beverage	86	9
Morocco	71	8	Trade & Investment	85	9
Tunisia	52	6	Energy	80	9
Ghana	30	3	Transport	73	8
Zambia	18	2	Agriculture	58	6
Tanzania	16	2	Media and Entertainment	50	5
Uganda	8	1	Hotel and Tourism	44	5
			IT and Telecom	35	4
			Healthcare	19	2
Total	923	100		923	100

### c) Variables and Measurements

#### i. Dependent variables

This study used firm performance as a dependent variable. The existing literature classified firm performance as market and accounting-based performance. The use of market and accounting-based firm performance metrics has been the subject of numerous debates over the past two decades (Chakravarthy, 1986; Combs, Russell Crook, & Shook, 2005; Johnson, Natarajan, & Rappaport, 1985; Keats, 1988; Lubatkin & Shrieves, 1986; Richard, Devinney, Yip, & Johnson, 2009). To justify and promote the use of market-based performance measures, its advocates underline their advantages over accounting-based firm performance metrics. For example, Lubatkin and Shrieves (1986) argue that market-based performance incorporates all relevant information. Thus unlike accounting-based firm performance metrics, they are not limited to a single aspect of firm performance. Some scholars even openly take the shareholder perspective and propose that maximization of shareholder wealth is the ultimate criterion for the fulfilment of the firm's economic goal (Johnson et al., 1985). Besides, accounting measures are subject to managerial manipulation and distortions due to depreciation policies, inventory valuation, and treatment of specific revenue and expenditure items, differences in the methods of consolidating accounts, and outright lying and fraud (Chakravarthy, 1986).

Knowing that either accounting or market-based measures are perfect, scholars accept both of them as valid measures of a firm's financial performance (Gentry & Shen, 2010; Hoskisson, Wan, Yiu, & Hitt, 1999). Scholars generally treat accounting-based firm

performance measures as a measure of past or short term financial performance and market-based measures as a measure of future or long-term performance (Hoskisson, Johnson, & Moesel, 1994; Keats, 1988). Similarly, the current study employed both the accounting-based and the market-based firm performance indicators. The widely used accounting-based performance measures return on assets (ROA) which is a ratio of net income to total assets. ROA measures the operating performance of the firm (Love & Klapper, 2002). Prior studies widely used ROA as a proxy of accounting-based firm performance metrics (Demis H., Man W., & Ali R., 2017; Demis H., Sujatha S., & Daniel T., 2017; Hailu, 2019). Mathematically, we compute the ROA as follows.

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

Prior studies widely used Tobin's q as a measure of the market firm performance (Al-Matari, Al-Swidi, & Fadzil, 2014; R. C. Anderson & Reeb, 2003; Dang, Li, & Yang, 2018; Favero, Giglio, Honorati, & Panunzi, 2006; Gentry & Shen, 2010). Tobin's q plays an essential role in many financial interactions. It has been employed to explain several diverse corporate phenomena, such as a cross-sectional difference in investment (Jose, Nichols, & Stevens, 1986; Malkiel, Von Furstenberg, & Watson, 1979), the relationship between managerial equity ownership and firm value (McConnell & Servaes, 1990; Morck, Shleifer, & Vishny, 1988), the relationship between managerial performance and tender offer gain (Lang & Litzenberger, 1989), investment opportunities and tender offer responses (Lang & Litzenberger, 1989), and financing, dividend, and compensation policies (Chung, 1994; Smith Jr &

Watts, 1992). These indicated that Tobin's  $q$  is a comprehensive market-based measure of firm performance. Consistent with existing literature (Al-Matari et al., 2014; R. C. Anderson & Reeb, 2003; Dang et al., 2018; Favero et al., 2006; Soedarmono, Trinugroho, & Sergi, 2019), we compute Tobin's  $q$  as follows.

$$\text{Tobin's } q = \frac{\text{MVE} + \text{BVD}}{\text{TA}}$$

Where MVE is market capitalization or market value of equity (the price of share\*number of common shares outstanding), BVD the book value of total debt, TA is the book value of total assets.

## ii. Independent variables

Again we need to recall that this study explored the relationship between financial slack. Thus, the independent variable is financial slack. Advocates of slack argued that financial slack allows experimentation and innovation, thereby increase profit (Barney, 1991; Cyert & March, 1963). However, proponents of slack argued that financial slack is management inefficiency and a source of the agency problem, thereby inhibits firm performance (Jensen & Meckling, 1976). These conflicting arguments motivated us to explore the relationship between financial slack and firm performance. The existing literature broadly defined financial slack as a resource over the minimum requirement in the firm (Bourgeois III, 1981; Bromiley, 1991; George, 2005; Mishina, Pollock, & Porac, 2004; Nohria & Gulati, 1996).

The existing literature further classified financial slack as available and potential slack (Bourgeois III, 1981; Geoffrey Love & Nohria, 2005; Hailu, 2019). Slack exists as financial reserves that a firm can maintain by holding cash or financial instruments. Such type of slack is unabsorbed or available slack. These reserves are not directly helpful in innovation developments that in turn, influence performance; however, they influence decisions to continue or discontinue R&D projects. This effect occurs as excess financial resources lead to less strict performance monitoring of uncertain projects.

Available slack, which is unabsorbed or currently uncommitted resources, is more easily redeployed, enabling higher managerial discretion. Strict performance monitoring can lead to new activities aborted before a firm has accumulated enough experience to know whether they will ultimately boost its performance (Lounamaa & March, 1987). The impatient assessment led by low slack is mainly damaging for R&D projects, which are vulnerable to cutbacks due to unclear performance signals that they produce (Garud & Van De Ven, 1992). On the other hand, the existence of available slack shows that management has not been utilizing such resources to expand the firm's current operation, thereby adversely affects firm performance (Mishina et al., 2004). Scholars offer useful guidelines

regarding the measurement of available slack. Accordingly, the current ratio best operationalizes available slack (Bourgeois III, 1981; Greve, 2003; Hicheon Kim, Kim, & Lee, 2008; Lewis, 2013; Singh, 1986). Consistent with the previous studies, we also measure available slack by a current ratio as follows.

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current liabilities}}$$

Financial slack also exists when the firm borrows less than it potentially could borrow, which is called potential slack. The existing literature measured potential slack employing leverage ratio; debt to equity (Bourgeois III, 1981; Hailu, 2019; Justin Tan, 2003) for which increasing debt reveals decreasing potential slack levels (Bourgeois III & Singh, 1983). This kind of slack indicates the ability of a firm to secure resources with the structure of external financing — debt and equity financing. The employment of such slack resource involves the firm incurring future expense (cost of borrowing) and in turn, influences the firm value (Geiger & Cashen, 2002).

According to Ukaegbu and Oino (2014), a high debt-level (low potential slack) may lead to a decline in performance that ultimately brings about bankruptcy. Beside, Fama and French (2002) argued that excess debt (low potential slack) leads to higher agency costs, implying a negative association between debt ratio and firm performance. However, Bourgeois III (1981) argued that a decrease in the debt-to-equity ratio (high potential slack) shows lower future interest payment that reduces the possibility of creditors to affect management. Consistent with existing literature, we employed a leverage ratio as a measure of potential slack in this study. Mathematically, we computed the potential slack as follows.

$$\text{Potential slack} = \frac{\text{Debt}}{\text{Equity}}$$

## d) Control variables

### i. Selling and general administrative expenses (sgaes)

The selling and general administrative expenses should move proportionately with the firm's revenue. An increase in the ratio of selling and general administrative expense to sales between two periods shows a negative signal about future profitability and firm value (M. Anderson, Banker, Huang, & Janakiraman, 2007). More importantly, the ratio of selling and general administrative expense is a measure of operating efficiency. An increase in the ratio reveals management inefficiency and inability to control the costs and vice-versa. Such inefficiency possibly adversely affects firm performance. Thus, this study controlled the selling and general administrative expense to sales ratio in this study. Consistent with prior studies (B.-N. Kim et al.,

2017; C. L. Lee & Wu, 2016; Murro, Teixeira, Beuren, Scherer, & Lima, 2016; Stan et al., 2014), we used the selling and general administrative expense scaled by sales in this dissertation.

$$\text{sgaes} = \frac{\text{Selling and General administrative expenses}}{\text{Sales}}$$

#### ii. Firm growth

We control firm growth in our study because of the following reasons. First, firm growth is closely associated with its survival. Thus, firms experiencing continuous growth will have a higher chance of surviving in the market. Unless the firm is survived, performance and innovation are unthinkable. *Second*, firm growth is a way to introduce innovation and is a knowledge of technological change that influences performance. For instance, if a company needs to grow and survive in a

competitive business, it requires to integrate new technologies to be more efficient and competent (Pagano & Schivardi, 2003). In this viewpoint, growth is a challenge a firm must encounter by introducing innovation. Third, firm growth might influence the accumulation of financial slack resources.

More growing firms may use a resource available for development or innovation purpose so that they might end the period with little slack resources. Firm growth is measured in two ways—sales growth and employment growth. Consistent with previous studies (Coad & Hölzl, 2012; Hölzl, 2009; Vickers & Lyon, 2014), we computed sales growth as a disparity between current period sales and previous period sales scaled by previous period sales of firms. We calculated employee growth the same as we did for sales growth.

$$\text{Sales growth (firm)} = \frac{\text{Sales}_t - \text{Sales}_{t-1}}{\text{Sales}_{t-1}}$$

$$\text{Employee growth (employee)} = \frac{\text{Employee}_t - \text{Employee}_{t-1}}{\text{Employee}_{t-1}}$$

#### iii. Firm size (size)

The existing literature widely emphasized the influence of firm size on performance (Aduralere Opeyemi, 2019; Hedija, 2015; J. Lee, 2009; Lopez-Valeiras, Gomez-Conde, & Fernandez-Rodriguez, 2016; Lun & Quaddus, 2011; Olawale, 2017; Y.H. Venus Lun, 2011). The central question address by these studies is whether firm size matters. Results of those studies implied that large firms have huge sales that portion of it used to invest in R&D. Studies further suggested that large firms can access finance for risky R&D projects, thereby maintain higher performance (Nooteboom & Vossen, 1995).

However, Counterarguments are that large firms may become bureaucratic and less efficient, thereby adversely affects firm performance. For instance, Hedija (2015) found that small firms grow faster than their counterparts. Similarly, Olawale (2017) found that firm size in terms of total assets has a negative influence on the firm's financial performance. Due to these arguments, we decided to control firm size in this study. Like previous studies (Aduralere Opeyemi, 2019; J. Lee, 2009; Lopez-Valeiras et al., 2016; Lun & Quaddus, 2011), we employed the natural logarithm of total asset of firms as a measure of firm size.

#### iv. R&D investment

In today's global competition, there is a general agreement that innovation is critical for a firm's competitiveness and superior performance. The R&D investment decision made today influences a firm's growth, competitiveness, and performance in the future. In most of the cases, firms that spend heavily in R&D are more likely to be profitable and successful. Hay (1979) argued that high investment in R&D is generally a high-

risk-high-return strategy that is more attractive to shareholders in expectation of better financial performance. This argument implied that emphasizing on R&D may boost a firm's competitive advantage and thus, may improve the firm's ability to gain better performance in the marketplace.

Moreover, empirical studies found a positive association between R&D investment and firm performance (Adeyeye, Jegede, & Akinwale, 2013; Cho, Lim, Kwon, & Sung, 2008; Ehie & Olibe, 2010; Gui-long, Yi, Kai-hua, & Jiang, 2017; Guo, Wang, & Wei, 2018; Hyojoon Kim, Kim, & Cho, 2014; Usman, Shaique, Khan, Shaikh, & Baig, 2017). The result of these studies implied that R&D investment favourable influenced firm performance. However, there are cases in which R&D investment adversely affect a firm's performance. According to investment theory, R&D investment is different from ordinary investment. First, most of the expenditure (except new capital equipment expenses), comprises of wages and salaries of well-educated scientists and engineers.

According to Hall (2010), in practice, 50 per cent of R&D investment is the wages and salaries of those scientist and engineers. We argued that this figure might exceed 50 per cent in the context of Africa. Because most of the time, such scientists and engineers who engaged in complex R&D activities are expatriates. The payment for such expatriates is enormous; that is why we believed that more than 50 percent of R&D investment might go to the payment of scientists and engineers in Africa. Thus, R&D investment may inhibit firm performance in Africa. Prior studies also found an adverse effect of R&D investment on firm performance



(Cui & Mak, 2002; Hsu & Boggs, 2003; Vithessonthi & Racela, 2016). We compute R&D investment as follows.

$$R\&D\ investment\ (rds) = \frac{R\&D\ expenditure}{Sales}$$

v. *Banking sector and stock market development*

Financial development encompasses enhancements in such functions provided by financial systems like (1) pooling of saving; (2) allocating capital to productive investment; (3) monitoring those investments; and (4) risk diversification (Levine, 2005). These functions can impact saving and investment decision and efficiency. Moreover, financial development reduces asymmetric information, agency problem, financial constraints, promote risk-sharing, and enhance the ability of the financial system to absorb shocks. Furthermore, the well-functioning financial system help firms access external finance, thereby improves their performance. In particular, we argued that a well-functioning banking sector boosts firm performance by providing the required sources of debt

financing. Similarly, stock markets offer platforms for equity financing that eliminates firms financing constraints. Summing up, by providing external finance, diversifying risk, providing symmetric information, and reducing agency problems, well-functioning banking sector and stock market promote firm performance.

The banking sector development predominantly measured by the bank deposit to the percentage share of the country's gross domestic product (GDP). Bank deposit to a percentage share of GDP measures the size (depth) of the banking sector development, among others (Beck, Demirgüç-Kunt, & Levine, 2000, 2009; Beck, Demirgüç-Kunt, & Levine, 2010; Cihak, Demirgüç-Kunt, Feyen, & Levine, 2012). Bank deposit to a percentage share of GDP is the ratio of all checking, savings, and time deposits in banks relative to GDP (Beck et al., 2009; Beck et al., 2010; Cihak et al., 2012). Consistent with previous studies of Hailu (2019) and Beck et al. (2010), we thus measured the banking sector development as the bank deposit to GDP. We computed the bank deposit to GDP as follows.

$$Bank\ deposit\ to\ GDP\% = \frac{Bank\ deposit}{GDP} * 100, \text{ where bank deposit is demand, time, and saving deposits}$$

Stock market capitalization (stock market cap) to a percentage share of GDP, among others, measures the size of stock market development (Bayraktar, 2014; Beck et al., 2000; Demirgüç-Kunt & Levine, 1996).

Following Demirgüç-Kunt and Maksimovic (1996) and Hailu (2019), we used the ratio of stock market capitalization to a percentage share of GDP as a measure of the stock market development in this study.

$$Market\ capitalization\ to\ GDP\% = \frac{Stock\ market\ capitalization}{GDP} * 100$$

vi. *Economic growth*

Studies empirically suggested that changes in the economic situation have influenced performance and investment decision of firms operating there. Studies further argued that business success and economic conditions are highly linked (Barrot & Sauvagnat, 2016; Bernile, Delikouras, Korniotis, & Kumar, 2017; Giroud & Mueller, 2017). As our study emphasized a cross country investigation, we believed that the economic growth of individual countries could influence the firm performance. Firms in better economic growth may be more profitable than firms in relatively lower economic growth. Therefore, we argued that it is essential to control the economic growth of countries in a study like ours. We used an annual GDP growth rate of sample countries based on constant 2010 U.S dollars (the World Bank computation of annual GDP growth rate).

vii. *Governance indicators*

Since the 1990s, studies have given attention to 'good governance' as both a means of achieving development and development objectives in itself. The World Bank has defined 'good governance' as "epitomized by expected, open and enlightened policy-

making; a bureaucracy imbued with a professional ethos; an executive arm of government accountable for its actions; and a strong civil society participating in public affairs; and all behaving under the rule of law" (Talvitie, 1994). Because of the growing demand for the measure of the quality of governance, numbers of aggregate governance indicators have been produced, such as World Bank's Worldwide Governance Indicators which are, for instance, political stability and violence, government effectiveness, the rule of law, and control of corruption. The effectiveness of government is intended to serve the interest of the general population, and the cooperation among public and private sectors is crucial for ensuring the betterment of the society and business. On the one hand, the public and the private sectors are depending on each other to operate efficiently and to attain their objectives; thus the public sector could facilitate, via a suitable controlling mechanism and regulatory framework, the effectiveness of the business sector.

On the other hand, the private sector's output could provide a basis for public sector serve the economic health of a country (BOȚA-AVRAM, 2014). In this viewpoint, the business performance should represent the concern of government and the public



sector, and the primary interest of government must be more accessible business regulations, given the relevance of business outputs for public sectors. Studies also confirm that effective governance influences the effectiveness of business environments (BOŢA-AVRAM, 2014).

There are six world-wide governance indicators— (1) voice and accountability, (2) political stability and absence of violence, (3) regulatory quality, (4) government effectiveness, (5) control of corruption, and (6) the rule of law. These indicators have similar measurements ranging from -2.5 (indicating weak governance) to 2.5 (indicating good governance). Due to such similarity, these indicators have higher collinearity with each other. To avoid severe collinearity among the indices, we controlled only three less correlated, namely control of corruption, the rule of law, and regulatory quality. Thus, we explained only these three indicators in this part. Control of corruption captures the perception over the Control of Corruption, including various forms of public power exercises for illegally private gains like additional payments to get things done, but also its negative influences on the business environment. The rule of law estimates the

extent to which the public and citizens have confidence in and abide by the rules of society, including the effectiveness of the judiciary system and the security of property right. Regulatory quality evaluates the effects of policies which are perceived as market-unfriendly, such as price controls or inadequate bank supervisions, or excessive regulation which might affect business growth.

We argued that these specific governance indicators have effects on firm-specific performance. In general, it has been accepted that good governance leads to sustainable firm performance. We also argued that these governance indicators influence African firms' performance. The influence of good governance on firms' business success is undoubtful. Good governance indicates fair regularity frameworks, accountability, and transparent policy-making that possibly have a strong favourable impact on firms' business success and sustainability (Ngobo & Fouda, 2012). Besides, good governance ensures a framework of good rules that enhances business success (BOŢA-AVRAM, 2014). We summarize the measurements of these indices in Table 2.

Table 2: Variables and measurements

Variables	Indicator	Measurement
Dependent variables (Firm performance)	Tobin's q	$\text{Tobin's } q = \frac{\text{MVE} + \text{BVD}}{\text{TA}}$
	Return on Assets (ROA)	$\frac{\text{Net Income}}{\text{Total Assets}}$
Independent variables (Financial Slack)	Available slack (cr)	$\frac{\text{Current Assets}}{\text{Current liabilities}}$
	Potential slack (de)	$\frac{\text{Debt}}{\text{Equity}}$
Firm-level control variables	R&D investment (rds)	$\frac{\text{R\&D expenditure}}{\text{Sales}}$
	Selling general and administrative expense to sales (sgaes)	$\frac{\text{Selling General and Administrative expenses}}{\text{Sales}}$
	Sales growth (firm)	$\frac{\text{Sales}_t - \text{Sales}_{t-1}}{\text{Sales}_{t-1}}$
	Employment growth (employee)	$\frac{\text{Employee}_t - \text{Employee}_{t-1}}{\text{Employee}_{t-1}}$
	Firm size (size)	Log total assets
Country-level control variables	Banking sector development (bdgdp)	$\frac{\text{Bank deposit}}{\text{GDP}} * 100$
	Stock market development (stmktgdp)	$\frac{\text{Stock market cap}}{\text{GDP}} * 100$
	Economic growth (gdp)	Annual GDP growth rate (%)
	Control of Corruption (CC)	from -2.5 (weak) to 2.5 (strong) governance
	The rule of law (RL)	from -2.5 (weak) to 2.5 (strong) governance
	Regulatory quality (RQ)	from -2.5 (weak) to 2.5 (strong) governance

#### viii. Econometric models and estimation techniques

We specified model 1 to test hypotheses 1 and 2.

$$\text{Tobin's } q_{ij,t}(\text{ROA}_{ij,t}) = \alpha + \beta_1 cr_{ij,t} + \beta_2 de_{ij,t} + \beta_3 SGAES_{ij,t} + \beta_4 rds_{ij,t} + \beta_5 size_{ij,t} + \beta_6 firm_{ij,t} + \beta_7 employee_{ij,t} + \beta_8 bdgdp_{j,t} + \beta_9 stmktgdp_{j,t} + \beta_{10} gdp_{j,t} + \beta_{11} CC_{j,t} + \beta_{12} RQ_{j,t} + \beta_{13} RL_{j,t} + \mu + \delta + \theta + \varepsilon \dots \dots \dots (1)$$

Where  $Tobin's\ q_{ij,t}$  and  $ROA_{ij,t}$  are the firm performance of firm  $i$ , in a country  $j$  and time  $t$ ,  $cr_{ij,t}$  and  $de_{ij,t}$  are available slack and potential slack of firm  $i$ , in a country  $j$ , at time  $t$ ,  $SGAES_{ij,t}$  is selling general and administrative expense to sales ratio of firm  $i$ , in a country  $j$ , at time  $t$ ,  $rds_{ij,t}$  is R&D investment of firm  $i$ , in a country  $j$ , time  $t$ ,  $size_{ij,t}$  is the size of firm  $i$ , in a country  $j$ , at time  $t$ ,  $firm_{ij,t}$  is the firm's sales growth of firm  $i$ , in a country  $j$ , at time  $t$ ,  $employee_{ij,t}$  is employment growth of firm  $i$ , in a country  $j$ , at time  $t$ ,  $bdgdp_{j,t}$  is banking sector development of country  $j$  at time  $t$ ,  $stmktgdp_{j,t}$  is stock market development of country  $j$  at time  $t$ , and  $gdp_{j,t}$  is an annual GDP growth rate of country  $j$  at time  $t$ ,  $CC_{j,t}$  is control of corruption of country  $j$  at time  $t$ ,  $RQ_{j,t}$  is regularity quality of country  $j$  at time  $t$ ,  $RL_{j,t}$  is the rule of law of country  $j$  at time  $t$ ,  $\beta_1$  to  $\beta_{12}$  are coefficients and  $\mu, \delta, \text{ and } \theta$  are country, industry, and year fixed effects respectively and  $\varepsilon$  error term, and  $\alpha$  is constant.

