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THEORETICAL PERSPECTIVE OF DYNAMIC CREDIT RISK ANALYSIS AND LENDING MODEL; EFFECTIVE TO ENTERPRISES OF FRAGILE ECONOMY

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"Success in Banking is attained not by avoiding risk but by effectively selecting and managing risk"

ABSTRACT

There is empirical evidence and objective argument, which justifies the core functioning of money in economic growth and its correlation to the development of a Nation, which equally establishes the reason for the relevant role of Banks in every economy. The underpinning of this research is to present the necessity for the financial industry of undeveloped and developing economies fragile in their functioning, to adopt the proposed theoretical perspective of dynamic credit-lending-risk analysis as an upgrade model over the existing static credit-lending-risk analytical approach, found to be ineffective to the productiveness of enterprises, emerging from such economies, hence, creating frustration to the welfare design of the State, and heightening its unemployment tension.

1. INTRODUCTION

In other words, establishing an in depth analytical base of the subject for discussion, upholding a quality submission of theoretical-model-analysis. Some relevant terminology used herein, lacking precise definition in the taxonomy of economic science, has to be clearly defined in the context of this paper based on critical assessment of varied definitions adopted by scholars in the economic science community. And these two major technical terms are as follows;

i. Fragile Economy

ii. Credit Analysis & Risk

i.   Fragile Economy

It is argued to have been coined by Morgan Stanley in 2013, representing emerging market economies that are too dependent on unreliable foreign investment to finance growth ambitions. Bruce & Jennifer (2013), defined the fragile economy as a National economic network to venerable metropolitan economies, consisting of networks of innovative firms, talented workers, risk-taking entrepreneurs, supportive Institutions and associations that cluster together in metropolitan areas and co-produce economic performance and progress. Demirek (2009), almost like the intent of the originator of the word, defined a fragile economy as an environment where firms rely heavily on external funds to finance its operational costs.

However, in the context of this paper, the fragile economy will be defined as, "an economy, experiencing significant weakness in its currency, making it difficult to finance its account deficits and growth projections, thereby contributing to a slow down and vulnerability in its welfare functioning". There are numerous factors known to cause economic fragility of a State, for instance, weak political institution, poor constitution functionality, poor governance, poor financial-industrial policies, bad tax regulations, high cost of having a strong balance sheet as an enterprise, poorly developed investment market, high inflationary effect, complex bureaucracy, low capital adequacy of banks, and finally in respect of this paper, corruption. All the listed factors will be extensively diagnosed to establish its significant contribution to a fragile economy and a negative impact on Enterprise existence. Which should guide in the analyses of the

effectiveness in the use of *'Static-credit-lending-risk-analysis'* model for potential profitable Enterprises that emerge from such economies, which in most circumstances is observed to cause a huge obstruction to the surviving state of such Enterprises.

Credit Analysis & Risk

Kagan (2018) defined credit analysis, as a type of analysis that an investor or bond portfolio manager performs on companies or debt issuing entities, to measure the entity's ability to meet its debt obligations. Which the content of this paper, do concur with the above definition to establish the bases of its theoretical assumptions. Banks remain a major conduit for the transformation of Savings into productive investments. And much particular in emerging countries where capital markets are still not sufficiently developed and where savers have limited access to direct-credit-risk opportunities. Jonathan & Philippe (2013) state, Banks and Financial Systems should share the blame with profligate politicians, outdated socioeconomic models and a shift of the 'world's center of gravity' towards newcomers in the financial-economic warfare. And further argued, Banks cannot survive unless they take risks. The trick for them is to manage those risks without destroying shareholders' value.

The fatter the better, from creditworthiness point of view and without endangering depositors and creditors. It must be acknowledged that financial intermediaries like Banks do carry substantial credit and market risks. They act as the shock absorbers by removing it from their depositors' shoulders and charge a hefty fee for the services. It is observed that no individual with money to spare, that is Savings or Capital, will provide a credit on a commercial basis, unless she believes that the borrower has both the requisite willingness and capacity to repay the funds, advanced. To form such belief rationally, she must be satisfied that, the two questions can be answered in affirmative. Which are;

a) The prospective borrower will be willing, so long as the obligation exists, to repay it?

b) The prospective borrower will be able to repay the obligation when required under its terms?