We employed the robust Ordinary Least Square (OLS) regression model following Hausman fixed-random specification and Breusch-Pagan Lagrange multiplier (LM) tests. While Hausman fixed-random specification test suggested that a fixed effect model is not appropriate, the Breusch-Pagan Lagrange multiplier (LM) test suggested that OLS is superior over the random effect model. The Breusch-Pagan / Cook-Weisberg test ( $\chi^2(1) = 30642.05$ ,  $Prob > \chi^2 = 0.0000$ ) suggested that there exists a heteroscedasticity problem. To handle such a problem, we employed a robust OLS regression model based on the suggestions of statisticians (Wilcox & Keselman, 2004). We further employed the two-step system GMM regression model as a robustness check.

#### IV. RESULTS

##### a) Descriptive statistics

We employed descriptive statistics of variables across countries and levels of financial slack. Panel A of Table 3 presents the descriptive statistics across countries, whereas Panel B of Table 3 reported the descriptive statistics of high and low financial slack firms.

While Ugandan and Tanzanian firms report the highest average ROA of 0.15, the highest average ROE of 0.65 is reported by Moroccan firms. Again, Ugandan firms reported the highest average Tobin's  $q$  of 1.74 while the lowest Tobin's  $q$  is reported by Tanzanian (Tobin's  $q=0.81$ ), Egyptian (Tobin's  $q=0.85$ ), and Nigerian (Tobin's  $q=0.88$ ) firms. The highest average market cap of 5 also reported by Ugandan and Tanzanian firms. In terms of all performance measures, Ugandan firms are found more performing firms compared with other firms in other countries. Overall, African firms reported an average ROA, ROE, Tobin's  $q$ ,

and a market cap of 0.06, 0.54, 1.01, and 3.86, respectively.

The highest (2.42) and the lowest (1.82) average available slack is reported by South African and Ghanaian firms, respectively. Again, the average potential slack ranges from 1.26 by South African firms to 0.036 by Tanzanian firms. These figures indicated that there exists a heterogeneous potential slack across countries. For instance, firms in South Africa have more available slack but have little potential slack compared with firms in other countries. Overall, African firms reported available slack and potential slack of 2.1 and 0.75, respectively.

African firms, overall, reported an average R&D investment (rds) of 0.009, which is less than 1 per cent. Across countries, the average R&D investment ranges from 0.02 by Zambian firms to 0.00002 by Nigerian, Kenyan, and Ugandan firms from 2007 to 2016. The average selling general and administrative expense to sales ratio range from 0.616 in Ghanaian firms to 0.24 in Ugandan firms, indicating there exist a heterogeneous selling general and administrative expense to sales ratio across African countries. While Nigerian firms are found to be more growing firms (sales growth of 0.93), Tunisian firms are less growing firms (sales growth of 0.04) for the last ten years. Firm-level employment growth has shown expansion and contraction in Africa. Tunisian firms reported the highest average employment growth of 0.89. However, employment growth has shown contraction in Egypt and Nigeria, with an average growth rate of -0.18 and 0.68, respectively. This contraction in employment by Egyptian and Nigerian firms might have two implications. First, firms in these countries may become more technology intensives than labour-intensive. Second, we have also found that Egyptian and Nigerian firms are the least performing firms both in accounting and market-based performance; hence, their business is contracting, so does the employment. Nigerian firms are larger, with an average logarithm of total assets of 5.87, while Tanzanian firms are smaller, with an average logarithm of total assets of 0.42. The overall average logarithm of total assets is 4.03.

The average bank deposit to GDP ranges from 82.87 in Morocco to 14.33 in Uganda. The average stock market development again ranges from 64.03 in Morocco to 3.92 in Tanzania. This depicted that Morocco has a relatively well-developed banking sector and the stock market. Contrarily, while Uganda is behind in banking sector development, Tanzania left behind in stock market development from other African countries. The continent reported an average banking sector and stock market development of 52.19 and 32.86, respectively, during the study period. While Ghana is the fastest growing economy with an average annual GDP growth rate of 6.8, South Africa is the slowest growing

economy with an average annual GDP growth rate of 2.17. On average, Africa reported an average GDP growth rate of 3.99 during the last ten years (2007-2016).

Countries such as Nigeria, Uganda, Kenya, and Egypt suffer from a relatively high level of corruption with an average control of corruption index of -1.098, -0.962, -0.990, and -0.653, respectively. However, South Africa has the strongest average control of corruption of 0.075, indicating South Africa strongly fights corruption. The regulatory quality is relatively the worst in Nigeria, Egypt, and Zambia, with an average index of -0.78, -0.482, and -0.474, respectively. However, there exists a positive, relatively strong regulatory quality in South Africa and Ghana with an average index of 0.375 and 0.018, respectively. The rule of law is relatively the worst again in Nigeria, Kenya, Egypt, and Zambia, with an average index of -1.08, -0.77, -0.397, and -0.376, respectively. However, the rule of law is relatively strict in South Africa and Ghana, with an average index of 0.124 and 0.029, respectively. This implied that while the extent to which citizens have confidence in abiding by the rule of law is weak in Nigeria, Kenya, Egypt, and Zambia, it is strong in South Africa and Ghana. The average control of corruption, regulatory quality, and the rule of law of all sample countries are -0.513, -0.254, and -0.35, respectively.

In conclusion, while South Africa and Ghana have relatively good governance, Nigeria, Egypt, and Kenya have weak governance. On the other hand, eight out of ten countries have given a negative governance score for the last ten years. This implied that governance, in the region, is very weak.

On average, high financial slack firms reported an average available slack (cr) and potential slack (de) of 3.8174 and 0.2436, respectively. Low financial slack firms reported an average available slack and potential slack of 1.1598 and 2.1809, respectively. This indicated that while high financial slack firms have high current assets and low debts, low financial slack firms have low current assets and high debts. High financial slack firms reported better market and accounting firm performance than their counterparts during the study period. The average Tobin's q and market cap of high financial slack firms are 2.4754 and 4.02, respectively. The average ROA and ROE of high financial slack firms are 2.5296 and 0.9086, respectively. However, low financial slack firms reported an average of Tobin's q and a market cap of 1.0360 and 3.6555. These firms also reported an average ROA and ROE of 0.0878 and 0.6759. These figures show that high financial slack firms are performing better than low financial slack firms.

High financial slack firms have higher R&D investment as compared to their low counterparts. An average R&D investment of high financial slack during the study period is 0.0097 (0.97 %). However, an

average R&D investment of low financial slack firms is only 0.0005 (0.05 %). This implied that firms with high current assets and low debts have better engagement in R&D projects than low financial slack firms. High financial slack firms reported average logarithm total assets of 5.8807, while the low financial slack firms reported average logarithm total assets of 2.8561. This indicated that large firms have high current assets and little debts as compared to their low counterparts.

High and low financial slack firms have approximately equal selling general and administrative expense to sales ratio. On average, high financial slack and low financial slack reported the selling general and administrative expense to sales ratio of 0.1831 and 0.1895, respectively. This figure does not indicate that high and low financial slack firms have the same selling general and administrative expenses. Instead, it shows that the selling general and administrative expense in proportion to the sales of high and low financial slack is almost the same. High financial slack reported better sales growth than their low counterparts. High and low financial slack firms reported an average sales growth of 2.0246 and 0.6603, respectively. This shows that high financial slack firms are more growing firms than low financial slack firms.

While high financial slack firms reported the average employment growth of 0.6985, low financial slack firms reported average employment growth of -0.2546. These figures show that while high financial slack recorded positive employment growth, low financial slack firms reported a contraction in employment growth. This might indicate two facts. First, low financial slack firms might be more technology intensives, and the demand for human capital declines through time. Second, low financial slack firms are low performing firms (they reported low performance); hence, their business is contracting, so does their employment.

Table 3: Descriptive statistics across countries

	Panel A: Descriptive statistics across countries												Panel B: Descriptive statistics across subsamples	
Variables	Egypt	Ghana	Kenya	Morocco	Nigeria	South Africa	Tanzania	Tunisia	Uganda	Zambia	All countries	High financial slack	Low financial slack	
ROA	0.060 (0.100)	0.0440 (0.100)	0.054 (0.120)	0.070 (0.067)	0.060 (0.100)	0.053 (0.240)	0.150 (0.190)	0.050 (0.110)	0.150 (0.210)	0.070 (0.100)	0.060 (0.140)	2.5296 (2.7379)	0.0878 (0.7248)	
ROE	0.500 (0.350)	0.550 (0.620)	0.450 (0.290)	0.650 (0.730)	0.380 (0.400)	0.430 (0.570)	0.450 (0.400)	0.510 (0.660)	0.440 (0.420)	0.410 (0.240)	0.540 (1.430)	0.9086 (22.0038)	0.6759 (2.3437)	
Tobin's q	0.850 (0.990)	1.050 (0.942)	0.981 (1.407)	0.940 (1.150)	0.880 (1.910)	1.350 (6.230)	0.810 (0.700)	0.940 (0.970)	1.740 (2.080)	0.857 (1.003)	1.010 (3.260)	2.4754 (27.8263)	1.0360 (4.9636)	
Market cap	3.180 (2.590)	4.300 (1.930)	4.470 (2.530)	4.740 (1.720)	2.610 (2.980)	4.830 (2.560)	5.050 (3.910)	3.640 (2.150)	5.100 (2.950)	3.740 (2.430)	3.860 (2.705)	4.0207 (2.5860)	3.6555 (2.8406)	
$\alpha$	2.330 (4.540)	1.820 (1.753)	1.950 (2.2)	1.870 (1.060)	1.290 (0.950)	2.420 (7.620)	1.910 (1.010)	2.000 (1.730)	0.500 (0.250)	2.000 (1.950)	2.100 (4.700)	3.8174 (1.7673)	1.1598 (0.4426)	
de	0.970 (3.740)	0.071 (0.160)	0.045 (0.138)	0.350 (0.750)	0.640 (16.910)	1.260 (1.840)	0.036 (0.040)	0.270 (0.770)	0.150 (0.230)	0.090 (0.470)	0.750 (6.700)	0.2436 (0.2054)	2.1809 (1.9065)	
sgae	0.153 (2.163)	0.616 (4.691)	0.269 (0.497)	0.176 (0.186)	0.260 (0.250)	0.310 (1.93)	0.270 (0.190)	0.250 (0.240)	0.240 (0.080)	0.270 (0.150)	0.240 (1.730)	0.1831 (2.2025)	0.1895 (0.2381)	
rds	0.010 (0.100)	0.003 (0.018)	0.00002 (0.0002)	0.0003 (0.0053)	0.00002 (0.00018)	0.017 (0.120)	0.0001 (0.0004)	0.0004 (0.0013)	0.0900 (0.00013)	0.020 (0.170)	0.009 (0.086)	0.0097 (0.0742)	0.0005 (0.0034)	
size	5.160 (1.300)	1.151 (4.072)	0.490 (0.259)	0.500 (0.190)	5.870 (1.300)	5.810 (1.770)	0.420 (0.220)	0.530 (0.480)	0.520 (0.300)	0.430 (0.230)	4.030 (2.710)	5.8807 (1.2255)	2.8561 (2.6956)	
firm	0.900 (1.3)	0.07 (0.536)	0.061 (0.110)	0.070 (0.065)	0.930 (0.690)	0.730 (2.240)	0.200 (0.160)	0.040 (0.090)	0.070 (0.072)	0.130 (0.150)	0.610 (1.380)	2.0246 (52.3860)	0.6603 (19.6356)	
Empl oyee	-0.180 (0.390)	0.580 (5.789)	0.850 (1.436)	0.740 (2.960)	-0.680 (0.470)	0.050 (0.610)	0.850 (1.150)	0.890 (0.840)	0.880 (1.820)	0.800 (4.170)	0.101 (1.740)	0.6985 (15.5908)	-0.2546 (0.7147)	
bdgdp	64.670 (7.130)	20.914 (2.203)	37.954 (2.861)	82.870 (4.240)	20.730 (5.760)	59.960 (2.050)	18.090 (0.650)	51.000 (3.980)	14.330 (1.620)	18.170 (1.110)	52.190 (20.050)			
stmk t gdp	40.100 (24.70)	7.839 (0.826)	30.678 (5.017)	64.030 (14.050)	17.750 (9.730)	32.500 (10.790)	3.920 (0.280)	18.550 (3.470)	20.770 (5.830)	13.380 (0.860)	32.860 (20.840)			
gdp	4.190 (1.84)	6.844 (3.195)	5.229 (2.091)	3.870 (1.280)	4.98 (2.62)	2.170 (1.750)	6.700 (1.040)	2.770 (2.170)	6.130 (1.990)	6.520 (2.340)	3.990 (2.400)			
CC	-0.653 (0.077)	-0.082 (0.085)	-0.990 (0.070)	-0.308 (0.099)	-1.098 (0.112)	0.075 (0.126)	-0.580 (0.157)	-0.146 (0.102)	-0.962 (0.096)	-0.383 (0.068)	-0.513 (0.404)			
RQ	-0.482 (0.288)	0.018 (0.113)	-0.244 (0.079)	-0.140 (0.060)	-0.780 (0.089)	0.375 (0.092)	-0.407 (0.053)	-0.191 (0.198)	-0.213 (0.034)	-0.474 (0.033)	-0.254 (0.324)			
RL	-0.397 (0.216)	0.029 (0.073)	-0.770 (0.239)	-0.198 (0.079)	-1.088 (0.073)	0.124 (0.035)	-0.434 (0.068)	-0.027 (0.111)	-0.359 (0.046)	-0.376 (0.111)	-0.350 (0.371)			
Note: This Table reported the descriptive statistics across countries based on the overall sample and levels of financial slack based on subsamples. The overall sample and the subsample comprises 923 firms and 530 firms, respectively. The standard deviation is in parenthesis, cr is available slack, de is potential slack, sgae is selling general and administrative expense to sales ratio, rds is R&D investment, size is firm size, firm is firms' sales growth, employee is firms' employment growth, bdgdp is the banking sector development, stmktdp is the stock market development, gdp is annual GDP growth rate, CC is control of corruption, RQ is regularity quality, RL is the rule of law														

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#### b) Correlation analysis and multicollinearity test

Table 4 reported the descriptive matrix and multicollinearity test. Panel A of Table 4 reported the correlation matrices and Panel B of Table 4 reported the multicollinearity test using the Variance Inflation Factor (VIF). The highest correlation coefficients, in our study, are 0.688, 0.581, 0.547, and 0.529, which are the correlation between the rule of law and control of corruption, the rule of law and regularity quality, banking

sector and stock market development, and regularity quality and control of corruption, respectively. The correlation coefficient between available slack and selling general and administrative expense to sales ratio is -0.011. The negative coefficient implied that an increase in selling general and administrative expense leads to a decline in the available slack. The correlation between potential slack and available slack is -0.131 indicating an increase in the available slack leads

to a decrease in debt-level (an increase in potential slack). This also implied that firms with available slack might accumulate more potential slack because such firms tend to use their internal finance for their investment. Similarly, GDP is negatively ( $r=-0.080$ ) and positively ( $r=0.221$ ) correlated with the banking sector and the stock market development.

Variance Inflation Factor (VIF) is employed to detect the presence of multicollinearity problem. The rule of thumb —most commonly the rule of 10 (associated with the VIF) is a sign of severe

multicollinearity problem. This rule appears in both statistical articles and advanced textbooks (Miles, 2014). When VIF reaches this threshold value ( $VIF \geq 10$ ), it indicates that there exists a severe multicollinearity problem. Control of Corruption (CC) and the rule of law (RL) have the highest VIF of 6.82 and 6.3, respectively. However, these VIFs are lower than the threshold value of 10. The rest VIFs are reasonably small. This implied that our model is free from multicollinearity problem, and thus, all variables are retained in the model.

Table 4: Correlation analysis

	Panel A: correlation analysis													Panel B: Multicollinearity test		
	1	2	3	4	5	6	7	8	9	10	11	12	13	VIF	1/VIF	
cr	1													1.04	0.958046	
de	-0.131	1.000												1.13	0.886865	
rds	-0.032	0.073	1.000											1.1	0.912241	
sgaes	-0.011	0.010	0.140	1.000										1.09	0.917975	
size	-0.078	0.313	0.222	0.014	1.000									1.32	0.755053	
firm	0.058	0.070	0.096	0.038	0.272	1.000								1.09	0.917671	
employ ee	0.022	0.243	0.026	0.073	0.667	0.193	1.000							1.0	0.995309	
bdpgdp	0.090	0.021	0.042	0.126	0.072	0.027	0.070	1.000						3.06	0.326806	
simktc gdp	0.046	0.006	0.019	0.121	0.004	0.007	0.077	0.547	1.000					3.4	0.294513	
gdp	-0.024	0.059	0.019	0.072	0.219	0.068	0.094	0.080	0.221	1.000				1.38	0.722783	
CC	0.066	0.022	0.080	0.092	0.111	0.034	0.176	0.310	0.057	0.356	1.000			6.82	0.146637	
RQ	0.047	0.004	0.068	0.124	0.037	0.012	0.270	0.392	0.276	0.228	0.529	1.000		3.67	0.27229	
RL	0.071	0.012	0.081	0.042	0.073	0.026	0.227	0.432	0.274	0.246	0.688	0.581	1.000	6.36	0.157269	
Mean VIF														2.5		

This Table reported the correlation analysis and the Variance Inflation Factor (VIF). Panel A reported the correlation analysis while Panel B reported the Variance Inflation Factor (VIF). Where cr is available slack, de is potential slack, sgaes is selling general and administrative expense to sales ratio, rds is R&D investment, size is firm size, firm is firms' sales growth, employee is firms' employment growth, bdpgdp is the banking sector development, simktgdp is the stock market development, gdp is the annual GDP growth rate, CC is control of corruption, RQ is regularity quality, and RL is the rule of law



### c) Regression Results

Table 5 reported the relationship between financial slack and firm performance. Panel A of Table 5 presented the slack-performance nexus using the overall sample of 923 African firms. This sample encompasses all firms with mixed, overlapped, high, and low financial slack. The result shows that the association between available slack (cr) and Tobin's q is negative and statistically significant at 10 percent ( $r=-0.002$ ,  $p=0.061$ ), and the relationship between available slack (cr) and ROA is negative and statistically significant at 1 percent ( $r=-0.01$ ,  $p=0.001$ ). The result also shows that the relationship between potential slack and Tobin's q is positive and statistically significant at 1 percent ( $r=-0.014$ ,  $p=0.007$ ) and the correlation between potential slack and ROA is positive and statistically significant at 1 percent ( $r=-0.02$ ,  $p=0.000$ ). These negative coefficients show an increase in potential slack (i.e., a decline in debt-equity) boosts firm performance (Tobin's q and ROA).

In conclusion, while available slack has a significant negative association with firm performance, potential slack has a significant positive relationship with firm performance. This result is consistent with agency and resource-based theories and empirical studies. The agency and resource-based theories broadly assumed the negative and the positive relationship between financial slack and firm performance, respectively. Prior studies further confirmed both negative and positive association between financial slack and firm performance (Altaf & Shah, 2017; De Carolis et al., 2009; George, 2005; B.-N. Kim et al., 2017; S. Lee, 2011; Wan & Yiu, 2009). However, this result is very vague. It does not show which level of financial slack (high or low financial slack) has a positive or negative association with firm performance. We argued that the vagueness of this result masks the real picture of slack-performance nexus. Considering the ambiguity of the result reported in Panel A of Table 5, we did a split sample analysis. We argued that this analysis would possibly unmask the real picture of the slack-performance nexus.

To avoid these ambiguous results, we breakdown the overall sample into subsamples using the regional average financial slack, as explained in the methodology. The final subsample includes 530 firms (i.e., 212 high and 318 low financial slack firms). Before running the regression, we run an independent t-test to evaluate if there is a significant difference between these high and low financial slack firms. The test demonstrates significant differences between the two groups of firms — high available slack firms ( $M=3.8$ ,  $SD=3.6$ ) and low available slack firms ( $M=1.2$ ,  $SD=0.6$ ),  $t = -41$ ,  $Pr(T > t) = 0.0000$  and high potential slack firms ( $M=0.24$ ,  $SD=0.47$ ), and low potential slack firms ( $M=2.2$ ,  $SD=2.6$ ),  $t = 34$ ,  $Pr(T > t) = 0.0000$ . In short, there is a

significant difference between the groups of high and low financial slack firms (i.e., high financial slack firms have significantly higher average financial slack as compared to low financial slack firms). This difference allows us to run a split sample analysis.

Panel B and Panel C of Table 5 reported the split sample analysis results. While Panel B reported the relationship between high financial slack and firm performance, Panel C reported the relationship between low financial slack and firm performance. The result is interesting. The split sample analysis unmasked the real picture of slack-performance nexus. High available slack (cr) is negatively and strongly associated with Tobin's q ( $r=-0.023$ ,  $p=0.000$ ) and negatively and significantly correlated with ROA ( $r=-0.024$ ,  $p=0.000$ ). However, low available slack has a positive strong association with Tobin's q ( $r=0.1379$ ,  $p=0.001$ ) and significant positive relationship with ROA ( $r=0.023$ ,  $p=0.009$ ). High potential slack (de) has strong positive relationship with Tobin's q ( $r=-0.036$ ,  $p=0.003$ ) and significant positive association with ROA ( $r=-0.11$ ,  $p=0.000$ ). However, low potential slack has an insignificant negative association with Tobin's q ( $r=0.0028$ ,  $p=0.681$ ) and ROA ( $r=0.00001$ ,  $p=0.987$ ). We have to note that the negative coefficient between potential slack and firm performance indicated a positive relationship and vice versa.

The result clearly shows that agency theory provides a strong prediction when dealing with high available slack. Agency theory (Jensen & Meckling, 1976) argued that the availability of slack is a waste incurred by an agent's pursuit of own interests, apathy, and incompetence, which is more harmful for an organization than a buffer. This theory further argued that slack is a source of agency problem and exists due to management inefficiency. Moreover, available slack hinders firm performance by promoting imprudent R&D activities that hardly maintain performance (Jensen & Meckling, 1976; Leibenstein, 1969). It also encourages unreasonable investment by management in personal projects (Leibenstein, 1969; Nohria & Gulati, 1996) and worsen the motivation to capture new opportunities (Tseng, Tansuhaj, Hallagan, & McCullough, 2007). More generally, agency theory argued that available slack is a signal in the overall value of a firm and inefficiency that must be eliminated (Jensen & Meckling, 1976; Nohria & Gulati, 1996).

This result also supported our argument in developing hypothesis 1. We argued that the accumulation of high available slack will lead to agency problem in African firms due to the presence of weak governance and underdeveloped financial system in the region. In Africa, maintaining good governance is challenging due to lack of transparency, lack of adequate regulatory and institutional frameworks, and lack of market discipline (Rossouw, 2005). More importantly, the descriptive statistics of this study shows

that except South Africa and Ghana, other sample African countries have very weak governance indexes (control of corruption, the rule of law and regulatory quality) for the last ten years (2007 to 2016). This implied there exists weak governance, and maintaining good governance remains the big challenge of the region.

Besides, the financial system development in the region is left behind the rest of the world (Hailu, 2019). We tried to compare the African banking sector and stock market development with Asia's, European's, and the world's banking sector and the stock market. Astonishingly, both the banking sector and the stock market development in Africa is even below the world average banking and stock market development for the last 55 years (1961 to 2016). The region is very far from Europe and Asia in the banking and the stock market development. The combinations of weak governance and underdeveloped financial system leads to an undesirable use of firms' resources. The immediate output of the underdeveloped financial system (banking sector and stock market) is information asymmetry and agency problems. These problems, in turn, create the frictions preventing firms from making all desired investments. More specifically, these problems lead to unproductive use of firms' available resources (available slack) by the management. Thus, this result is as expected, and hypothesis 1 is confirmed.

The result also shows that the resource-based theory offers a strong prediction when dealing with high potential slack (low debt-equity ratio). The resource-based theory (Barney, 1991) argued that slack in general and potential slack, in particular, is a source of a firm's competitive advantage, thereby positively influencing performance. This theory further explained that potential slack improves firm performance by eliminating goal conflicts, embodying a cushion in a hostile environment, playing a stabilizing role, maintaining sustainable competitive advantage, and promoting a firm's innovativeness. More importantly, this theory argued that potential slack influence management decision to continue or not to continue innovative projects that possibly produce competitive advantage and superior firm performance. This result further shows that unlike available slack, an increase in potential slack will not lead to managerial malpractice. That is, as potential slack increases, it is difficult to imagine that undisciplined experimentation will happen since it is not currently available resources within the firm. This result is as expected, and hypothesis 2 is confirmed.

Table 5 also illustrated the relationship between control variables and firm performance. Amazingly, R&D investment (rds) has a positive association with the performance of overall, high, and low financial slack firms. However, its relationship is stronger on the performance of low financial slack firms. This particular result indicated that firms with low financial slack

effectively managed R&D investment in the way it generates superior performance. The selling general and administrative expense to sales ratio (sgaes) and performance of all types of firms (i.e., overall firms, high financial slack firms, and low financial slack firms) have a negative association. Its relationship is stronger with the performance of low financial slack firms, implying, as an expense, the selling general administrative expense adversely affects performance. Its adverse effect, however, is stronger on the performance of firms with low financial slack.

Similarly, firm size (size) is negatively associated with the performance of all types of firms. Astonishingly, the negative relationship of firm size is stronger with the performance of firms with high financial slack. This implied that large firms with high financial slack are more bureaucratic and less efficient than their counterparts, thereby has a strong adverse effect on their performance. Although it is not statistically significant, firms' sales growth (firm) is negatively associated with the performance of all types of firms. This result implied that firm growth in terms of sales is not always favourable for firms return. However, employment growth (employee) has a positive association with firm performance with all levels of financial slack. This implied that human capital is more favourable for firms return. This might be because human capital leads firms to have skilled employees that possibly create change and innovate in the firm.

The banking sector development (bdpgdp) has a positive influence on the performance of firms with high financial slack. This indicated that a well-functioning of banking sector positively influenced firm performance with high available slack and high potential slack (low debt-equity ratio). This implied that firms with more available slack could access external finance. Such firms may use available slack for easily paying their interest payment. Similarly, firms with low debt-level (high potential slack) potentially access external finance from the well-functioning banking sector, thereby improve their performance. Amazingly, the banking sector development has a negative association with the performance of firms with low financial slack. Low financial slack firms are firms with low available slack (i.e., low current ratio) and low potential slack (i.e., high debt-equity ratio). The low current ratio and the high debt-equity ratio implied that these firms have low current assets and high debts. Such firms faced a shortage of internal finance and excess debts. Though such firms have a limited potential to borrow, further development in the banking sector make it possible to happen. Thus, these firms will borrow more which aggravate the adverse effects of their performance. Hence, by providing more debt for the already indebted firms, the development of banking sector adversely affects the performance of firms with low financial slack.

However, stock market development (stmktcgdp) has a positive association with performance of all types of firms. This result implied that stock markets offer platforms for equity financing that eliminates firms financing constraints, thereby improves firm performance. We also found a positive association between the annual GDP growth rate (gdp) and performance of all types of firms. However, its association is stronger with the performance of firms with low financial slack. This result implied that economic growth has a favourable influence on African firms' performance. This study also found a fantastic relationship between governance indicators and African

firms' performance. Regulatory quality (RQ) and the rule of law (RL) have a strong positive association with firm performance of all types of firms. Astonishingly, the association of this governance indicators (i.e., RQ and RL) with the performance of low financial slack is stronger. However, control of corruption (CC) has a negative association with firm performance. Its relationship with performance is stronger in low financial slack firms. This result implied that corruption is substantial in Africa, and African firms are suffering from it. The result also shows that fighting corruption remains a challenge for Africa.

Table 5: Financial slack and firm performance

	Panel A: Financial slack and performance of the overall sample (923 firms)		Panel B: High financial slack and firm performance (212 firms)		Panel C: Low financial slack and firm performance (318 firms)	
	Tobin's q	ROA	Tobin's q	ROA	Tobin's q	ROA
cr	-0.0021*** (0.0043)	-0.0100** (0.0032)	-0.230* (0.0060)	-0.2410* (0.0058)	0.1379* (0.0419)	0.2300* (0.0088)
de	-0.0140*** (0.0050)	-0.02*** (0.0041)	-0.3620* (0.0361)	-0.1100* (0.0305)	0.0028 (0.0067)	0.00001 (0.0009)
rds	0.2476 (0.3627)	0.4842* (0.3982)	0.2109 (0.9424)	0.7211* (0.9347)	0.5981* (0.4050)	0.6502** (0.6624)
sgaes	-0.0186 (0.0527)	-0.2228* (0.0354)	-0.1097 (0.1153)	-0.0998 (0.0842)	-0.0835* (0.1252)	-0.0590* (0.0115)
size	-0.0031 (0.0127)	-0.0125 (0.0110)	-0.0355* (0.0336)	-0.1124* (0.0223)	-0.0173 (0.0191)	-0.0125* (0.0020)
firm	-0.0025 (0.0082)	-0.0039** (0.0018)	-0.0008 (0.0239)	-0.0043 (0.0044)	-0.0064 (0.0124)	-0.0019 (0.0012)
employee	0.0109 (0.0275)	0.4381* (0.0365)	0.0260 (0.0593)	0.3799* (0.0656)	0.0464 (0.0453)	0.0127* (0.0043)
bdpgdp	0.0016 (0.0011)	0.0028*** (0.0008)	0.0046*** (0.0023)	0.0007 (0.0014)	-0.0008 (0.0021)	-0.0006 (0.0004)
stmktcgdp	0.0035*** (0.0016)	0.0074** (0.0011)	0.0111** (0.0034)	0.0030 (0.0022)	0.0008 (0.0028)	0.0001 (0.0004)
gdp	0.0023 (0.0072)	0.0002 (0.0059)	0.0093 (0.0169)	0.0021 (0.0128)	0.0292* (0.0143)	0.0032* (0.0014)
CC	-0.4289* (0.1804)	-0.1894* (0.1418)	-0.5114** (0.4026)	-0.5838*** (0.3065)	-0.3512 (0.3308)	-0.0113 (0.0337)
RQ	0.0541** (0.1379)	0.1170*** (0.1064)	0.1700** (0.2909)	0.3765*** (0.2082)	0.0777* (0.2647)	0.0993* (0.0376)
RL	0.1168** (0.1269)	0.2323*** (0.1268)	0.0071** (0.2663)	0.4160*** (0.2169)	0.1616* (0.2934)	0.0424* (0.0461)
_cons	0.9891* (0.1352)	0.7972* (0.1571)	0.8861* (0.2476)	4.6654* (0.3130)	0.5777 (0.5002)	-0.0281 (0.0645)
Number of obs	9,230	9,230	2,120	2,120	3,180	3,180
Prob > F	0.0000	0.0000	0.0000		0.0000	0.0000
R-squared	0.23	0.92	0.55	0.923	0.39	0.97
Country fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes

This Table reports Robust OLS regression results based on three samples. The first sample includes 923 firms with mixed and overlapped financial slack. While the second sample includes 212 firms with high financial slack, the third sample comprises 318 firms with low financial slack. Standard errors are in parenthesis. cr is available slack, de is

potential slack, sgaes is selling general and administrative expense to sales ratio, rds is R&D investment, size is firm size, firm is firms' sales growth, employee is firms' employment growth, bdpdp is the banking sector development, stmktgdp is the stock market development, gdp is the annual GDP growth rate, CC is control of corruption, RQ is regularity quality, RL is the rule of law, \*  $p < 0.01$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.1$

d) *Robustness check*

i. *Robustness check using alternative performance measures*

The main result provides evidence that while high available slack has a negative relationship with firm performance, low available slack has a positive association with firm performance. Conversely, while high potential slack has a positive association with firm performance, low potential slack has a negative correlation with firm performance. To check the sensitivity of these results, we did robustness checks using alternative firm performance measures and alternative estimation methods. We tested the sensitivity of these results using market cap and ROE as alternative firm performance metrics.

Market cap captures the total market value of a firm's outstanding shares and indicates the prospects of firms. It also provides investors with an indication of a firm's total value of shares. Prior studies used the market cap as the market-based firm performance

measure (Al-Matari et al., 2014; Mollah, Al Farooque, & Karim, 2012; Mollah & Talukdar, 2007). Consistent with these studies, we employed a natural logarithm of market cap to deal with a potential outlier problem and substituted it in place of Tobin's q in model 1. Prior studies widely used ROE as an alternative measure of accounting-based performance. It measures the profit made by a firm for its shareholders with the finance made available to the firm by its shareholders. That is, it evaluates the management's effectiveness to maximize the return to shareholders based on their investment in the firm (Alexander & Nobes, 2004). Studies used ROE; the ratio of net income to equity as accounting-based firm performance measures (Demis H., Sujatha S., et al., 2017; Hailu, 2019). Thus, we used market cap and ROE as an alternative market and accounting-based firm performance. We replaced market cap and ROE in place of Tobin's q and ROA in model 1. The model thus is specified as follows.

$$\text{Market cap}_{i,t}(\text{ROE}_{i,t}) = \alpha + \beta_1 \text{cr}_{i,t} + \beta_2 \text{de}_{i,t} + \beta_3 \text{SGAES}_{i,t} + \beta_4 \text{rds}_{i,t} + \beta_5 \text{size}_{i,t} + \beta_6 \text{firm}_{i,t} + \beta_7 \text{employee}_{i,t} + \beta_8 \text{bdpdp}_{j,t} + \beta_9 \text{stmktgdp}_{j,t} + \beta_{10} \text{gdp}_{j,t} + \beta_{11} \text{CC}_{j,t} + \beta_{12} \text{RQ}_{j,t} + \beta_{13} \text{RL}_{j,t} + \mu + \delta + \theta + \varepsilon \quad (2)$$

The robust OLS regression result using alternative firm performance (Market cap and ROE) is robust. There exists a strong negative relationship between available slack and performance and a strong positive correlation between potential slack and performance of overall firms (see Panel A of Table 6). Similarly, high available slack is significantly and negatively associated and high potential slack is

significantly and positively correlated with firm performance (see Panel B of Table 6). While low available slack has a strong positive association with firm performance, low potential slack has a strong negative association with firm performance (see Panel C of Table 6). These results are consistent with the main result using Tobin's q and ROA as firm performance measures.

Table 6: Robustness check using alternative firm performance

	Panel A: Financial slack and firm performance (923 firms)			Panel B: High financial slack and firm performance (212 firms)			Panel C: Low financial slack and firm performance (318 firms)	
	Marketcap	ROE		Marketcap	ROE		Marketcap	ROE
cr	-0.0166* (0.0105)	-0.0003** (0.0013)		-0.0225** (0.0162)	-0.0021** (0.0022)		0.2857** (0.1827)	0.0045* (0.0092)
de	-0.0353* (0.0144)	-0.0017** (0.0016)		-0.0128** (0.1507)	-0.0289** (0.0142)		0.0633* (0.0202)	0.0049* (0.0020)
rds	-0.4276** (0.7324)	-0.0628 (0.0748)		-0.5534 (0.2699)	-0.0829 (0.1286)		0.6035** (0.9398)	0.6072* (0.0265)
sgaes	-0.3880* (0.1284)	-0.0265 (0.0170)		-0.0441 (0.2591)	-0.0247 (0.0507)		-0.7249* (0.2911)	0.0381* (0.0310)
size	-0.0877* (0.0292)	-0.0018 (0.0032)		-0.0253 (0.0599)	-0.0054 (0.0065)		-0.2041* (0.0566)	-0.0088 (0.0059)
firm	-0.0031 (0.0171)	-0.0006 (0.0018)		-0.0054 (0.0377)	-0.0080** (0.0041)		-0.0374 (0.0272)	-0.0004 (0.0026)
employee	0.1193*** (0.0724)	0.0269* (0.0095)		0.1707 (0.1428)	0.0311 (0.0201)		0.1981 (0.1357)	0.0019 (0.0138)
		0.0013*		0.0008	0.0019**		-0.0012	-0.0001



bdpgdp	0.0020 (0.0026)	(0.0004)		(0.0050)	(0.0009)		(0.0057)	(0.0006)
stmkcgdp	-0.0048 (0.0033)	-0.0011* (0.0005)		-0.0016 (0.0069)	-0.0027** (0.0012)		-0.0055 (0.0072)	-0.0007 (0.0008)
gdp	0.0134 (0.0167)	0.0001 (0.0024)		0.0628*** (0.0362)	0.0032 (0.0067)		0.0402 (0.0346)	-0.0016 (0.0036)
CC	-0.7198*** (0.3773)	-0.1800* (0.0460)		-1.3517 (0.8958)	-0.3756* (0.1456)		-0.3280 (0.8250)	0.0039 (0.0908)
RQ	0.4992 (0.3266)	0.1002** (0.0456)		0.7896 (0.6547)	0.2026*** (0.1094)		0.0450 (0.6340)	0.0413 (0.0674)
RL	0.0362 (0.3021)	0.0576 (0.0399)		0.5247 (0.6019)	0.0636 (0.0864)		0.8093 (0.7792)	0.0491 (0.0843)
_cons	0.2825* (0.3360)	0.4215* (0.0410)		0.6834* (0.6301)	0.3916* (0.0880)		0.6195* (0.4966)	0.4070* (0.0481)
Number of obs	9,230	9,230		2,120	2,120		3,180	3,180
Prob > F	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000
R-squared	0.17	0.31		0.14	0.65		0.15	0.42
Country fixed effect	Yes	Yes		Yes	Yes		Yes	Yes
Industry fixed effect	Yes	Yes		Yes	Yes		Yes	Yes
Year fixed effect	Yes	Yes		Yes	Yes		Yes	Yes
This Table reports the Robust OLS regression results. The result is based on three samples. The first sample includes 923 firms with mixed and overlapped financial slack. While the second sample includes 212 firms with high financial slack, the third sample comprises 318 firms with low financial slack. Standard errors are in parenthesis. Where cr is available slack, de is potential slack, sgaes is selling general and administrative expense to sales ratio, rds is R&D investment, size is firm size, firm is firms' sales growth, employee is firms' employment growth, bdpgdp is the banking sector development, stmkcgdp is the stock market development, gdp is the annual GDP growth rate, CC is control of corruption, RQ is regularity quality, and RL is the rule of law, * p < 0.01, ** p < 0.05, *** p < 0.1								

## ii. Robustness check using two-step system GMM

We also used an alternative regression model to check whether the OLS result is robust. We are concerned about the endogeneity problem. Endogeneity is an obstacle for understanding the real association between variables of interest in corporate finance (Abdallah, Goergen, & O'Sullivan, 2015; Li, 2016). Besides, Li (2016) argued that variables are naturally endogenous, instruments are scarce, and causality relations are complex in corporate finance. More specifically, simultaneity (causality) is a source of endogeneity problem in corporate finance studies (Abdallah et al., 2015; M. Roberts & Whited, 2011; M. R. Roberts & Whited, 2013). Our argument in this regard is that there might be causality (simultaneity) from firm performance to financial slack. For example, more profitable firms may accumulate more financial slack. Such causality or endogeneity may create a severe problem in the inference. It leads to biased and inconsistent parameter estimate and incorrect implication, which provide a misleading conclusion and inappropriate theoretical interpretation (M. Roberts & Whited, 2011; Ullah, Akhtar, & Zafarian, 2018).