To respond to these questions, a credit analyst will re-sought a judgment of probability. Banks acceptance of credit risk, is inherent to their operations, since, the very reason for existence as banks, is the supply of credit through the advance of cash and the corresponding creation of

financial obligations. Credit Risk in the perspective of this paper will be defined as, "the risk of money loss arising from the default of a counter-party on a fundamental financial obligation or higher than expected loss of severity, arising from a lower than expected exposure at the time of default". The following is a formulated assessment of credit risk in the framework of this paper assumed to be the generally accepted tradition of the banking industry:

(i). Examining the obligator's capacity and willingness to repay credit

(ii). The country's risk and operational conditions as in its macroeconomic climate that the obliged is exposed to

(iii). Examining the attributes of obligation from which the credit risk arises in the instance of legal or derivative risk and character of the currency.

(iv). Assessing credit risk and mitigation such as collateral utilization, pledges, guarantees, and insurance.

The concern herein is not the underlying probability of default but the degree of uncertainty associated with forecasting this probability. As Hale (1983) succinctly put across, if the pawnbroker lends money against a gold watch, he does not need credit analysis. He needs instead to know the price of the gold watch with respect to time. The Traditional Credit analysts of the banking sector are best known for sieving through a quantum of data ranging from cash flows, credit history, in its ratio and trend analysis to draw a probability line in terms of exposure to default, the recovery rate, and the loss at a given default target. This defined style of credit-lending-risk- analysis modelled and exhibited as 'Figure E' below in this paper, has become an accepted standard of the Banking practices. In the credit analytical perspective, there are two technical approaches available to the traditional banks in issuing credit support to a firm, which are;

    I.   Structural Model
    II.   Reduced- form model

The [*Structural model (1)*], considers the 'positions' of stakeholders of the company, meaning their creditworthiness as a base to issue credit support to the company, while the [*Reduced-form model (2)*] seeks to predict, when a default may occur based on observable variables. Which this

paper, in conclusion, seeks to critique the stringent application of the model (2) in the context of fragile economy, expressing doubt on the effectiveness and reliability to rely on model-2 as a general standard of metric analysis observed from the ex-post-facto study of developing economies, in a deep reliance on observational experience from the Sub-Saharan Africa market, hence, provide the alternative model as a theoretical perspective.

2. EX-POST-FACTO CONDITIONS AS A SIGNIFICANT CAUSE TO FRAGILE ECONOMY AND POOR ENTERPRISE FUNCTIONING

Popularly accepted literature argued in favour of a wide range of factors affecting Enterprise (Syed Fida et.al 2013) as contributive causes in fragile economy. However, this paper narrows the cause-based analysis of the observable factors of a fragile economy as stated below, which the effects are translated to a poor functioning of productive Enterprises, with difficulties to access quality credit facilities. The following are the listed caused factors;

 [I] Weak Governance and Political Institution

[II] Poor constitutional functionality

[III] The poorly developed investment market

[IV] Bureaucracy

[V] Corruption

[VI] Banks capital adequacy

I.   Weak Governance and Political Institution

It was suggested by Adji et.al, (1997), as well as Feng & Chen (1997), that a political government, which is an active economic participant, can positively intervene to shape an environment to attract investment. They further argue that lower political capacity, indicate less ability to extract resources, which critically implies higher budget deficits and an increase in uncertainty. Finally, concluded a lower political capacity governance is more likely to create new taxes or increase existing ones, thereby reducing the return on investments. Which sums up to the fact that a capable government aligns their policies with sound macroeconomic criteria, while

weak governments stress political survival, and are mostly exposed to challenges, which act as a huge frustration to Enterprise survival in such economy. When political institution formed, is captured as an ideological gloss through which the minority who exercise real power through the State and its monopoly, seek to conceal this fact from the subject population as Lenin (1917), did submit in his paper the 'State and Revolution', then the Institution becomes hopeless in its function denied in its expected benefit to its members than to serve the interest of the political elite. In such a circumstance, Enterprises not engaging in cronyism, suffocate in a sound successful growth in such an economy, which is a common conditional state operating within the economies of majority countries on the continent of Africa.

II.   Poor Constitutional Functionality

In an economic environment, where the legitimacy of the State, the nature of its authority, and the nature of its obligations to its citizens and of its citizens to it, lack clarity; with the constitution functioning not as the rule of law, but the rule of men, ruled by subjective and arbitrary will of particular men instead of objective determinant of general and public laws, as Kant (1724-1804) asserted. For a strong constitution, is a union of an aggregate of men under rightful law. In such a circumstance, the labour of men through their enterprises to serve the market as well as to generate private property are easily undermined, and mischievously destroyed in the spirit of plundering, which weakens the spirit of innovation, creativity and sacrifice through entrepreneurship for economic growth, a major challenge faced by Enterprises in fragile economy, which is a major predicament in Africa.