Thus, M. Roberts and Whited (2011) suggested that researchers should address the endogeneity problem in their study. The OLS estimator may not be useful to handle such a causality problem. Among others, the use of lagged dependent variable has become a powerful remedy for endogeneity problem (Abdallah et al., 2015; Li, 2016; M. Roberts & Whited, 2011). Arellano and Bond (1991) and Blundell and Bond (1998) developed a generalized method of moments (GMM) model for dynamic panel data estimation. GMM model is appropriate for situations with endogeneity and heteroscedasticity, among others. As we explained earlier, our dataset violates one of the classical linear assumptions of OLS—the homoscedasticity. Thus, the GMM model appropriately handles heteroscedasticity and causality problems (Wintoki, Linck, & Netter, 2012). We employed a two-step system GMM model using lagged Tobin's q and ROA. According to Arellano and Bond (1991) and Roodman (2009), two-step system GMM model is more efficient and robust to treat heteroskedasticity and endogeneity problems. Therefore, we developed model 3 using lagged Tobin's q and ROA.

$$\begin{aligned} \text{Tobin's } sq_{i,t}(ROA_{i,t}) = & \alpha + \beta_1 \text{Tobin's } sq_{i,t-1}(ROA_{i,t-1}) + \beta_2 cr_{i,t} + \beta_3 de_{i,t} + \beta_4 SGAES_{i,t} + \beta_5 rds_{i,t} + \beta_6 size_{i,t} + \\ & \beta_7 firm_{i,t} + \beta_8 employee_{i,t} + \beta_9 bdpgdp_{j,t} + \beta_{10} stmkcgdp_{j,t} + \beta_{11} gdp_{j,t} + \beta_{12} CC_{j,t} + \beta_{13} RQ_{j,t} + \beta_{14} RL_{j,t} + \mu + \delta + \theta + \\ & \varepsilon \dots \dots \dots (3) \end{aligned}$$



The two-step GMM model also offers a robust result. The lagged Tobin's q (Tobin's q L1.) and lagged ROA (ROA L1.) have a positive and strong association with Tobin's q and ROA. There is robust evidence that available slack (*cr*) is negatively and significantly associated with both Tobin's q and ROA and potential slack (*de*) is positively and strongly associated with Tobin's q and ROA in the overall sample (see Panel A of Table 7). The result is also robust regarding the relationship between high financial slack and firm performance (see Panel B of Table 7). While high

available slack (*cr*) is negatively and strongly associated with firm performance, high potential slack is positively and significantly related to firm performance. Panel C of Table 7 also confirms the robust result on the relationship between low financial slack and firm performance. While low available slack and firm performance have a positive association, low potential slack and performance have a negative correlation. These results are also consistent with the result obtained from the robust OLS regression results.

Table 7: Robustness check using two-step system GMM model

	Panel A: Financial slack and firm performance (923 firms)		Panel B: High financial slack and firm performance (212 firms)		Panel C: Low financial slack and firm performance (318 firms)	
	Tobin's q	ROA	Tobin's q	ROA	Tobin's q	ROA
Tobin's q L1.	0.3430* (0.1650)		0.6053* (0.0488)		0.5246* (0.0518)	
ROA L1.		0.1320* (0.2290)		0.2045* (0.0764)		0.9154* (0.0352)
<i>cr</i>	-0.5500*** (0.6810)	-0.0300*** (0.0001)	-0.1680* (0.0603)	-0.1130** (0.0359)	0.5670* (0.3546)	0.1000** (0.0045)
<i>de</i>	-0.2540*** (0.5690)	-0.0040*** (0.0120)	-0.1130** (0.9177)	-0.0844** (0.4855)	0.0742*** (0.0288)	0.0029*** (0.0038)
<i>rds</i>	-0.6150* (0.1980)	-0.9210*** (2.1250)	-0.3928 (0.0828)	-0.2865 (0.0407)	0.908** (0.7728)	0.6554** (0.8086)
<i>sgaes</i>	-0.7700 (0.1800)	-0.0950*** (0.0490)	-0.0559 (0.8329)	-0.4830 (1.0744)	-0.9186 (0.7826)	-0.1409** (0.0660)
<i>size</i>	-0.2300** (0.4390)	-0.5320* (0.2310)	-0.1451 (0.0917)	-0.8144* (0.1089)	-0.2420 (0.1855)	-0.0513 (0.0196)
<i>firm</i>	-0.0260 (0.3470)	-0.0030 (0.0060)	-0.2192** (0.1018)	-0.0025 (0.0682)	-0.0412 (0.0934)	-0.0079 (0.0049)
<i>employee</i>	0.2840 (0.8350)	0.0010 (0.0220)	0.6163*** (0.3164)	0.0743 (0.2295)	0.7595 (0.3146)	0.0206 (0.0264)
<i>bdp</i> <i>gdp</i>	0.4310** (0.6360)	0.0010 (0.0020)	0.0012 (0.0026)	0.0025 (0.0018)	-0.0033 (0.0022)	-0.0015* (0.0004)
<i>stmktgdp</i>	0.1440 (0.5940)	0.0001 (0.0010)	0.0058 (0.0037)	0.0003 (0.0027)	0.0056*** (0.0030)	0.0015* (0.0005)
<i>gdp</i>	0.9780** (1.7150)	0.0020 (0.0040)	0.0097 (0.0262)	0.0077 (0.0215)	0.0076 (0.0135)	0.0097* (0.0031)
<i>CC</i>	-0.7970 (1.4480)	-0.0200 (0.0870)	-0.1302 (0.2086)	-0.2994 (0.2755)	-0.1686 (0.2354)	-0.0276 (0.0207)
<i>RQ</i>	0.9950 (1.5600)	0.0570 (0.0840)	0.6434** (0.3121)	0.1011 (0.3099)	0.1099 (0.2007)	0.0603** (0.0283)
<i>RL</i>	0.9730** (2.0250)	0.1030** (0.0490)	0.2009 (0.3238)	0.0618 (0.2403)	0.6508* (0.2659)	0.0561*** (0.0304)
<i>_cons</i>	0.691* (0.400)	0.2250* (0.9170)	0.7693 (0.6128)	4.3458* (0.7041)	0.4944 (0.0738)	0.3943* (0.1294)
Number of obs.	9229	9229	2119	2119	3179	3179
Number of groups	923	923	212	212	318	318
AR(1)	0.476	0.339	0.45	0.102	0.239	0.280
AR(2)	0.974	0.922	0.356	0.679	0.165	0.190
Sargan	1.000	0.934	0.201	0.983	0.657	0.101
Hansen	0.400	0.117	0.193	0.224	0.381	0.125

This Table reports the results of a two-step system GMM model based on three distinct samples. The first sample includes 923 firms with mixed and overlapped financial slack. While the second sample includes 212 firms with high financial slack, and the third sample comprises 318 firms with low financial slack. For the diagnostic tests: Arellano-Bond test for serial correlation (AR(1) and AR(2)) and the Sargan and Hansen tests of the validity of over-

identification restriction, p-values are reported. The null hypothesis of the Arellano-Bond test for serial correlation is no autocorrelation. The null hypothesis of the Sargan test is over-identifying restrictions are valid. The null hypothesis of the Hansen test is that instruments as a group are exogenous. If the p-values of the Arellano-Bond, the Sargan, and the Hansen tests are above 0.05, the null hypotheses are accepted (Roodman, 2009). As can be seen from this Table, the p-values of the Arellano-Bond, Sargan, and the Hansen tests are not less than 0.05. We thus can conclude that there is no first-order and second-order serial correlation. The Sargan test of over-identification gives higher p-values for all models, suggesting that there is no problem of over-identification. Similarly, the Hansen test offers high p-values in all models, implying that instruments as a group are exogenous. Robust standard errors in parenthesis. Standard errors are in parenthesis. Tobin's q L1 is one year lagged Tobin'sq, ROA L1 is a one year lagged ROA, cr is available slack, de is potential slack, sgaes is selling general and administrative expense to sales ratio, rds is R&D investment, size is firm size, firm is firms' sales growth, employee is firms' employment growth, bdpdgp is the banking sector development, strktgdp is the stock market development, gdp is the annual GDP growth rate, CC is control of corruption, RQ is regularity quality, RL is the rule of law

\* p < 0.01, \*\* p < 0.05, \*\*\* p < 0.1

### iii. *Robustness check using Instrumental variables*

In the preceding section, we applied the ad hoc solution in dealing with the potential endogeneity problem. We lagged the dependent variables and used a two-step system GMM model to do so. However, statisticians argued that this approach could not evaluate how severe the endogeneity problem is (Shepherd, 2010). They also argued that the best way to deal with endogeneity is an IV estimator (Ebbes, Papies, & van Heerde, 2016). Thus we further applied instrumental variables to deal with a potential endogeneity problem.

Scholars strongly suggested the application of an instrument in the study where there is a potential endogeneity problem. An instrument is a variable that is correlated with the endogenous (independent) variable but only affects the dependent variable via its effect on the independent variable. In other words, a valid instrument variable has a strong correlation with the endogenous variable but only affects the outcome variable via its effect on the treatment variable (Windmeijer, Farbmacher, Davies, Davey Smith, & White, 2015). This study explores the association between financial slack and firm performance, and there might be a potential causality from firm performance to financial slack, as explained earlier. The Durbin and Wu-Hausman tests confirm this situation. The significant level of the Durbin and Wu-Hausman tests (see Table 8) implied that financial slack is endogenous and should be treated as an endogenous variable. Thus, we decided to apply instruments in addition to the two-step system GMM to draw a rigorous conclusion.

We used tax payments and wages & salaries as instrumental variables. Our argument for choosing these variables as the instruments is that both tax payments and wages & salaries could significantly affect financial slack, thereby impacts firm performance. Firms with high tax payments and wages & salaries might have little financial slack, which in turn influences their performance, and the reverse is true for firms with low tax payments and wages & salaries. Besides, we choose these variables following statistical tests. The

tests confirm that tax payments and wages & salaries are valid instruments (see Table 8).

Table 8 presents the results of two-stage least square (2sls), the most common IV estimator, using tax payments and wages & salaries as instruments. The two-stage least square (2sls) exhibits a robust result. There is robust evidence that available slack (*cr*) and potential slack (*de*) are negatively and positively associated with the performance of overall firms, respectively (see Panel A of Table 8). The result is also robust regarding the relationship between high financial slack and firm performance (see Panel B of Table 8). While high available slack (*cr*) is negatively and strongly associated with firm performance, high potential slack is positively and significantly related to firm performance. Panel C of Table 8 also confirms the robust result regarding low financial slack and firm performance nexus. Low available and low potential slacks have a positive and negative association with firm performance.

We thus can conclude that the association between financial slack and firm performance is not sensitive to different performance measures and estimation techniques. The robustness check using alternative firm performance measures and estimation techniques (GMM and 2sls) offer consistent results with the main findings using OLS.

Table 8: Robustness check using Instrumental variables

	Panel A: Financial slack and performance of Overall firms		Panel B: High financial slack and performance		Panel C: Low financial slack and performance	
	Tobin's q	ROA	Tobin's q	ROA	Tobin's q	ROA
cr	-0.1282** (0.1087)	-0.0270** (0.0735)	-0.3730* (0.7191)	-0.1160* (0.3767)	0.3375* (1.6901)	0.1131* (0.1549)
de	-0.2539** (0.1381)	-0.1598*** (0.0934)	-0.4055* (5.8800)	-0.1068* (3.0799)	0.1299*** (0.2674)	0.0398*** (0.0245)
rds	0.1126 (0.7711)	0.1926* (0.5212)	0.7978 (8.5555)	0.4055* (4.4813)	0.4869* (3.8739)	0.6495** (4.9380)
sgaes	-0.0143 (0.0628)	-0.2187*** (0.0424)	-0.2947 (0.6474)	-0.2932 (0.3391)	-0.5790* (0.4718)	-0.0890* (0.0432)
size	-0.0072 (0.0363)	-0.0404*** (0.0245)	-0.2113* (0.2656)	-0.0315* (0.1391)	-0.0900 (0.0643)	-0.0168* (0.0059)
firm	-0.0118 (0.0137)	-0.0037 (0.0092)	-0.0058 (0.0383)	-0.0054 (0.0201)	-0.0112 (0.0226)	-0.0041** (0.0021)
employee	0.0806 (0.0668)	0.4808* (0.0451)	0.4933 (0.8928)	0.5750 (0.4676)	0.0205 (0.0873)	0.0157** (0.0080)
bdpgdp	0.0026*** (0.0014)	0.0022* (0.0009)	0.0050*** (0.0058)	0.0015 (0.0031)	-0.0173 (0.0110)	-0.0008 (0.0010)
stmkcgdp	0.0040* (0.0015)	0.0071* (0.0010)	0.0091 (0.0183)	0.0036 (0.0096)	0.0196 (0.0127)	0.0001 (0.0012)
gdp	0.0014 (0.0079)	0.0001 (0.0053)	0.0317 (0.0598)	0.0062 (0.0313)	0.0235* (0.0231)	0.0027* (0.0021)
CC	-0.2180 (0.2146)	-0.3169* (0.1450)	-0.3954** (0.5886)	0.5204*** (0.3083)	-0.9129 (0.6528)	-0.0252 (0.0598)
RQ	0.0158 (0.1563)	0.1255 (0.1057)	0.8031** (2.6088)	0.0473** (1.3665)	0.1207* (0.8824)	0.1373*** (0.0809)
RL	0.1491* (0.1413)	0.2216* (0.0955)	0.6941** (1.5814)	0.1450** (0.8283)	0.6437* (1.3088)	0.1256* (0.1200)
_cons	0.3118* (0.3125)	0.6120* (0.2112)	0.0643* (2.1288)	0.1537* (1.1150)	0.2479* (1.5820)	0.2093* (0.1450)
No of obs	9,230	9,230	2,120	2,120	3,180	3,180
Wald	59.96*	81.50*	54.41*	87.13*	54.36*	64.20*
Durbin	13.9364*	14.9550*	17.0228*	16.4302*	17.4520*	16.9762*
Wu-Hausman	12.9603*	12.4678*	13.4533*	13.1610*	13.6901*	13.454*
eigenvalue	16.9		14.2		18.38	

This Table reports the two-stage least square (2sls) regression results. Tax payments (tax) and wages and salaries (wages) are instrumental variables. We used the natural logarithm of tax payments and wages & salaries, and we winsorized them into their 1<sup>st</sup> and 99<sup>th</sup> percentile of distribution to handle the effects of potential outliers. The null hypothesis of the Durbin and Wu–Hausman tests is that the financial slack can be treated as exogenous. Here both test statistics are highly significant in all models, so we reject the null of exogeneity; we must continue to treat available (cr) and potential (de) slacks as endogenous. The difference between the Durbin and Wu–Hausman tests of endogeneity is that the former uses an estimate of the error term's variance based on the model assuming the variables being tested are exogenous. In contrast, the latter uses an estimate of the error variance based on the model assuming the variables being tested are endogenous. According to Stock and Yogo (2002), weak instruments cause instrumental-variables estimators to be biased, and hypothesis tests of parameters estimated by instrumental-variables estimators may suffer from severe size distortions. The minimum eigenvalue statistic tests for weak instruments (Stock & Yogo, 2002) and the eigenvalue greater than 10 shows instruments are strong (Staiger & Stock, 1994). The minimum eigenvalue statistic is greater than 10 in all panels, indicating instruments are not weak. The Wald test (Wald) in all panels has higher values and statistically significant, suggesting the models are correctly specified. cr is available slack, de is potential slack, sgaes is selling general and administrative expense to sales ratio, rds is R&D investment, size is firm size, firm is firms' sales growth, employee is firms' employment growth, bdpgdp is the banking sector development, stmkcgdp is the stock market development, gdp is annual GDP growth rate, CC is control of corruption, RQ is regularity quality, RL is the rule of law

\* p < 0.01, \*\* p < 0.05, \*\*\* p < 0.1

## V. CONCLUSION AND IMPLICATION

This study explores the relationship between financial slack and firm performance using African sample firms. The conflicting arguments of theories and the mixed results of prior studies motivated this study. While the resource-based theory argued that financial slack derives firm performance, agency theory argued that financial slack hinders firm performance. Previous studies further explored the slack-performance nexus based on the arguments of these theories and found mixed results. The source of firm-level data is the Osiris database. This database offers both financial and non-financial firm-level data of 1285 firms in 33 African countries. The study excluded the financial institutions considering their slack accumulation and performance might be unique and may affect the result. Thus, we used a sample of non-financial firms. The study period covers ten years (from 2007 to 2016) based on data availability. We further exclude non-financial firms that have no the required data for ten years. The final sample then included 923 firms in ten African countries covering a period from 2007 to 2016. For split sample analysis, we dropped 393 firms with mixed and overlapped financial slack. Then we used a sample of 533 firms. From this sample, we split the sample into two groups — 212 firms are “high financial slack firms”, and 318 firms are “low financial slack firms. We extracted the data for country-level control variables from the World Bank database.

To alleviate the potential effects of outliers on the result, we winsorized all variables (except governance indicators) at the 1<sup>st</sup> and 99<sup>th</sup> percentile of their distribution. We employed robust Ordinary Least Square (OLS) regression model following Hausman fixed-random specification test and Breusch-Pagan Lagrange multiplier (LM). The descriptive statistics depicted that there exist a heterogeneous financial slack and firm performance across countries.

Following the descriptive statistics, we tested of heteroscedasticity and multicollinearity problems. We detected heteroscedasticity problem and employed a robust OLS regression model to remedy this problem. But multicollinearity is not an issue in the model. We run the robust OLS regression using the overall all sample firms (i.e., 923 firms). The result shows while available slack has a strong negative association with firm performance, potential slack has a strong positive correlation with firm performance. But this result is vague. It does not show which level of financial slack (high or low financial slack) is negatively or positively associated with firm performance. This ambiguous result thus masks the real picture of slack-performance nexus.

To unmask this relationship, we run a split sample analysis (using 533 firms). This analysis provides a more robust and imperative result regarding

the slack-performance nexus. The result shows that high available slack is strongly and negatively associated with the performance of firms while low available slack is positively and strongly related to the performance of firms. This result clearly shows that the agency problem offers a strong prediction when dealing with high available slack. The result further indicates that high potential slack is strongly and positively associated with firm performance, while low potential slack is negatively related to firm performance. This result, however, depicted that the resources-based theory provides a robust prediction when dealing with high potential slack.

The result of this study offers the following essential implications. The resource-based theory generates strong prediction when dealing with high potential slack while the agency theory offers strong prediction when dealing with high available slack. This result further implied that the combination of resources-based and agency theories is essential in explaining the slack-performance nexus. The result also implied that evaluating the effects of different levels of financial slack on firm performance is critical for unmasking the real picture of slack-performance link. The study finally suggested future researchers consider the non-financial slack resources in the study of slack-resource relation.

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# Inside the Black Box of the Islamic Financial Decision: Designing a Paying for Performance Contracts<sup>1</sup> with Agency Problems, Incentives and Asymmetry of Information

By Dr. Elmelki Anas & Dr. Ben Salah Saidi Hejra

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**Abstract-** From a theoretical point of view in the Islamic financial framework, trust is supposed to provide the economic glue that enables social financial cohesion and be the cornerstone of all transactions that need to be fair and equitable. The two parties involved in the contractual agreement must act with good intention in order to avoid exploitation in the exchange transaction and improve their mutual welfare. In fact, the contractor loves to his partner that which he loves for himself. Unfortunately, in practice this situation is not always true, because Islamic finance isn't merely reserved to muslims and also among muslims there could be who isn't behaving in accordance with the Islamic teaching all the time, and have different interests. This situation can get worse, especially in PLS contracting with risk sharing, when there's a presence of asymmetry of information and non observability, which makes pareto-optimal risk sharing prevented, due to the lack of proper incentives and high monitoring costs not allowing suitable decisions taking.

**Keywords:** *islamic banking finance, asymmetry of information, optimal contract, mudarabah, mucharakah, profits or losses sharing ratio, incentives.*

**GJMBR-C Classification:** *JEL Code: B26*



*Strictly as per the compliance and regulations of:*





# Inside the Black Box of the Islamic Financial Decision: Designing a Paying for Performance Contracts<sup>1</sup> with Agency Problems, Incentives and Asymmetry of Information

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**Abstract-** <sup>1</sup>From a theoretical point of view in the Islamic financial framework, trust is supposed to provide the economic glue that enables social financial cohesion and be the cornerstone of all transactions that need to be fair and equitable. The two parties involved in the contractual agreement must act with good intention in order to avoid exploitation in the exchange transaction and improve their mutual welfare. In fact, the contractor loves to his partner that which he loves for himself<sup>2</sup>. Unfortunately, in practice this situation is not always true, because Islamic finance isn't merely reserved to muslims and also among muslims there could be who isn't behaving in accordance with the Islamic teaching all the time, and have different interests. This situation can get worse, especially in PLS contracting with risk sharing, when there's a presence of asymmetry of information and non observability, which makes pareto-optimal risk sharing prevented, due to the lack of proper incentives and high monitoring costs not allowing suitable decisions taking. Instead what can be realized is only a second best solution (with enough incentives and reasonable monitoring costs that permit trading some of the risk sharing advantages).

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<sup>1</sup> Profits or losses sharing (PLS): the idea of this work has grown in the academic year 2017/2018 when I was charged to teach a course entitled "Islamic financial contracts". And my greatest debt is the work of Hart and Oliver the Economic Nobel Prize winner 2016 for their work on the theory of contract to which I referred to prepare my course curriculum. With the paradigm shift, which is one of the rare cataclysmic events in science when researchers make substantial break with the field has been progressing and then try to pursue a new direction. This is how I tried to look to the Islamic financial contracts with slight modifications that required an anomaly awareness and reality confrontation with theory to get something different and new. Falling in love with the initial idea is the very enjoyable part of the research. But when it comes to writing, I worry most about having perfect parts, and this slow down the paper production and makes it too long. But when it comes to publish it: it's another story.

<sup>2</sup> On the authority of Abu Hamzah Anas bin Malik (may Allah be pleased with him) - the servant of the Messenger of Allah (peace and blessings of Allah be upon him) - that the Prophet (peace and blessings of Allah be upon him) said: "None of you will believe until you love for your brother what you love for yourself." Related by Bukhari & Muslim

The main functions of the Islamic banking intermediation, as its conventional peers, are especially assets transformation, offering liquidity and payment services, risk management and processing information and monitoring engagements with different stakeholders.

In order to perform these functions, acquiring information about the different stakeholders involved in the financial contacting process is very crucial for packaging a set of contracts that provide an efficient and transparent execution of financing economic activities. This set of contracts allows the Islamic bank to meet the different financial needs.

In the practice of Islamic banks, we can easily notice the lack, and sometimes the absence of use of participatory financial tool in funding the clients and allocating the Islamic banks resources in its intermediation process<sup>3</sup>.

In this work, we propose to study the impact of asymmetry of information on the practice of the Islamic bank in the design of Paying for Performance contracts (Profits or losses sharing (PLS)). Most of the time, the Islamic bank in its process of funding and during its relations with the clients is invited to take financial decisions under asymmetric of information (incomplete or imperfect information). Also the Islamic bank cannot observe the level of effort and /or the outcome of the investment (revenue streams) checked with precision the level of respect of the contractual terms.

This paper aims to fill in the gap; its purpose is to analyze incomplete long-term participatory financing contracts between an entrepreneur (The Agent) with no initial wealth (Mudharabah) or partial wealth (Musharakah) and a wealthy investor: the Principal (the Islamic bank). Both parties involved in the contacting process may have potentially conflicting interests. We address the questions of (i) whether and how the initial contract can be structured in such a way as to bring about a perfect coincidence of objectives between both agents and meet the welfare maximization (ii) when the initial contract cannot achieve this coincidence of objectives how should control rights be allocated to achieve efficiency? One of the main results of our analysis concerns the optimality properties of the (contingent) control allocation induced by financial contracting in a Paying for performance context that

<sup>3</sup> www.ibisonline.net: in Europe, Asia and Middle East for 2015 mudharaba and Musharaka are less than 2% of the total portfolio Islamic Modes of Financing In The Tunisian context according to the 2017 annual report of The Zitouna bank: Mudharaba and Musharaka represent about 4.2% in the total portfolio financing products and about 3.2% in 2016.

requires both the ability to write sufficiently detailed contracts ex ante, as well as the ability to measure and verify performance ex post

Then we present the design of profits or losses sharing contracts and the optimal contract conditions. After that, we introduce an illustrative model of Mudarabah contract and we analyze the levels of the Sharing rates of the profits or the losses to be fixed by the Islamic banking firm in order it becomes competitive in a dual banking system and gain at least what gains a conventional bank taking into consideration the presence of the asymmetry of information. We finally present the Musharakah financing contract with a focus on the diminishing Musharakah and the level of effort.

**Keywords:** *islamic banking finance, asymmetry of information, optimal contract, mudarabah, mucharakah, profits or losses sharing ratio, incentives.*

## 1. INTRODUCTION

Contracts and for long decades, has been an important concept in economic and financial studies, research as well as practice, and gave rise to major fields: incentives structures studies, complete and incomplete contracts, agency costs and property rights. The study of contractual approaches can give us various details on how decision making is structured and the behavior of agents is framed. As Oliver Hart Concluded in his paper *Financial contracting 2001*: that has been an evolution in dealing with the firm profitability from it's treated as given standard to acknowledging that the managerial action (behavior) affect the profitability level. and the value of the firm depends on the allocation of control rights decision. This can be superposed by analogy to Islamic financial context.

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In order to perform these functions, acquiring information about the different stakeholders involved in the financial contacting process is very crucial for packaging a set of contracts that provide an efficient and transparent execution of financing economic activities. This set of contracts allows the Islamic bank to meet the different financial needs.

In this work, we propose to study the impact of asymmetry of information on the practice of the Islamic bank in the design of PLS contracts. The study of risk inherent to signing a contract. Most of the time, the Islamic bank in its process of funding and during its relations with the clients is invited to take financial decision under asymmetric of information (incomplete or imperfect information).

When a financial relationship is being tied between the Islamic bank and its client (corporate or individual entrepreneur), an informational problem is

possible to take place in fact the Islamic bank may not know perfectly (exactly) the entrepreneur characteristics (its capacity to identify and implement good investment project). Also the Islamic bank cannot observe the level of effort and /or the outcome of the investment (revenue streams) checked with precision the level of respect of the contractual terms.

Finance and banking have been rethought by integrating the Islamic religious dimension which rejects the interest rate from the banking operations. This innovation in the banking sector has given birth to a new model of banking intermediation known as interest free banking or simply Islamic banking which enhances, risk sharing, value creating, ethics and socially responsible transactions.

Islamic finance is an interesting area of contemporary academic and policy interests. The Islamic financing process is based on 5 pillars which have to be respected together in order to guarantee the Shari' a compliance of the financial intermediation process. These five pillars which will be explained each in turn later are:

- The prohibition of interest (*Riba*)
- The prohibition of uncertainty (*Gharar*) and speculation (*Maysir*)
- The prohibition of unlawful haram assets which contradict the value pattern of Islam.
- The profits and losses sharing obligation PLS.
- The assets backing obligation.

**Section1:** Inside the Black Box of the Islamic financial decision and behavior: Heart, Mind, Faith and Money Do all the Stars shine?

We can easily notice, when reviewing the Islamic financial literature, that an abundant part of it has been widely dedicated to describing financial instruments and institutions. A little focus has been put on analyzing its foundational microeconomics aspects of decision making with broader principals of behavior<sup>4</sup> from a range of epistemological, social and economic (financial) dimensions, focusing on different approaches from motivations, incentives, risks, cognitive, emotion to socio-psychological as well as religion (conviction; sociality and identity) with rational Vs irrational assumptions that drives choices and business decisions and economics behavior in the Islamic financial framework. The idea of morally balanced decision has been mentioned in Adam Smith "Theory of Moral Sentiments" "... The great source of both the misery and disorders of human life seems to arise from overrating the difference between one permean situation and another..."

<sup>4</sup> With reference to 2017 Nobel prize in Economics Richard Thaler: The behavioral economist one of the pioneer in this field.

Finance is usually presented as the study of optimal decisions of capital allocation to generate added value with risk elimination or at least minimization (to avoid losses). As such decisions are made by human, it's useful to understand people's individual behavior and interactions and how emotions (also convictions) affect decisions.

The human nature is essentially characterized by self-discipline and self-control designed by the society through rules or divine guidance. The human behavior seeks to reach the individual well-being (individual interest: need fulfillment: material needs as well as spiritual moral intellectual and social) with respect of the mankind welfare that can be perceived as a multidimensional concept covering different aspects of human life and that leads to: the Mankind Happiness. This is only can be done with avoiding exploitation, behavior of excess and prevailing balance, fairness, justice in all the dealings through cooperation participation and help.

Islam is a religion of fairness, justice, equality and balancing in decision making: "Thus we have made you a justly balanced community" (Surat 2; 143). The balance in pursuing individual interest and society interest, in spending, in time allocation: Human life here in and hereafter...

Islam isn't a totally new religion; it is considered to be the last chain of Ibrahimic religions. Therefore many values are shared between Islam and Christianity and Judaism. The lack or absence of such values, principals and believes could turn the Adam Smith Invisible Hand to a Stealing Hand. The human behavior in the Islamic financial field consider agent as seeking optimization rather than rationality to reach the balancing situation with a learning process to avoid mistakes that makes rationality bounded and human are not identical although for long time in the economic theories are considered rational and thus identical when making decision and choice.

#### a) *Faith Mind and Money or the Business Ethics*

Institutions with its offer (goods and services), in the market logic, were created by Human to serve Human in an Economic framework in which people should be placed above economy. Islamic economy isn't a zero-sum game. There should be no exploitation, what is good for one stakeholder shouldn't be bad for the other. The gain on the expense of someone's welfare in transactions shouldn't be encouraged. Economy isn't an end in itself but is at the service of life, of society and is to be measured with reference to its social functional rationality (Ulrich Peter 200 p 11; 1997 p 117; 1989 p 182). Humans when seeking to achieve happiness, they shouldn't do it only by the pursuit of money gains but also with following the values and its conformity.

Kant doesn't demand self-sacrifice since man is explicitly pursuing his own happiness (Kant Immanuel 1788 p 25). The Human duty is to shape the world with different decisions in such a way that people can also be happy in this. Part of our own happiness should then be found in the helping others to be happy (do not harm: pose no problem (environmental or other), what you don't want to be done to you, Do not do it to anyone else (others).

Immanuel Kant "Act in such way that your behavior could be the basic of universal law".

The prophet Med P.B.U.H: "do unto others, as you would have them do unto to you": *The Moral behavior*.

To avoid the conflict of interest (individual Vs society) a relevant behavior guidance orientation can be applied to individuals, companies or the whole economy: Business ethics that have an important goal: prevailing the common good of economic individual benefit maximization and to improve the performance (productivity) in order to reach the economic efficiency (Marcus Donald)

#### b) *The intentions (the purpose) and the actions*

The good will (according to Immanuel Kant) "intention", is decisive to achieve good actions (purpose) or at least not to have anyone including the decision to act or not to act. What if everyone did that? Become a Maxims.

The intention is crucial for ethical level evaluation. From an ethical point of view duties are what should be done with reference to a set of values (ethical principles of behavior that man in community has voluntarily accepted derived from religion, ideologies, believes and convictions...). This in community duties are law that regulate human coexistence.

#### c) *Ethics freedom and decision making*

The contractual freedom means the ability to choose from a among a sufficient range of contract types (or at least to have a bargaining power) or being able to make adjustments within the deal. A free individual has the deliberate choice between different decisions making, which lead to the self-bearing responsibility of the decision's consequences (Max Weber 1919 p 441-442). As all the people aren't the same in nature (convictions, actions) and they are not all well informed, their decision consequences will not be easily predictable and can even be immoral due to the limited rationality.

David Hume posed the bases of civilized society: security of the person, stability of propriety and the obligation of contracts (a treaties of human nature). The Islamic foundation of law and justice aim to the same premises also.

The promise is the moral basis of commitment (contract, obligation) from which emerged the contract in the modern time. Not all promises are legal, its

obligations and standards can be driven from beliefs, faith or community rules. Whether written or not, the commitment "fidelity to one's word" to the contract agreements (contractual obligation) represent a promise that the parties have themselves assumed and trust each other in a way doing things cooperatively with respect of the mutual interest.

d) *Incomplete contract, incentives and morality*

In designing contracts, ethics can be integrated as incentives to direct the behavior of stakeholders. If some aspects are missing in the contract (agreements terms) or even in the legal system, this gap can be filled by morality (Homam, Karl 1999). Thus, decision makers (companies, individuals, politicians....) are asked to behave morally beyond the incomplete legal framework in respect to the requirements of good faith in carrying out of the contractual obligations. Therefore an economic action is moral or ethical if it does not harm other even if the conditions for competition allow the unethically behavior.

e) *The classical view of men "Homo Economicus" Vs Ethical view of man "Homo Ethiconomicus"*

An homoeconomicus (Max Weber 1992 p16) is considered as a machine that acts rationally such it's setup in its basic parameters, assuming a given level of information, he would always choose the option that maximizes its gain and his own advantages including even committing amoral action such as lying, betraying and other immoral acts (Milgrom, Roberts 1992) especially when the context allows in situations of lack of laws rules and regulations (sanctions and monitoring). With the Homo Ethiconomicus, the same is true with the difference in redefining "Gain" and widening the concept to integrate the doing good for other people. Even it seems to reduce one's own objective benefits, it increases, then his happiness instead.

Section 2: Return to fundamentals: Trust in Muslim communities:

From a theoretical point of view in the Islamic financial framework, trust is supposed to be the cornerstone of all transactions that need to be fair and equitable. The two parties involved in the contractual agreement must act with good intention in order to avoid exploitation in the exchange transaction and improve their mutual welfare. Explicit trust provides the economic glue that enables social financial cohesion. In fact, the contractor loves to his partner that which he loves for himself<sup>5</sup>.

<sup>5</sup> Refer to reference number 2: On the authority of Abu Hamzah Anas bin Malik (may Allah be pleased with him) - the servant of the Messenger of Allah (peace and blessings of Allah be upon him) - that the Prophet (peace and blessings of Allah be upon him) said: "None of you will believe until you love for your brother what you love for yourself." Related by Bukhari & Muslim

Unfortunately, in practice this situation is not always true, because Islamic finance isn't merely reserved to Muslims and also among Muslims there could be who isn't behaving in accordance with the Islamic teaching all the time, and selfish or boundedly rational entrepreneur, or with intrinsic material motivations may get in PLS contractual relationship with the Islamic bank.

This situation can get worse, especially in PLS contracting with risk sharing, when there's a presence of asymmetry of information and non-observability, which makes pareto-optimal risk sharing prevented, due to the lack of proper incentives allowing taking suitable decisions. Instead what can be realized is only a second-best solution (with enough incentives that permit trading some of the risk sharing advantages). The PLS contractual mechanism can entail conflict of interest, that's why this type of contract must be properly designed to ensure that the parties take mutually beneficial decisions and actions.

The Islamic bank when it funds a client (customer) through a PLS contract cannot observe the action of its partner, and also cannot make sure that it has chosen the good agent even when gathering the required level of information before signing the contract.

Monitoring the agent's actions, if it's possible to implement (with reasonable costs), can offer additional information to use in elaboration the contractual terms. In this case, a first-best solution (implying optimal risk sharing) is possible by using a forcing contract that takes actions against opportunistic behavior.

It is difficult for the Islamic bank to identify "Good Agent" Client in the mudhararaba arrangement and to do so it requires using a variety of screening devices, as for example designing a menu of contracts that aims to self-revelation of agent's private information, may represent a solution to the adverse selection problems.

## II. THE DESIGN OF PROFITS OR LOSSES SHARING (PLS) FINANCING CONTRACTS IN THE ISLAMIC BANKING FIRM

a) *Complete contracts*

We can refer to complete contracts as contracts in which the contractual terms describe exactly everything that can ever happen. There may be some incentive constraints arising from asymmetric information: moral hazard or adverse selection but there are no unanticipated contingencies. Actual contracts are not like this, they are weakly worded, confusing sometimes, and leave out essential aspects that's what make them incomplete. At some stage, Grossman and Hart realized that a critical question that arises with an incomplete contract is, who has the right to decide about the missing things? This can be called: right of the



residual control or decision right: Property rights theory (PRT). The question is, who has it?

Why should it matter who has residual control rights? Residual control rights are like any other asset: there is an optimal allocation of them. Sometimes it is more efficient for one owner to hold all the residual control rights, and sometimes it is more efficient for these control rights to be split between several owners.

#### b) *Rationality Vs Religiosity and agent behavior*

Islamic bank costumers (depositors investors or entrepreneurs) might make a strong pledge by treating with the logic of risk sharing and may see their wealth decreasing, but the gratification of following their moral deeds which can be enough to cover the cost of any loss incurred by their religious preferences and their quest to religious compliance. Accordingly, a pious Muslim behaves in ways contrary to the patterns that neoclassical economics attributes to homo economicus. As further formulated by the theoreticians of Islamic economics, a Muslim is primarily motivated to live an Islamic life and his actions tends as possible to be in compliance with his believes and to contribute to an equal society<sup>6</sup>. The characterization of the Muslim actor, namely homo Islamic us, substantially differs from homo economicus by preferring a moral economy over pragmatic benefits (Kuran, 1986, 1995, 2004). However, the pattern that Islamic bank deposits portray during interest rate changes indicates that Islamic bank depositors blend Islamic beliefs with so called rationality (Demiralp, 2015).

#### c) *Incomplete contracts*

Contractual incompleteness is mainly due to the difficulty of describing all possible future contingencies (market conditions, states of nature etc.) in advance; there are too many possible contingencies to describe, or even to predict. However, Maskin and Tirole (1999) show that as long as the parties can predict the possible payoffs, the first-best can be implemented by a message game which does not require describing all possible contingencies in advance. They argue that parties that are sufficiently rational to calculate the expected payoffs from an incomplete contract should also be able to use the effectively complete contracts

they propose. In a rejoinder, Hart and Moore (1999) show that Maskin and Tirole is first-best investment result can be overturned in a sufficiently complex contracting environment (borrowed from Segal, 1999), when parties cannot commit not to renegotiate the initial contract. Furthermore, Aghion et al. (2012) demonstrate that some of the objections to the incomplete contract's framework are fragile, in the sense that the more complete contracts proposed in the critique only perform well under very strong common-knowledge assumptions.

### III. PLS FINANCING CONTRACTS AND SIMILARITIES WITH VENTURE CAPITAL FINANCING

Kaplan and Stromberg (2003, 2004) report evidence from a large number of venture capital (VC) contracts. This is a real-world setting that quite closely corresponds to the environment of the financial contracting theories, where entrepreneurs who raise money for start-ups are the agents, and VC investors who invest in start-up firms are the principals. They find that VC financial contracts separately allocate cash-flow rights as well as different control rights including board rights, voting rights, and liquidation rights-between investors and entrepreneurs. The allocation of these rights is frequently state-dependent, being contingent on financial as well as non-financial measures of performance. Both cash-flow and control rights are allocated such that investors obtain full control of poorly performing firms. But entrepreneurs retain more control rights in better performing firms, and their cash-flow rights increase with firm performance, often in a non-linear fashion. Moreover, the allocation of rights responds to the perceived risk investors see in the venture, as well as the likelihood that investors will have to intervene in the future, for example by replacing management. Kaplan and Stromberg argue that these contracts can best be understood through a combination of incomplete-contracts theory and classic contract theory. Importantly, the separate allocation of cash-flow and control rights cannot be fully understood outside an incomplete-contracting framework.

#### a) *Incompleteness of the PLS contracts*

In the Profits or Losses contracts (Paying for Performance contracts: Mudaraba or Musharaka) where the Agent "entrepreneur" who needs to raise funds to finance an investment project. Future decisions concerning this project have to be taken, which due to its inherent incompleteness, cannot be perfectly determined in the initial contract. Moreover, the Agent "entrepreneur" and the Islamic Bank "investor" (fund provider) may have conflicting objectives regarding the future developments of the project which as a result of

<sup>6</sup> Islam is regarded not only as a set of moral preaching, but a framework spanning the whole life. In this interpretation, daily economic affairs should be inspired by the rules set by Islam. Since Islam forbids selfishness for the welfare and order of the whole community, the representative agent in Islamic economics is totally different from homo economicus. We refer interested readers to Kuran (1983) for a review on Islamic economics with an extensive critique about the applicability of its rules. Ebrahim and Safadi (1995), in their comment to Kuran (1983), try to nullify its arguments by presenting good practices in ancient Islam civilizations, but Kuran (1995) argues that Islamic economics without any modern standards would fail to meet the demands of modern societies.



contractual incompleteness and wealth constraints, cannot be perfectly realigned by the initial contract.

We start with one period static model of bilateral contracting between an entrepreneur the agent, and an investor the principal (the Islamic bank); it discusses the nature of contractual incompleteness and describes the origin of the conflict of interest between the two contracting parties. In the case of Paying for Performance contracts (PLS contracts) a bilateral contracting relationship is being set up where the Agent "entrepreneur" seeks funding from a Principal the "Islamic bank" fund provider called also investor to finance the set-up costs,  $I_0$ , of his new project. We suppose in a dual banking system that there are many fund providers investors (other Islamic banks or conventional banks) looking for good investment

opportunities and fewer entrepreneurs with good projects, so that our entrepreneur has all the bargaining power and can make a take-it-or-leave-it offer to the investor. If the contract promises an expected return to the investor of at least  $I_0$ , the fund provider is willing to take the offer.<sup>1</sup> This defines the investor's individual rationality constraint.