III.   Poor developed Investment Market

Poorly developed investment market could be defined as an economic environment, whereby either bank-based or market-based financial system is poorly developed in promoting long-run economic growth. Stiglitz (1985) submitted that well-developed markets quickly and publicly reveal information, which reduces the difficulties and the cost for individual investors to acquire information, hence, becomes an incentive to attract investors to such an environment easily. While Boot et.al, (1993) acknowledged, Banks reveal of information is slow to the public due to its long-term relationship with firms. However, Boot & Thakor (1997) added to the debate that, a coordinated coalition of investors with the Bank is better than uncoordinated with the market,

where monitoring firms and reducing post-lending moral hazards is weak. Bhide (1993) also posits that liquid markets hold a myopic investor climate, making the bank-based system preferable in policy guide and reliable theoretical practice. So in a fragile economy whereby both the Bank-based and Market-based financial system is underdeveloped, visionary enterprises struggle in productivity and smooth growth. It is further observed in such an environment, investors hold the assumption that, there is a potential high risk to invest in the private sector of such economy, despite the evidence that the sector may be holding the highest volume of transaction performance in their macroeconomic environment. And even if, it is considered by Investors as an environment to support, they then expect it to be politically guaranteed, a process that slows economic growth and stiffens innovations in the private enterprise paradigm.

IV.   Bureaucracy

As Niskanen Jr. (1990) argued, a large part of our population wants to expand the role of government particularly to alleviate poverty, and improve the environment. Correspondingly, a large part of our population is exasperated by the methods of bureaucracy and dissatisfied by its performance, just as Max Weber (1864-1920) recognized bureaucracy as the characteristic form of public administration for a State with extended territorial sovereignty developed, and has become the standard definition guiding this form of organization in our contemporary times. Von Mises' book 'bureaucracy' in appreciation to the sophistication of bureaucracy negative impact to economic service delivery did argue, and I quote: "'bureaus' specialized in the supply of those services with the 'value' of which cannot be exchanged for money at per-unit rate. As a consequence of the above, 'bureaus' cannot be managed by profit goals in the economic calculus, therefore, must be centrally managed by the pervasive regulation and monitoring of the activities of subordinates with the absolute solution, to reduce the scope of government". Enterprise success in both endogenous and exogenous climate of a State depends much on strategic exploitation of opportunities in respect to time. In an advent of competition, time becomes a valuable commodity to take advantage of, which fragile economy drawn in complex bureaucracy, lacking respect to time of performance and speed of the market development, as a result of a political-self-serving system architecture, by downplaying the struggle of an entrepreneur's effectiveness and efficiency through innovation against open market competition, has caused numerous venture collapse in such economies.

V.   Corruption

Olken & Pande (2012) posits that, survey evidence suggests that corruption is rampant in the developing world and more prevalent in developing countries than in rich ones and justify further, there is a situation where 'bureaucrats' official salaries were less than their market wage in expectation of the corrupt rents, they would obtain. Mocan (2008) finds that the income and education of the individual have positive impacts on the likelihood of being asked for a bribe in developing countries. There are an Instances, reported by Reinikka & Svensson (2004), using public expenditure tracking survey, they compared the amount of special education block grant sent down from the Central government of Uganda, with the amount of the Block grant received by the schools. They estimated a leakage rate of 87%. Another instance, which Olken (2007) report of a rural road project. He compares the official amount spent on the road to an independent engineer, estimate of what the road actually cost to build, in which engineers dug a core sample of the roads to estimate material quantities, did price surveys to estimate local prices, and interviewed villagers to estimate actual wages paid. It was realized some amount of materials disappeared during construction. And an estimated missing expenditure in respect of the village claim and the engineering estimation to the promoted cost was approximately 24% per average.

Olken & Pande (2012) did further argue that corruption lessens the government's ability to correct an external challenges. If someone can bribe a police officer or a judge instead of paying an official fine, the marginal cost of breaking the law is reduced from the official fine to the amount of the bribe. Furthermore argued, if the police officer extracts the same bribe regardless of whether the person has broken the law, the marginal cost of breaking the law falls to zero, and the law ceases to have a disincentive effect altogether. An environment which has a strong network of corruption driven in complex innovative dealings, any honest transactions, which should be the hallmark of any successful and credible enterprise, becomes difficult, as a result, a long term progression of such a venture in competion against its counterpart in the strong economic environment becomes questionable.