The Islamic banking firm will finance the entrepreneur (Agent) who hasn't enough funds to undertake an investment project which requires a certain investment  $I_0$  and will generate in the end of the first period an Output Level (OL) depending on the effort  $e \in EL$  with  $EL$  a complete description of how the entrepreneur will manage the project) and the realization of the future state of the world  $Sw \in \Omega$ .  $OL(e, Sw)$

In the case of the Mudarabah contract, the initial wealth of the entrepreneur is:  $W_0 = 0$  (1.1)

In the case of the Musharakah contract the initial wealth of the entrepreneur is:  $W_0 > 0 / W_0 + C_{IB} = I_0$  (1.2)

The contractual arrangement specifies the percentage of sharing futures returns, the amount of capital contributions by the Islamic banking firm and the investors and the possible restrictions to control the entrepreneur behavior and to limit his undesired opportunistic decisions during the period spanned by the contractual agreement. The design of the financial contracts in presence of asymmetry of information must be done in a way to guarantee the interest of the Islamic banking firm and thus the client (the investment account holders) from the opportunistic behavior of the entrepreneur the Agent.

Before the contract is finalized the entrepreneur (Agent) may have access to pre-contractual private information which place the Islamic banking firm (Principal) at an information disadvantage and expose it to an adverse selection. After signing the financing contract, the entrepreneur (Agent) may provide certain level of effort which can be publicly observed or carried out privately by the entrepreneur (Agent) and exposing the Islamic banking firm (Principal) to a moral hazard. At the final stage, the realization of the Output, the result

may be publicly observed and easily checked (supervised) by the Islamic banking firm or it may be observed privately only by the entrepreneur who realize it. All of these situations can be characterized as costly verification situations (CVS).

In the case of informational asymmetries, pre-contractual information (adverse selection), private actions and different level of effort (moral hazard) or the final result may be exactly known by outsiders only at a cost, the design of contracts must allow the Islamic banking firm to reduce the effects of informational asymmetries and thus protect its interests.

#### b) PLS financing contracts and the Costly Verification Situations (CVS)

With reference to Townsend (1979), in an informational asymmetries framework, the result (Output level)  $OL$  of the project may be observed without cost only by the entrepreneur (Agent), while the Islamic banking (Principal investor) can observe the  $OL$  only after paying a state dependent verification cost  $C_v(OL)$

Verification policy  $V_p(OL) = 1$  if the verification occurs (1.3)

And  $V_p(OL) = 0$  if the no verification occurs (1.4)

The verification occurs in bad situation: low share of the Islamic bank if  $OL < OL_{OL\_the\ minimum\ accepted}$   
 $OL$  and in this case  $V_p(OL) = 1$  (1.5)

1) No verification occurs in the case of  $V_p(OL) = 0$  in this case the entrepreneur (Agent Mudarib) pays to the Islamic banking firm (Principal investor) an amount depending on  $OL$  and the predetermined fixed sharing rate  $S_R$

- Revenue of the Islamic banking firm  $R_{IB} = S_R * OL$  (1.6) is accepted by the bank and is at least equal to the expected level of revenue.
- Revenue of the entrepreneur  $R_E = (1 - S_R) * OL$  (1.7)

- As the mudarabah contract is a PLS contract, it's also a risk sharing contract.

The Islamic banking firm (I) (Investor) acts as a neutral risk agent (the Islamic bank uses the investment accounts funds). The entrepreneur (E) (Agent) is risk averse (in case of losses, no reward is granted to him for his effort "labor" and time).

Under the PLS arrangement, the terms of financial transactions reflect a symmetrical riskreturn distribution between counterparties (El-Hawary et al.,

2007; Askari et al., 2010). Both the entrepreneur and the investor are risk neutral in income. Their Von-Neumann-Morgenstern utility functions over income and action pairs are denoted by  $UE(r,a)$  and  $UI(r,a)$  respectively. We suppose that they take the following simple form:

$$UE(r, a) = r + I(a,O) \quad (1.8)$$

$$UI(r, a) = r. \quad (1.9)$$

The investor the non management parties (silent partner) are only interested in the level of profitability monetary returns of the project. The entrepreneur, who thought about the project and took the initiative of setting it up, cares not only about the monetary returns but also about the opportunity cost and how much he values his effort level and other less tangible things such as reputation, specific human capital, etc. These non-monetary elements in his payoff depend on the choice of action and on the state of nature; they are represented by the function  $I(a, 0)$ . (Note that  $I(a, 0)$  can be positive or negative).  $D_{U,H,e}$  disutility for the high effort level and  $D_{U,L,e}$  disutility for the low effort level

We shall refer to them as the private benefits of the entrepreneur since they are not observable or verifiable by third parties. It is clear, given our specification of preferences, that potential conflicts of interest may arise between the entrepreneur and the investor concerning the choice of action.

The payment done by the entrepreneur (Agent) to the investor (Islamic banking firm) varies from small to big depending on the  $OL$ . Thus the optimal contract calls for risk sharing and all the problem is to determine the Sharing Rate  $S_r$  which an agent is willing to accept and that may act as one such screening device: those who are willing to accept low PLSR may, on average may be considered as worse risks, they are willing to accept low PLSR because they perceive their probability of low profitability. As the PLSR decrease the average riskiness of those agent increase and thus possibility lowering the bank's profits. As the terms of the contract may change, the behavior of the agent client, is likely to change. For instance, rising (decreasing) the PLSR, decrease the time of ownership of the shares of the business company (the profitability of the business).

We will show that lower PLSR induce agent to undertake (they will perform) projects with lower profitability (lower probability of success) and lower level of efforts.

In a world with perfect and costless information, the bank would stipulate precisely all the actions which the agent should undertake (level of effort which might affect the project revenue and thus the level of profitability).

However the bank is not able to directly control all the actions of the Agent ; therefore , it will formulate the terms of the PLS contract in a manner to induce the agent to take actions and perform level of effort which

are in the interest of the Islamic bank as as to attract low or reasonable risk agent profile.

For these reasons, the expected return of the project and thus the part of the Islamic bank from the project revenue may increase less rapidly than the PLSR and beyond a point may actually decrease. The PLSR at which the expected return to the Islamic bank is maximized, we refer to as the optimal PLSR\*

Both the demand and supply of funds are function of the PLSR and interest rate (in a dual banking system)

#### IV. PROFIT MAXIMIZATION, PRODUCTION OF THE ISLAMIC BANKING FIRM

There is an abundant literature that explains bank production. The banking firm sets to itself the objective of profit maximizing as it's a rational economic agent<sup>7</sup>. The specification of the inputs and outputs of the production process of the banking firm has been the subject of continuous debate with the dominance of two currents, namely the production approach and the intermediation approach.

##### a) *Theory of the Islamic banking firm*<sup>8</sup>

The functioning of Islamic banks is essentially based on the idea of Profit or Loss Sharing " PLS " between on the one hand the bank and the client (depositor / investor agent with financing capacity) and on the other hand the bank and the entrepreneur client (agent in need of financing). The PLS principle assumes the existence of a financial partnership frame work with the existence of a minimum level of trust agency relationship (principal and agent). The operating model of Islamic banks suggests that they accept deposits on the basis of the PLS principle and allocate them to entrepreneurs again on the same basis as " PLS ".

On the asset side, Islamic banks have a variety of financing methods which are classified as follows :

- Investment-based financing mode PLS agency relationship (Mudaraba and Mucharaka).
- Sales-based financing method (Murabaha, Salam, Istisnaa).
- Lease-based financing method (Ijara).

<sup>7</sup>Jacob A. Bikker and Jaap WB Bos [2008] "Bank Performance A theoretical and empirical framework for the analysis of profitability, competition and efficiency" Part I Chapter 2 Production of the banking firm pp 6-16 First published 2008 by Routledge 2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN Simultaneously published in the USA and Canada by Routledge 270 Madison Ave, New York, NY 10016 .

<sup>8</sup> Humayon A. Dar and John R. Presley Islamic banking Part II Chapter 8 pp191-206 [2003] "Handbook of International Banking" Edited by Andrew W. Mullineux Professor of Global Finance, University of Birmingham, UK and Victor Murinde Professor of Finance, University of Birmingham, UK Published by Edward Elgar Cheltenham, UK • Northampton, MA, USA ISBN 1 84064 093 6.

## b) Deposits and Investments

Let  $D$  ( $D_v$ ;  $D_0$ ) be the set of possible deposits available to depositing clients,

$D_v$ : represents deposits with variable income which are based on the PLS principle.

$D_0$ : non-interest-bearing deposits, current accounts or savings accounts.

Islamic banks also offer a range of fixed and variable income financing methods to entrepreneurs (agent in need of financing)  $I$  ( $I_f$ ;  $I_v$ ;  $I_0$ )

Where  $I_f$ : fixed income investment example Murabaha

$I_v$ : Variable investment based on the principle of "3P" example Mudaraba and Musharaka

$I_0$ : investment without income for the example bank Quard Hassan

Be

$$\alpha = I_f / TI ; \beta = I_v / TI ; \gamma = I_0 / TI \quad (2.1)$$

Are the respective proportions of investments in the various types of financing methods compared to the total investment  $TI = I_f + I_v + I_0$

The income that the bank receives on all of its investments :

$$Y = \alpha r_f + \beta r_v + \gamma r_0 \quad (2.2)$$

$r_f$ ,  $r_v$ ,  $r_0$  Are the rates respectively returned back fixed investment, and without variable income (returned as zero Quard Hassan)  $r_0 = 0$ .

The net profit of the bank can then be written:

$$\pi = Y - C \quad (2.3)$$

With  $C$  represents all of the charges that the bank incurs in order to generate income  $Y$ .

If we decompose the total profit into two components according to the fixed income and variable income investment we get:

$$\pi = \pi_f + \pi_v \quad (2.4)$$

$$\text{Avec } \pi_f = \alpha r_f - C_f \text{ et } \pi_v = \beta r_v - C_v$$

$\pi_f$  : is independent of the profit level of the projects in which the entrepreneur is engaged, and therefore it can be treated as fixed income.

$\pi_v$  : is the aggregate income rate of all income from individual business investments on the basis of the "PLS" principle.

Islamic banks invest in various PLS-based projects and the rates of income that the projects generate and that will be shared with its clients are not necessarily the same, if there are "n" projects in which the Islamic bank invests then:

$$r_v = \sum_{i=1}^n \frac{\beta_i}{\beta} (r_{viBI} * \pi_{vi}) \quad (2.5)$$

With  $\pi_{vi}$  = the total profit generated by the investment project "i"

Et  $r_{viBI}$  = the proportion of the income from the investment project "i" accruing to the Islamic bank.

$\beta_i$  = The proportion invested in the project in relation to the overall investment performance and variable as:

$$\sum_{i=1}^n \beta_i = \beta$$

$$\beta * r_v = \beta * \sum_{i=1}^n \frac{\beta_i}{\beta} (r_{viBI} * \pi_{vi})$$

$$\pi_v = \beta r_v - C_v$$

$$\pi_v = \sum_{i=1}^n \beta_i (r_{viBI} * \pi_{vi}) - C_v \quad (2.6)$$

The total profit becomes

$$\pi = A + \sum_{i=1}^n \beta_i (r_{viBI} * \pi_{vi}) \quad (2.7)$$

$$\text{with } A = \alpha r_f - C_f - C_v$$

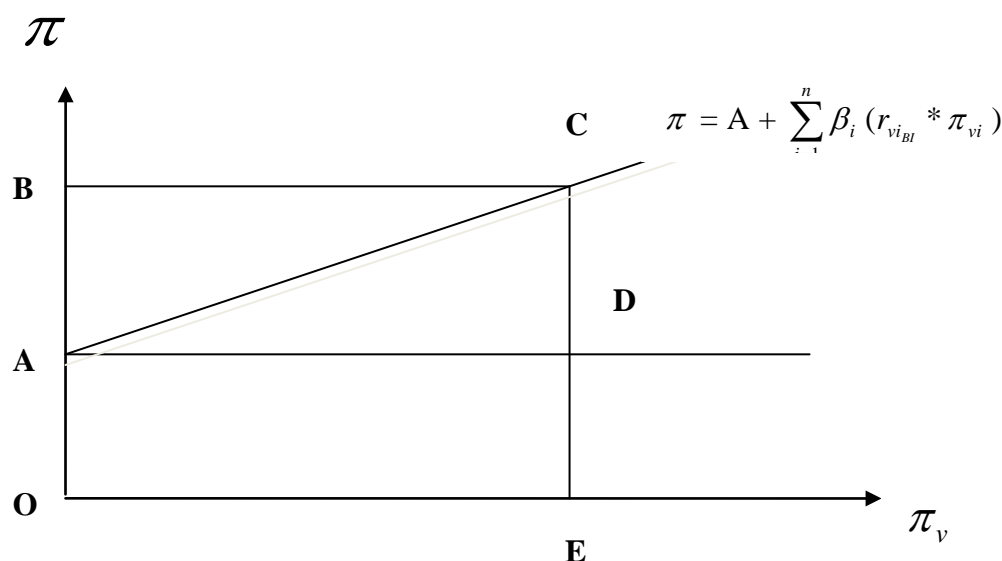


Figure 1: Profits of Islamic banking and the composition of investments

The presence in the total profit equation (6) of a component which corresponds to the fixed income has interesting implications with regard to the agency problems which are inherent in participatory contracts. This also explains why the majority of Islamic banks opt to allocate their funds on a fixed income funding basis because it's less risky and with high gain not like the PLS products that are more riskier and with less gain. On the other hand the profit equation has similarities with the CAPM equation, If we assume that the bank invests the same volumes of funds in variable return investments and fixed return investments then CAPM implies that:

$$\sum_{i=1}^n \beta_i (r_{vi_{BI}} * \pi_{vi}) > A \quad (2.8)$$

Schematically, this implies that funds must be invested on the basis of variable returns to scale such as:  $ACD > OADE$  and assuming that only these investments generate profits beyond point C of the profit line. In this case, the proportion of investments with variable returns is higher than that of investments with fixed returns in the whole portfolio.

c) *PLS terms can be renegotiated in the light of each period result*

The PLS contract should specify indicate the distribution ratio of profit between both parties (which cannot be a lump sum or a percentage of capital). The distribution ratio could be revised at future dates by agreement of both parties.

Does the PLS contract allow, in imperfection information framework (hidden actions) reviewing the contractual terms to improve the welfare of the two parties? And how can such revision, be optimally implemented?

In the context of principal agent relationship in which the agent provides a productive input (effort) that cannot be observed by the principal (the Islamic Bank) directly<sup>9</sup>.

Implementing monitors can provide information that is independent of the state of nature and allows the principal to detect any shirking by the agent with positive probability.

These monitors<sup>10</sup> seem to be of limited interest; however a first-best solution can be almost arbitrarily approximated in this case since observing the agent's action directly is made possible through these monitoring devises that needs to be valued in order to compare their cost to their benefits in agency relationships (Stiglitz 1975, Williamson 1975) which serves to explain the extensive use of imperfect information in contracting. Furthermore, we characterize optimal contract based on such imperfect information in a way which yields considerable insight into the complex structure of actual contracts.

d) *Relation between Islamic bank and entrepreneur (Agent)*

We aim to present through this model<sup>11</sup>, which is doesn't take into account the existence of taxes on

<sup>9</sup> Harris and Raviv 1976 and 1978; earlier works on principal and agent models: Wilson 1969, Ross 1973, and Mirrlees 1976.

<sup>10</sup> The monitoring should be as perfect as possible in order to insure that any additional information about agent's action, however imperfect, can be used to improve the welfare of both the principal and agent as the PLS contract offer a framework of reviewing the contractual terms in going.

<sup>11</sup> We started from the idea of Hassoune Anouar which proposes a simple model of comparison of profitability between the Islamic banks and conventional banks, but we developed another analysis logic for the participative contract framework (Moudaraba). Hassoune Anouar (2003), « La Solvabilité Des Banques Islamiques: Forces et Faiblesses », Revue d'Economie Financière n° 72

incomes, the levels of the Sharing rates of the profits or the losses to be fixed by the Islamic banking firm in order it becomes competitive and gain at least what gains a conventional bank. Under which conditions the Islamic banking firm can attract entrepreneurs who are not solely motivated by religious reasons and how to incite them to choose an Islamic financing?

e) *Illustrative one period model of Moudaraba contract*

The entrepreneur, who is supposed to be rational beside his seek of compliance of his believes to his business practices, will not choose the method of participative financing unless the profit released, after deduction of the Islamic banking firm's share will be higher than the profit obtained if he will have to treat with a conventional bank and thus payback the main amount of the loan increased of his financial expenses (interests).

1) For the entrepreneur

$$(1 - PLS_R) \tilde{P}_{OL} \geq \tilde{P}_{OL} - rD - \alpha D \quad (3.1)$$

$PLS_R$  : Profits or Losses Sharing ratio

$\tilde{P}_{OL}$  : Expected Output level (Profit) in the period

$D$  : Main amount of loan

$r$  : Interest rate

$\alpha D$  : Fraction of principal of the debt to be paid back;

For the one period model  $\alpha = 1$ .

$$PLS_R \leq \frac{D}{\tilde{P}_{OL}} (r + \alpha) \quad (3.2)$$

2) For the Islamic banking firm

Let's suppose that the profit to be realized  $\tilde{P}_{OL}$  can be exactly anticipated or calculated, the negotiations between the Islamic banking firm and the entrepreneur will focus on the level of  $PLS_R$  and consequently the Islamic banking firm will not be free to fix any level of  $PLS_R$  which will not take into account the interests of the entrepreneur who is likely to prefer the conventional financing otherwise;

$$PLS_R \tilde{P}_{OL} \geq rD + \alpha D \quad (3.3)$$

$$PLS_R \geq \frac{D}{\tilde{P}_{OL}} (r + \alpha)$$

$$\text{In the equilibrium } PLS_R = \frac{D}{\tilde{P}_{OL}} (r + \alpha)$$

For the one period  $\alpha = 1$ .

$$PLS_R \tilde{P}_{OL} \geq rD + D$$

$$PLS_R \geq \frac{D}{\tilde{P}_{OL}} (r + 1)$$

$$\text{In the equilibrium } PLS_R = \frac{D}{\tilde{P}_{OL}} (r + 1) \quad (3.4)$$

- Strategies of the Islamic banks with respect to the achievements of profits

The Islamic bank will attach more importance to the credibility of the profits anticipations. Optimistic profits anticipations will be in the favor of the entrepreneur and the bank will have a less Sharing rate. Statistically speaking, the Islamic bank must decrease the differences in variability between the profit really carried out and that anticipated one, and thus obtain a standard deviation  $\sigma(\tilde{P}_{OL}) = 0$ .

The more the anticipations of the Islamic banks are optimistic the more it will have a negative impact on their levels of profitability. Consequently, we can say that the strategy of the Islamic bank is based on the decline of the estimated value of the profits, and contrary to this logic, the entrepreneur will formulate his strategy.

We distinguish three possible scenarios depending on the level of how being close the estimated values to the values really realized of profit.

- First scenario: the estimated value of profit matches with the value really realized of the profit:

This is the case of certainty  $\tilde{P}_{OL} = \pi$  In this case:

$$PLS_R = \frac{D}{\pi} (r + 1)$$

The entrepreneur is indifferent to the funding source (Islamic or conventional).

- Second scenario: the estimated value of the profit is greater than the one actually realized by the entrepreneur:

In this case:  $\tilde{P}_{OL} > \pi$

The ratio:  $PLS_R = \frac{D}{\tilde{P}_{OL}} (r + 1)$  depend on the level of expected profit, but if the Islamic bank knew that the profit level will be limited to  $\pi < \tilde{P}_{OL}$  it should have been fixed a Profits or Losses Sharing rate:

$$PLS_R = \frac{D}{\pi} (r + 1) > PLS_R = \frac{D}{\tilde{P}_{OL}} (r + 1) \quad (3.5)$$

In this case, the participatory financing is more convenient to the contractor. But the bank may not be able to seize the opportunity to realize additional profits if it overestimates the level of profits to be performed by the contractor.

- Third scenario: the estimated value of profit is less than the one actually realized by the entrepreneur:

In this case:  $\tilde{P}_{OL} < \pi$



The ratio  $PLS_R = \frac{D}{\tilde{P}_{OL}}(r+1)$  is set on the basis of

predetermined level of expected profit  $P_{OL}$  but if the Islamic bank knew that the profit levels will exceed  $\tilde{P}_{OL}$

;  $\pi > \tilde{P}_{OL}$

$$PLS_R = \frac{D}{\pi}(r+1) < PLS_R = \frac{D}{\tilde{P}_{OL}}(r+1)$$

In this case, the contractor will see the amount of its income decrease, which may incentive him/her to use the financing interest rate based offered by the conventional banks from the moment he/she realizes that the participatory financing will reduce its profit level.

We outline from the three scenarios described above, in a framework of dual banking system it is not in the interest of the Islamic bank to set conditions that are flexible and competitive with those set by conventional banks.

❖ Negotiating position of the contractor and Islamic banking

We have understood from the foregoing that it is in the interest of the entrepreneur to foster the most optimistic expectations, even knowing that the profit he will realize will be less than the level initially reported to the Islamic bank when the funds were requested.

Once the level of profit made is less than the expected, the contractor will transfer a portion of profits to the Islamic bank, which will surely be less than the amount of financial expenses (sum of interest) and principal of the loan to be paid to the conventional bank.

Therefore, the Islamic bank must be vigilant and rigorous in dealing with the expectations of the contractor because the objective of the latter is to minimize as possible the part of the Islamic bank in the profit by fixing a minimum level of the profit or losses sharing ratio of participation.

The Islamic banks have to consider, in studying the business plans of the contractors, the least optimistic expectations, based on the position of the contractor.

In other words the Islamic bank should base its strategy in fixing the profit or losses sharing ratio on the assumption that profit really achieved will be much lower than anticipated one by the contractor because if this latter was sure of high levels of profits to be realized he would have chosen the conventional financing and pay less than the part of the profits to be transferred to the Islamic bank.

We cannot consider that the participatory financing is the refuge of the least efficient contractors because in the case of project failure and the realization of losses, the contractor will bear a portion of these

losses that is reflected in its provided effort and time spent which won't be remunerated.

f) Multi periodic Model with " $\tilde{P}_{OL}$ " constant to infinity:

$PLS_R$ : Profits or Losses Sharing ratio supposed to be constant

$\alpha$ : Fraction of principal of the debt to be paid back according to the constant amortization;  $\alpha$  is constant thus the amortization is constant and  $\alpha = 1/n$

$r$ : Constant interest rate

$D_i$  Remaining due capital to the  $i^{\text{th}}$  period with  $i = 1, 2, \dots, n$

$$D_1 = D$$

$$D_2 = D - \frac{1}{n}D; D_3 = D - \frac{2}{n}D; D_4 = D - \frac{3}{n}D \text{ et}$$

$$D_n = D - \frac{(n-1)}{n}D$$

Period 1:

$$(1 - PLS_R) \tilde{P}_1 \geq \tilde{P}_1 - rD_1 - \frac{1}{n}D \quad (4.1)$$

Period 2:

$$(1 - PLS_R) \tilde{P}_2 \geq \tilde{P}_2 - rD_2 - \frac{1}{n}D \quad (4.2)$$

Period 3:

$$(1 - PLS_R) \tilde{P}_3 \geq \tilde{P}_3 - rD_3 - \frac{1}{n}D \quad (4.3)$$

And

Period n:

$$(1 - PLS_R) \tilde{P}_n \geq \tilde{P}_n - rD_n - \frac{1}{n}D$$

By summing the terms on both sides of the inequality we obtain:

$$(1 - PLS_R) \sum_{i=1}^n \tilde{P}_i \geq \sum_{i=1}^n \tilde{P}_i - r \sum_{i=1}^n D_i - \sum_{i=1}^n \frac{1}{n} D_i \quad (4.4)$$

The level of interest rates affects the yield of participatory financing contracts as well as participatory remunerated accounts [(Chong & Liu (2009); Rachmawati & Syamsulhakim (2004); Kaleem & Mansoor (2003); Sudin & Norafifah (2000); Haron & Schanmugan (1995)]<sup>12</sup>.

<sup>12</sup> Sudin, H., Norafifah, A (2000), "The effet of conventional interest rates and rate of profit on funds deposited with islamic banking system in Malaysia", International Journal for Islamic Financial Services, 1 (4).

Haron, S., Shanmugam, B. (1995), The Effects of Rates of Profit on Islamic Bank's Deposits: A Note, Journal of Islamic Banking and Finance, 12 (2), pp. 18-28.

Kaleem, A., Mansor, Md Isa (2003), Causality relationship between Islamic and conventional banking instruments in Malaysia, International Journal of Islamic Financial Services, 4(4).

Several studies show a significant correlation between changes in the levels of interest rate and the variability of the Profits or Losses Sharing ratio of Islamic banks. Islamic banks do not rely exclusively on the model of *mudaraba*, although it is the realization of the logic of participative financing on which is based the Islamic bank.

But in practice, the financing *mudaraba* contract represents a small part in all activities of the Islamic banks this is due mainly to the high degree of risk related to the problems of asymmetric information and the higher cost of managing engaged in the participatory financing mode when compared to the conventional banks.

## V. ISLAMIC BANKS AND THE MUDARABA FINANCE CONTRACTS

Islamic banking practice reveals the non-popularity of financing contracts such as *Mudaraba* and the methods of non-equity financing (*Murabaha*, *Ijara*, *Salam*, *Ist'isnaa*) are more used at the expense of participatory methods. This is due mainly to problems of moral hazard that affect this type of contract. Therefore, the success of participatory mode of financing will depend largely on solving the asymmetric information problems associated to it, which requires incentives consideration in the contractual terms.

There is a big difference between a financing contract offered by an Islamic bank (a participatory contract) and a conventional debt financing. Islamic banks beyond pure financial intermediation in the traditional sense, take direct stakes in investment projects through the sharing ratio of profits or losses. The question is how the Islamic banks manage and overcome incentive problems?

### a) *Mudaraba contract and Principal Agent Relationship*

The theory of agency and incentives has been largely developed during the seventies, with the work of Ross (1973) and Jensen & Meckling (1976). This body of literature is interested in agency relationship that is developed between a principal and the agent. This theory encompasses any contractual relationship, even implicitly between two parties and in which the situation of one party depends of the other action. By its nature, *Mudaraba* contract calls for the separation between ownership and decision. This type of contract regulates situations where the actions and the efforts made by the contractor affect the welfare of the bank and in a second round in the welfare of the Islamic bank client (investment account holder). Therefore, the context of Principal

Agent is appropriate to analyze the peculiarities of this type of contract.

The initiative party is the one who seeks to reduce this asymmetry by considering some measures in our case it's the Islamic bank. Indeed, in the *Mudaraba* contract, the Islamic bank acts as the principal as long as it provides funds to the contract or who acts as an agent possessing no part in the project, and he provides only the effort and know-how necessary for the success of the project.

The income from the investment project will be shared between the two parties according to  $PLS_R$ : Profits or Losses Sharing ratio. It is not always possible for the Islamic bank to monitor and verify perfectly (without incurring additional costs) the actions of the contractor or once the contract is being signed. This enhances the conflict of interest between both parties.

Specifically, under the *Mudaraba* contract a dishonest contractor can be induced through bad behavior to distort reality and declare a lower level of profit in order to obtain higher gains.

Also what can aggravate the problem of asymmetric information in participatory *Mudaraba* contracts type we can mention:

- The non-requirement of collateral is likely to magnify the problems of agencies.
- The inability of the Islamic banks to control or require the Contractor to comply with certain practices or to take certain actions on post-contract encourages him to not provide the optimal level of effort.
- The obligation of Islamic banks to support certain financial charges inherent in the failure of projects funded in participatory mode. Indeed, those participating contracts (*Mudaraba*, *Musharaka*) are relatively risky with the practical difficulty faced by the bank to monitor and supervise a significant number of projects funded under the participatory mode. For example, under the *Mudaraba* contract, the agent (client contractor) may increase charges, beyond the needed level to reach the profit maximization, from the moment he has to share profits or losses with the bank. In case of losses, it is the Islamic bank that shall bear all costs which may enhance the agency problem. For the client (contractor), the participative financing as *Mudaraba* is less risky than conventional bank financing (bank loan) which requires, in case of losses paying back a fixed amount. The fact that most of the Islamic banks operate in a conventional financial system and as a result of competition, the agency problems may lead to the concentration of bad risks on the side of Islamic banks. To avoid such situations, the Islamic banks are invited to perform rigorous evaluations and to gather additional volume of information which leads inevitably to increase the

Erna Rachmawati, Ekki Syamsulhakim, [2004], "Factors Affecting *Mudaraba* Deposits in Indonesia", Working Papers in Economics and Development Studies (WoPEDS), 2004-04, Department of Economics, Padjadjaran University, revised Aug 2004.

Chong B. S., Liu M.H., (2009), *Islamic Banking: interest free or interest based*, Pacific Basin Finance Journal, N°17, pp 125-144.

costs (monitoring costs) of intermediation higher than those of conventional banks. Thus, the viability and profitability of each project should be assessed separately for negotiating the profits or losses sharing ratio.

By assuming that the parties have symmetric information at the time of contracting, we abstract from the problem of adverse selection (which does not describe the reality). Adverse selection inherent to the asymmetric of information is important to integrate in the analyze of the PLS contractual relationship. However, research related to this area has been recognized by the 1996 Prize to James Mirrlees and William Vickrey for contributions to the economic theory of incentives under asymmetric information, by the 2001 Prize to George Akerl of, Michael Spence, and Joseph Stiglitz for analyses of markets with asymmetric information, and by the 2007 Prize to Leonid Hurwicz, Eric Maskin, and Roger Myerson for the foundations of mechanism-design theory. Both moral hazard and adverse selection were important building blocks for the 2014 Prize to Jean Tirole for the analysis of market power and regulation.

#### b) *The Adverse selection*

In case where the information is hidden, the type or characteristic of the entrepreneur is not perfectly recognizable by the creditor, namely the Islamic bank, then it must implement prevention technique against negative effects adverse selection. In fact, the Islamic bank (the principal) may offer a menu of contracts that separate the different types of contractors (agents). The purpose is to form a menu of different contracts, where each of the contractors (agents) voluntarily chooses the most suitable contract designated by the Islamic bank. Thus, and according to the chosen contract, the Islamic bank (the principal) will be able to identify the characteristics of the agent. By doing this the Islamic bank sets up a model called screening. Islamic banks have variable profits or losses sharing ratios for investors to distinguish good (low risk) from bad investors (high risk). Thus, the bank can offer high profits or losses sharing ratio to investors with low risk and a good level of income.

#### c) *Moral Hazard*

In the framework where the action is hidden, the Islamic bank seeks to minimize the consequences of moral hazard. In fact, the Islamic bank (the principal) designs contracts that encourage the contractor (agent) to provide an optimal level of effort and perform acts more advantageous with respect to his incentives. The existence of moral hazard problems in participatory methods of financing is one of the most important factors that explain the non-popularity of these modes. In fact, the problem of moral hazard characterizes two situations, firstly if two agents agree on a contract but after that one of them began an action that is not

observed by the other agent, we are dealing with a problem of hidden action moral hazard.

In this case, this agent can take advantage of his position and make actions that increase his welfare at the expense of the welfare of the other. On the other hand, if two agents agree on a contract but, thereafter, there is a state of nature observed by one of the agents but not the other, this is the problem of hazard morale with hidden knowledge. The agent cannot in fact reveal the true realization of the state of nature and take advantage of the situation at the expense of another. So the behavior and attitude of the borrower after the beginning of the contract can totally unbalance the terms of the contract in the presence of moral hazard. How the Islamic banks have to proceed in order to reduce and even eliminate the negative consequences arising from information problems?

The Mudaraba contract attracts a large number of entrepreneurs with limited resources given the non-requirement of collateral. Several projects with low returns and high risks will be offered to Islamic banking in order to be financed. Suppose an entrepreneur who has two projects with the same level of expected return but with different degrees of risk. The project "A" has an acceptable level of risk while the project "B" is having the same future rate of return but characterized by a higher degree of risk. In a dual banking system where Islamic banks coexist and conventional banks and if it is not obvious to the Islamic bank to accurately characterize the two propositions "A" and "B" in terms of risk and return relationship, the entrepreneur chooses to finance the project "A" by debt contract with a conventional bank and thus realizes a high gain share. While for the project "B", he will prefer to be financed with an Islamic bank via a Mudaraba contract so that in case of bankruptcy the Islamic bank bears all the losses. Therefore, the non-requirement of collateral in connection with financing Mudaraba favors the concentration of high-risk entrepreneurs. In this context what mechanism the Islamic banking will use to overcome the problem of adverse selection?

In other words, how the Islamic banking firm comes to discriminate between high-risk projects and projects with lower risk?

In the absence of guarantee the Islamic bank can proceed to ration the supply of funds (By analogy to the concept of credit rationing Stiglitz, J. et A. Weiss [1981]: Credit Rationing in Markets with Imperfect Information American Economic Review 71, 393-410. Jaffee, D. and T. Russell (1976), 'Imperfect Information and Credit Rationing'. Quarterly Journal of Economics, vol. 90) to solve the problem of adverse selection.

In the process of rationing, the Islamic bank must employ a variety of technical discrimination (screening) to identify credibility and experiences of entrepreneurs.

The first step taken by the Islamic bank, which aims to reduce adverse selection problems is to select contractors by classifying them into two categories:

- Those who have had successful experiences and relationships with banks.
- And the new ones.

Comparing the two groups, one can be considered the least risky because information about their abilities, their credibility and reputations can be obtained at an acceptable level of costs from their history. Funding projects proposed by new entrepreneurs can supply the adverse selection problems as long as the information about them are scarce and more expensive or unavailable. Having already experienced entrepreneurs distinguished from those who are not and have estimated their credibility, the Islamic bank will prioritize projects according to their expected levels of profitability and their degrees of risk. In order that the Islamic banks protect their selves against dishonest contractors, they shall make the over estimation of the degree of risk associated with each project financing and as compensation for this, they will choose the projects with the rate of return higher. However, the high rate of return required by the Islamic bank means that projects with future rates of return relatively low associated with low levels of risk will be deemed non-profitable and therefore will not be accepted by the Islamic bank.

Whenever the bank accepts a project to high rates of return another risky project will be attracted and thus a safer project removed.

To minimize the possibility of financing high risky projects and to achieve cost savings associated with information identifying the characteristics of each project, the bank will provide financing initially for projects that are similar to those already funded and successful.

In this sense the scope of intervention of the Islamic bank will be limited and it will find it self focusing on a single business.

Therefore the bank cannot necessarily reach the optimum allocation of funds and fails to promote new entrepreneurs and thus may lose opportunities for gains.

Even if the Islamic bank can identify the risk return relationship of projects and it wants to finance it, the participatory nature of the Mudaraba contract may give rise to problems of moral hazard such as incentives to effort (level of effort required) and agency problems.

#### d) Illustrative model of the level of effort and incentive problems in the Mudaraba contract

As part of the allocation of funds, the Mudaraba contract is closely related to agency problems. In fact the Islamic bank cannot force the contractor to perform actions that it considers appropriate (the optimum level of effort required).

Under this contract, the remuneration of the entrepreneur takes the form of a predetermined percentage of total income of the project.

This remuneration scheme offers no incentive for the contractor to provide the level of effort required to maximize profit.

Thus, the effort provided by the contractor is equal to his share of marginal revenue instead of the total marginal revenue of effort.

By constructing a simple model, the incentive problems associated with Mudaraba contract will be discussed in the following:

Under the financing participatory "Mudaraba", the Contractor receives

$(1 - PLS_R)$  net profit  $\tilde{P}_{OL}$  whereas the bank receives  $PLS_R$  the net profit  $\tilde{P}_{OL}$ .

The entrepreneur can choose the level of effort (e) that he'll provide and the Islamic bank cannot control this level of effort. The Islamic bank observes only the outcome of this effort which is reflected in net profit.

- The net profit depends exclusively on the level of effort provided by the contractor  $PLS_R = f(e)$

$PLS_R(e)$  is an increasing function of the effort with decreasing marginal rate. The more the effort is provided by the contractor, the higher the level of profit will increase. The function  $PLS_R(e)$  is continuously differentiable and strictly increasing concave.

- The entrepreneur is risk neutral, if not if he was risk-averse he will choose a fixed wage (a workstation). This assumption implies that the utility function of the entrepreneur depends on what he will receive as income and what it will provide such effort.
- The production analysis is the certain universe thus there is a positive relationship between effort and out put.
- Our analysis focuses on the level of effort and not on the risk sharing.  $\pi'(e) \geq 0$   $\pi''(e) \leq 0$   $\pi(e=0) = 0$  (5.1)
- From the time that the contractor signs the contract and agrees with the bank on the rate of sharing, his concerns will be to maximize its utility function by keeping the level of effort provided (e):

$$\underset{(e)}{Max} (1 - PLS_R) \pi(e) - a e \quad (5.2)$$

With  $(1 - PLS_R) \pi(e)$  the part of the contractor in the net gain  $\pi(e)$

$a$  = the marginal disutility of effort is assumed to be constant.

The utility maximization of the entrepreneur is provided by the first order conditions:

$$(1 - PLS_R) \pi'(e) - a = 0 \Leftrightarrow \pi'(e) = \frac{a}{(1 - PLS_R)} \quad (5.3)$$

The Islamic bank is also interested in its share of income; its problem is the following:

$$\underset{(e)}{\text{Max}} (PLS_R) \pi(e) \quad (4)$$

This gives the first order condition:

$$(PLS_R) \pi'(e) = 0 \Leftrightarrow \pi'(e) = 0 \quad (5.4)$$

However, the socially optimal level is maximized when the rate of marginal revenue equalizes the marginal cost (disutility costs):

$$\underset{(e)}{\text{Max}} \pi(e) - a e \quad (5.5)$$

this gives

$$\pi'(e) - a = 0 \Leftrightarrow \pi'(e) = a \quad (5.6)$$

This implies that the entrepreneur maximizes his utility by equalizing the marginal cost of disutility to its marginal revenue and marginal revenue not social. This means that the contract or will not provide the optimum level of effort to achieve the socially optimal level of income. This can be illustrated in the following figure:

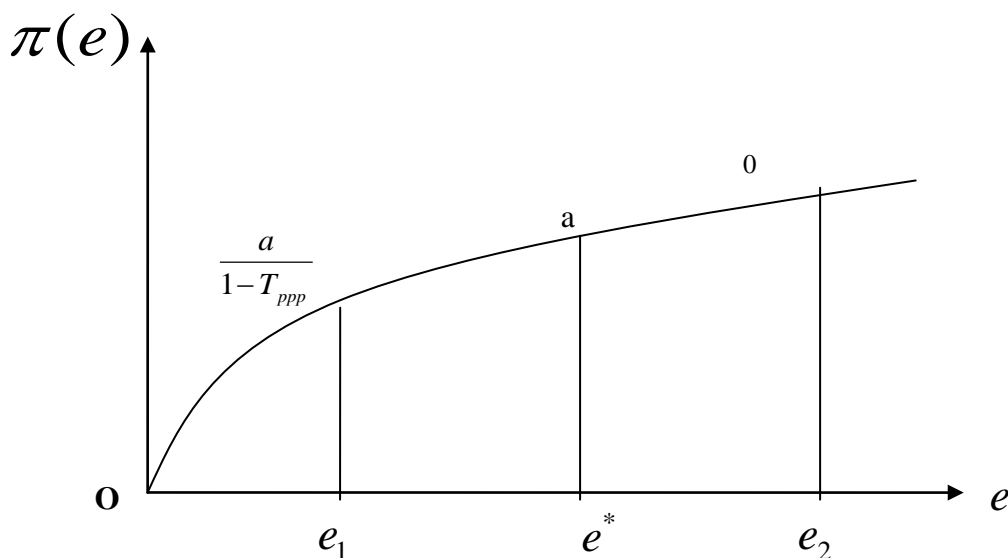


Figure 2: Level of Effort, incentive and profit

Agency problems and information asymmetry are not supposed to be occur in a context of Islamic finance which is based on moral and religious beliefs of different stakeholders<sup>13</sup>, each of them treats others with sincerity and loyalty, love for them what he/she likes for her/his self. The realization of these moral and religious convictions will minimize transaction costs. But the problem is that the ethical and religious values are not always present, even their applications and understandings are not homogeneous.

e) *Musharaka (equity: participation in a joint venture or joint ownership)*

Musharaka (active partnership) is a contract between two parties (or more) to finance a project whose losses or profits are distributed in proportion to respective capital contributions. This contract is based on the morality of the client, the relationship of trust and profitability of the project or activity funded. The key to sharing profits or losses is determined at the time of signing the contract. Thus, the  $PLS_R$  can beset either on the basis of negotiation and mutual consent (thesis Hanafi and Hanbali School<sup>14</sup>), or based on the setting of

<sup>13</sup> Stakeholders should not necessarily be Muslims. The fact that non-Muslim do not share the same faith as the Muslim, this does not mean that a Muslim must be despised with them, on the contrary, it must be fair to wards them both by the word and by the Act. Equity is the basis of various reports with non-Muslims.