VI.   Capital Adequacy of Banks

In the studies of Inoue et.al (2019) on lending behaviour of Banks, they submitted, when a substantial adverse shock hits the economy and many borrowers become insolvent and banks

face impaired capital. There are two types of lending behaviour observed, which are, stagnant lending in a capital crunch environment and forbearance lending. With the stagnant lending in a capital crunch, the banks decrease credit to borrowers, irrespective of whether they are good or bad borrowers. While that of Forbearance lending, the banks conduct window-dressing to avoid the realization of capital losses and thus allocate more credit to insolvent borrowers, with the hope that their situations will improve, with the premise that, the impaired banks adopt this lending behaviour as a considerable effort to avoid further deterioration of their balance sheets. In practice, it implies the stagnant lending in a capital crunch, involves the issue of overall credit under-supply to all borrowers. Whereas forbearance lending, involves the issue of credit allocation to low-quality borrowers, as a spirit of this, this very paper seeks to promote a proactive lending model very effective in a fragile economy, it then concludes, such a fragile economy will require a very vibrant banking industry.

Diamond (1984) and Calomiris & Wilson (2004) argued that, in the models of banking, under asymmetric information, the emphasis lies on the potential conflict of interest, which is between the banks and depositors. And such an informational problem, encourages the banks to offer short-term-low-risk debt, concentrating mostly on the balance sheet risk of their capital and thus insulating depositors from this risk. Therefore, it is important to determine whether banks are well capitalized enough to absorb their balance sheet risk and stabilize the banking system. Since the theoretical proposition of the paper on dynamic-credit-risk analysis and lending is established on the premise of a vibrant banking sector of a fragile economy, this does then promote a debate on signals of an economy to serve as a predictive power for Banks failure. Haldane (2014) and Bulow & Klemperer (2015) pointed out that regulatory measures of Bank Capital do not necessarily have predictive power for Bank failures. Empirically, Haldane & Madouros (2012) and Sarin and Summers (2016) measured Bank risk using both regulatory measures and market measures. And realized, the market measures, which is defined as the Capital ratio in the value of equity relations to total assets has the most explanatory power in predicting banks failure, secondly, the regulatory measures of bank capital in respect to the Basel accord. The limitation of this paper was to ignore the theoretical factors that anchor economic vibrancy that supports bank operations in credit-lending. In fragile economy, for instance, the arguments of Khwaja & Mian (2008) and (Jimens et.al. 2012; 2014) in studying the bank loans level data and firm-level

panel data did help to appreciate the omitted variable problems in controlling borrower-side factors in the bank loan equation and relied squarely on the theoretical pathway for effective credit-lending for a successful industrial progression. Which, we believe, further studies in the recommended areas, could explore these factors, deeper under an empirical perspective.

3. DYNAMIC CREDIT RISK ANALYSIS & LENDING MODEL

This section of the paper seeks to analyzed the current used method of credit-risk-analysis used by the traditional banks for credit lending and termed it as Model 'E' in the context of this paper, with an established model evidence of the inefficiency of such method process, utilization in a fragile economy of Sub-Saharan Africa, and the proposition of an upgraded model termed by this paper as Model 'D' to address the weaknesses of model 'E' application in fragile economy. In the theoretical settings of model 'E', it is observed per practical experience that, this kind of methodical tool is only useful and applicable to agencies having historical operational existences and financial performance in an economy, which the method rely on averagely three (3 years) historically, based on operational data performance and financials for a quantification forecast, as a criteria for credit application and approval. And then followed with other risk-metric assessment and analytical tools.

Enterprises chosen and analyzed on the scale of probability forecast on it credit-risk-analysis is expected to meet at least the four major required criteria outlined below as parametric conditions;

i. The Enterprise is assured of profitability for short, medium and long term.

ii. The Enterprise has passed, a credibility test

iii. The Enterprise has successful historical data of operational performance.

iv. The Management credibility and integrity test

When these parameters are met, then, the actual credit risk analysis of the Banks of the Financial Institution is generally observed to follow the model below in a diagram format, defined by the paper as 'Static Credit Analysis'.

Fig. A1. Model 'E'