<sup>14</sup> There are four main Islamic schools of law (madhabs) that have authority to determine what is or what is not Sharia compliant. The Hanafi and



each contracting party (Maliki school thesis and Shafi'ie<sup>15</sup>). In a Musharaka montage, the Islamic bank and the contractor both contribute in different degrees in the capital needed to start a business. The capital contribution maybe made either by cash contribution and / or in kind. This contract gives each partner the right to administer the affairs of society, and the right to participate in the profits or losses in proportion to their contributions. The Contracting Parties shall jointly assume the risks. Musharaka can be performed by the Islamic banks in the sense client/depositors -Islamic bank or in the sense Islamic bank-customer (contractor). First, as part of customer relationship depositor-Islamic bank which is governed by a contract musharaka, the customer participates in the out come of the Islamic bank and receives a portion based on the amount it has advanced. Moreover, the relationship between Islamic bank and customer Contractor, and is governed by a contract type musharaka, focuses on financial investment projects considered cost-effective and compatible with the principles of Islamic finance.

The funds require dare subject to a contribution of the two contracting parties will be integral incase of loss and share profits if the outcome of this investment is a gain.

#### f) *Diminishing participation in the capital of Firm*

According to AAOIFI<sup>16</sup> standards, Diminishing Musharakah has been defined as "the partnership in which one of the partners undertakes that it will purchase the shares of the other party/parties in installments/is periods to ensure that the project that is the subject matter of the partnership is transferred to the party that demands the financing"

In a diminishing Musharakah, the bank's interest share decreases by the payments received from the client, and the bank's share of the profit is calculated on the basis of the outstanding interest share. The client enters into an agreement with the bank for joint ownership of property in a known investment share of each partner. Afterward, the client pays the rent to the bank for using its share. The bank can only rent this property according to the level of its investment share. The bank cannot obligate the client to purchase its share. The bank's shares will be divided into a certain number of units, and the client will purchase these units from time to time at an agreed period. The customer purchases these units and the client increases his investment shares and reduces the amount of rent

gradually until the client becomes the sole owner of the property.

- 1) Modeling of diminishing participation and acquisition of capital by the entrepreneur at the end of the period

Let  $C$  be the capital needed to undertake the project

$C_E = B$ : Contribution of the entrepreneur to Capital

$C_{BI} = K = N * B$  Contribution of the Islamic bank to Capital.

With  $N$ : Coefficient of proportionality of  $K$  with respect to  $B$ ,  $N > 1$ .

$$C = C_E + C_{BI} \quad C = (N + 1) B \quad (6.1)$$

We consider the profit reinvestment hypothesis with two cases:

- 2) The project reports a steady income periodically annual.
- 3) The project reports a variable income from one year to another.

*First case*<sup>17</sup> Let  $P_1 = P_2 = P_3 = \dots = P_n = P$ . The profit of the period: year.

And let us assume that the portion of the profit going to the entrepreneur is proportional to his share in the capital.

*First year:* The part of the capital held by the entrepreneur is :  $C_{E1} = B$  (6.2)

Part of the profit available to the contractor:  $R_1 = \frac{P}{N+1}$

*Second year:* the part of the capital held by the entrepreneur is:

$$C_{E2} = B + \frac{P}{N+1} = B \left( 1 + \frac{P}{(N+1)B} \right) \quad (6.3)$$

Part of the profit available to the contractor:  $R_2 = \frac{P}{N+1} \left( 1 + \frac{P}{(N+1)B} \right)$

*Third year:* The part of the capital held by the entrepreneur is:

$$\begin{aligned} C_{E3} &= B \left( 1 + \frac{P}{(N+1)B} \right) + \frac{P}{N+1} \left( 1 + \frac{P}{(N+1)B} \right) \\ &= \left( B + \frac{P}{N+1} \right) \left( 1 + \frac{P}{(N+1)B} \right) \end{aligned}$$

Hanbali school sarer a ther conservative they prevailin the Middle East countries mainlygolf.

<sup>15</sup> The school Shafi'ie prevails in Southeast Asian countries and the Maliki school prevails in North Africa. These two schools are quite liberal.

<sup>16</sup> Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) :<http://aaoifi.com/>

<sup>17</sup> Boualem Bendjilali & Tariquallah Khan Economics Of Diminishing Musharakah [Research Paper No: 31] First edition 1995 1416H *Islamic Research and Training Institute*, Islamic Development Bank. Jeddah - Saudi Arabia.

$$= B \left(1 + \frac{P}{(N+1)B}\right)^2 \quad (6.4)$$

Part of the profit available to the contractor:  $R_3 = \frac{P}{N+1} \left(1 + \frac{P}{(N+1)B}\right)^2$

Generally speaking we can write: the part of the profit available to the contractor at the period j is written in the following

$$\text{form: } R_j = \frac{P}{N+1} \left[1 + \frac{P}{(N+1)B}\right]^{j-1} \quad (6.5)$$

We assume that the entrepreneur's share of the total profit is fully reinvested in the project in the form of acquisition of part of the capital that materializes in the shares of its partner namely the bank.

We note  $C_{Ej-1}$  the contribution of the entrepreneur to the capital at period d-1 and  $R_{j-1}$  the contractor's share of the profit that will be reinvested in period j.

The total contribution of the entrepreneur to the capital C in the period j :

$$C_{Ej} = C_{Ej-1} + R_{j-1}$$

$$C_{Ej-1} = C_{Ej-2} + R_{j-2}$$

$$\text{Making : } C_{En} = C_{E1} + \sum_{j=1}^{n-1} R_j \quad (6.6)$$

with  $C_{E1} = B$

As the entrepreneur's share of total profit increases and the bank's share decreases each year, this indicates a change in the ownership structure.

When the project is wholly owned by the contractor at the time of the project, its share of the profit will equal the entire profit generated by the project. In other words we will have to have the following equality:

$$\begin{aligned} \frac{R_j}{P} &= \frac{\frac{P}{N+1} \left[1 + \frac{P}{(N+1)B}\right]^{j-1}}{P} = 1 \\ \Leftrightarrow \left[1 + \frac{P}{(N+1)B}\right]^{j-1} &= N+1 \\ \Leftrightarrow (j-1) \log \left[1 + \frac{P}{(N+1)B}\right] &= \log(N+1) \\ (j-1) &= \frac{\log(N+1)}{\log \left[1 + \frac{P}{(N+1)B}\right]} \end{aligned} \quad (6.7)$$

Equation (3) provides information on the time required for the contractor to be the owner of the entire project. In other words, when P increases the time

required for the project to belong entirely to the contractor decreases. Deriving (3) on P:

$$\frac{\partial(j-1)}{\partial P_1} = - \frac{\log(N+1)}{\left(\log \left[1 + \frac{P}{(N+1)B}\right]\right)^2} * \frac{1}{P + B(N+1)} \quad (6.8)$$

The negative sign of equation (6.8) illustrates the inverse relationship between period j and profit level P.

*Second case*<sup>18</sup>: The project yields a variable income from one year to another.

Is  $P_1 \neq P_2 \neq P_3 \neq \dots P_j \dots \neq P_n$  the profit of the year period.

And let us assume that the part of the profit going to the entrepreneur is proportional to his share in the capital.

*First year*: The part of the capital held by the entrepreneur is:  $C_{E1} = B$

<sup>18</sup> Extension of the first case

Part of the profit available to the contractor:

$$R_1 = \frac{P_1}{N+1} \quad (6.9)$$

Second year: The part of the capital held by the entrepreneur

$$\text{is : } C_{E2} = B + \frac{P_1}{N+1} = B(1 + \frac{P_1}{(N+1)B})$$

Part of the profit available to the

$$\text{contractor: } R_2 = \frac{P_2}{N+1} (1 + \frac{P_1}{(N+1)B}) \quad (6.10)$$

Third year: The part of the capital held by the entrepreneur is:

$$\begin{aligned} C_{E3} &= B(1 + \frac{P_1}{(N+1)B}) + \frac{P_2}{N+1} (1 + \frac{P_1}{(N+1)B}) \\ &= B \left[ (1 + \frac{P_1}{(N+1)B}) + \frac{P_2}{B(N+1)} (1 + \frac{P_1}{(N+1)B}) \right] \\ &= B \left[ (1 + \frac{P_1}{(N+1)B}) (1 + \frac{P_2}{B(N+1)}) \right] \end{aligned} \quad (6.11)$$

$$\text{Part of the profit available to the contractor: } R_3 = \frac{P_3}{N+1} \left[ (1 + \frac{P_1}{(N+1)B}) (1 + \frac{P_2}{B(N+1)}) \right]$$

Fourth year: The part of the capital held by the entrepreneur is :

$$\begin{aligned} C_{E4} &= B \left[ (1 + \frac{P_1}{(N+1)B}) (1 + \frac{P_2}{B(N+1)}) \right] + \frac{P_3}{N+1} \left[ (1 + \frac{P_1}{(N+1)B}) (1 + \frac{P_2}{B(N+1)}) \right] \\ R_4 &= \frac{P_4}{N+1} \left[ (1 + \frac{P_1}{(N+1)B}) (1 + \frac{P_2}{B(N+1)}) (1 + \frac{P_3}{(N+1)B}) \right] \end{aligned} \quad (6.12)$$

Generally speaking we can write : the part of the profit available to the contractor (entrepreneur) at the period j is written in the following

$$\text{form: } R_j = \frac{P_j}{N+1} \prod_{i=1}^{j-1} (1 + \frac{P_i}{(N+1)B}) \quad (6.13)$$

We assume that the entrepreneur's share of the total profit is fully reinvested in acquiring new parts of the capital by holding additional the shares from the Islamic bank.

We note  $C_{Ej-1}$  the contribution of the entrepreneur to the capital at period j-1 and  $R_{j-1}$  the contractor's share of the profit that will be reinvested in period j.

The total contribution of the entrepreneur to the capital C in the period j :

$$C_{Ej} = C_{Ej-1} + R_{j-1}$$

$$C_{Ej-1} = C_{Ej-2} + R_{j-2}$$

$$\text{Making: } C_{En} = C_{E1} + \sum_{j=1}^{n-1} R_j \quad (2) \quad \text{with } C_{E1} = B$$

When the project is wholly owned by the contractor at the time of the project, its share of the

profit will equal the entire profit generated by the project. In other words we will have the following equality:

$$\begin{aligned} \frac{R_j}{P_j} &= \frac{\frac{P_j}{N+1} \prod_{i=1}^{j-1} (1 + \frac{P_i}{(N+1)B})}{P_j} = 1 \\ &\Leftrightarrow \prod_{i=1}^{j-1} (1 + \frac{P_i}{(N+1)B}) = N+1 \end{aligned} \quad (6.14)$$

From the foregoing, the level of profit generated by the investment project settles on the entrepreneur's contribution to the capital. This encourages him to increase his level of effort and therefore his level of productivity and profit in order to have the full capital under the diminishing musharakah contract and which is an incentive to solve the agency problems encountered during participatory contracts musharakah by involving the entrepreneur in the project via the share of capital.

## VI. BARGAINING POWER AND RENEGOTIATION EFFECTS IN CONTRACTUAL DESIGN

In the case of pay for performance contracts (venture capital financing and PLS in the Islamic

financing context), the bargaining power is a crucial variable in the process of designing the contracts. The bargaining power can essentially be useful when determining the PLS ratio in the Mudaraba and Musharaka contracts and the period covering these agreements. The payoff related to the entrepreneur's actions and effort (complete vs incomplete and symmetric vs asymmetric)

With the cooperation coalition game (theoric method developed by Nash 1953) between the fund provider with the entrepreneur, they can discuss their situation and agree on a joint plan when the outcome of the financed project is uncertain. It's also relevant to think about contracting and bargaining in a situation of informational asymmetry (adverse selection, Hazard Moral) and the conflict of interest : all these problems have been developed in the contractual approach of the firm: Coase 1973; Jenson and Meckling 1976; Fama and Jenson 1983. All these analyses still valid for the Islamic financial context.

#### *Bargaining Tools:*

Leverage: parts in the Capital: Musharaka or Mudaraba  
Previous successful experiences  
Managerial Power and teams  
Rival fund providers for the brilliant project ideas  
Corporate control and property rights  
Renegotiation in the loss cases  
Size of the firm and its capital structure  
Competition in banking and Venture Capital markets  
Transaction costs  
Symmetrically or not parties are informed

These several tools can have effect on the contract type, placement and investment modes, the right to set contracts conditions taking into account the agency cost consideration and the strategic aspects.

Smaller firms (growth cycle: when the firm is new) hardly have any access to funds from traditional financial institutions as they have few assets and being riskier would prefer the PLS mode of financing to spread their risk. The Islamic banks can use the PLS ratio to distinguish good (bad) investment and high (low) risk.

The question to be asked is: the level of information (expected return yield estimated by the entrepreneur and how the Islamic bank assesses this) gathered by the Islamic banks is enough and relevant?

The Islamic bank can mention the fact that it has the right to undertake auditing process in case its share is less than expected, and in order to incentive the agent to perform effort needed to succeed the project and to behave in a manner to increase their mutual welfare. When the auditing process is implanted its costs are supported by the agent to dissuade the agent to behave dishonestly.

The renegotiation in the PLS contracts can help to influence the way agent acts and behaves. The principal can induce the agent take set of desirable

actions and thus improve the common welfare and risk sharing.

In the property rights approach as developed by Grossman and Hart 1986; Hart and Moore 1990; Hart 1995, the ownership structure leads to the residual control rights. In the PLS contracts allocation of the right to take decision in case not mentioned prior in the contract to the principal (Islamic Bank) or the agent (entrepreneur) can play the role of incentives Hart et al 1997; Laffont and Martimort 2002.

## VII. CONCLUSION

Mudaraba contract financing represents a minimal part of the overall activities of Islamic banks. This is mainly due to the high degree of risk that emanates from the problems of information asymmetry and which generates a higher management cost than that supported by the conventional banks. The problems of agency and asymmetric information are not meant to arise in a context of Islamic financing that is based on the moral and religious beliefs of the various stakeholders<sup>19</sup>, each of whom treat the other parties sincerely and loyalty, loves for them what he loves for himself. The realization of these moral and religious beliefs will minimize transaction costs. But the problem is that ethical and religious values are not always present and even their applications and their understandings are not homogeneous.

The conditions under which Islamic banks can attract entrepreneurs who are not driven solely by religious motives and encourage them to opt for Islamic financing are especially the levels of profit-sharing or loss ratios to be set by the Islamic bank to be competitive and at least earn what a conventional bank earns depends on the level of interest rates practiced by the latter in a dual banking system. The entrepreneur will not choose the PLS financing contract unless the profit generated, after deduction of the Islamic bank's share, will be higher than the profit generated if it will have to deal with a conventional bank and thus repay the principal of the bank borrowed increased by its financial charges (interest).

As part of the allocation of funds, the contract of Mudaraba is intimately linked to the problems of agency. Indeed the Islamic bank can not force the entrepreneur to perform actions that it considers appropriate (the optimum level of effort to provide). According to this contract, the contractor's remuneration takes the form of a predetermined percentage of the total income of the project. This payment scheme does not provide incentives for the contractor to provide the

<sup>19</sup> Stakeholders must not be Muslims. The fact that the non-Muslim does not share the same faith as the Muslim does not mean that the Muslim must be despicable toward him, on the contrary, he must behave towards him fairly both by word and by the act. Equity is the basis of various relationships with non-Muslims.

level of effort needed to maximize profit. Thus, the effort provided by the entrepreneur equals his share of the marginal income instead of the total marginal income of the effort.

Islamic banks have the variable profit or loss sharing rate to distinguish good low-risk entrepreneurs from bad high-risk ones. Thus the bank can offer entrepreneurs with low risk and good income a high sharing ratio. Finally, the level of profit generated by the investment project funded by musharakah mode of financing can attract the entrepreneur to own the whole capital. This encourages him to increase his level of effort and therefore his level of productivity and profit in order to have the full capital under the diminishing musharakah contract and which can be considered as an incentive to solve the agency problems encountered during participatory contracts mucharaka by involving the entrepreneur in the project via the share of capital.

The optimal financial instrument for Islamic banks operating in environments characterized by agency problems and incomplete contracts is the Profits or losses contracts. The optimality and use of equity contracts will decrease as the level of agency problems increases in dual banking system, and debt contracts will become the dominant form of finance. Although Islamic banks should be based on the profit-and-loss sharing principle, given the economic environments in which they operate, a continuous quest for optimal PLS contract must be done to take advantage of this powerful tool in a dual banking system.

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# GLOBAL JOURNALS GUIDELINES HANDBOOK 2020

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# MEMBERSHIPS

## FELLOWS/ASSOCIATES OF MANAGEMENT AND BUSINESS RESEARCH COUNCIL FMBRC/AMBRC MEMBERSHIPS

### INTRODUCTION



FMBRC/AMBRC is the most prestigious membership of Global Journals accredited by Open Association of Research Society, U.S.A (OARS). The credentials of Fellow and Associate designations signify that the researcher has gained the knowledge of the fundamental and high-level concepts, and is a subject matter expert, proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice. The credentials are designated only to the researchers, scientists, and professionals that have been selected by a rigorous process by our Editorial Board and Management Board.

Associates of FMBRC/AMBRC are scientists and researchers from around the world are working on projects/researches that have huge potentials. Members support Global Journals' mission to advance technology for humanity and the profession.

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FELLOW OF MANAGEMENT AND BUSINESS RESEARCH COUNCIL is the most prestigious membership of Global Journals. It is an award and membership granted to individuals that the Open Association of Research Society judges to have made a 'substantial' contribution to the improvement of computer science, technology, and electronics engineering.

The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Fellows are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Fellow Members.



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## **We accept the manuscript submissions in any standard (generic) format.**

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Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at [submit@globaljournals.org](mailto:submit@globaljournals.org) or get in touch with [chiefeditor@globaljournals.org](mailto:chiefeditor@globaljournals.org) if they wish to send the abstract before submission.

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2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
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4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s) names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
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- Illustrations
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- Printed material
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- Electronic material
- Any other original work

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2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

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### Acknowledgments

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Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.



### ***Manuscript Style Instruction (Optional)***

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

### ***Structure and Format of Manuscript***

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

- a) A title which should be relevant to the theme of the paper.
- b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
- c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
- d) An introduction, giving fundamental background objectives.
- e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
- f) Results which should be presented concisely by well-designed tables and figures.
- g) Suitable statistical data should also be given.
- h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

- i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
- j) There should be brief acknowledgments.
- k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

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## FORMAT STRUCTURE

***It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.***

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The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

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The full postal address of any related author(s) must be specified.

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The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

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A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

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Numerical methods used should be transparent and, where appropriate, supported by references.

### **Abbreviations**

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

### **Formulas and equations**

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

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Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.



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Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

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Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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**2. Think like evaluators:** If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

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**7. Revise what you wrote:** When you write anything, always read it, summarize it, and then finalize it.

**8. Make every effort:** Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

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**11. Pick a good study spot:** Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

**12. Know what you know:** Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

**13. Use good grammar:** Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice. Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

**14. Arrangement of information:** Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

**15. Never start at the last minute:** Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

**16. Multitasking in research is not good:** Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

**17. Never copy others' work:** Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

**18. Go to seminars:** Attend seminars if the topic is relevant to your research area. Utilize all your resources.

**19. Refresh your mind after intervals:** Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

**20. Think technically:** Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.



**21. Adding unnecessary information:** Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

**22. Report concluded results:** Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

**23. Upon conclusion:** Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

## INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

### Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

### Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

*The introduction:* This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

### The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

### General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

**To make a paper clear:** Adhere to recommended page limits.

### Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.



- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

#### **Title page:**

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

**Abstract:** This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

*Reason for writing the article—theory, overall issue, purpose.*

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

#### **Approach:**

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

#### **Introduction:**

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

*The following approach can create a valuable beginning:*

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.





**Approach:**

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

**Procedures (methods and materials):**

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

**Materials:**

*Materials may be reported in part of a section or else they may be recognized along with your measures.*

**Methods:**

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

**Approach:**

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

**What to keep away from:**

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

**Results:**

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.



**Content:**

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

**What to stay away from:**

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

**Approach:**

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

**Figures and tables:**

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

**Discussion:**

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.



**Approach:**

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
<i>Result</i>	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
<i>Discussion</i>	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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