How the Credit lending analysis is conducted by the traditional banks
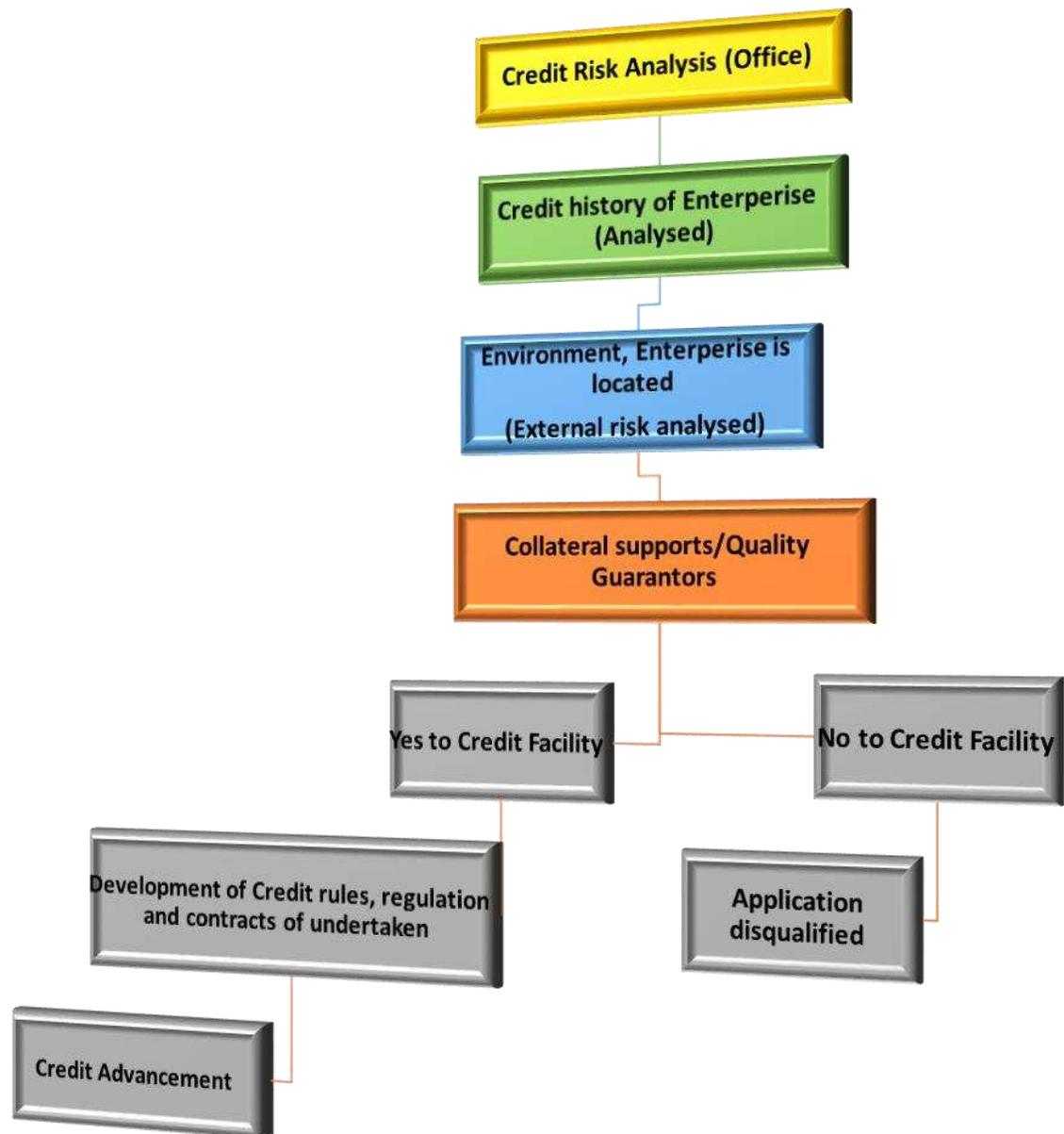
E. T. Senzu (2020), Credit-Lending- risk analysis model structure

In the examination of the efficiency of *Model 'E'*, passing through an empirical and evaluation test as an Old Static Banking approach in credit-risk-analysis, experimented in the following chosen countries, as a sample frame for the idealized fragile economies, the six below countries were chosen

1. Ghana

2.Nigeria

3.Uganda

4. Liberia

5.Zimbabwe

6. Sierra Leone

On the field survey study a total of two hundred (300) companies were engaged within these six countries targeting their book records of capital raising of both the Small & Medium Scale Enterprises, and corporate agencies, as a case study approach in respect to Best and Kaln (1998), as they argue that, case study probes deeply and analyzed interactions between factors that explain present status or influence change. The size of the sample, which was two hundred (300) companies balance sheet records engaged, was believed by the researcher as sufficient enough to be a good inference as Fink and Kosecoff (1995) posit, the size of a population from which the sample of a particular size is drawn has virtually no impact on how well a sample is likely to describe a population.

Finally, Fowler (1993) did also assert, a sample size of one hundred and fifty (150) respondents could describe a population of fifteen thousand (15,000) or five hundred million (5,000,000) with virtually the same degree of accuracy, assuming all other aspects of the design and sampling procedure were the same. These three hundred (300) companies selected were based on their interest for credit facility within the period, which the researcher conducted the study.

There were complex difficulties to easily access the detail credit application data from the Lending Institutions in the period of October, 2018 to February, 2020 as private primary data solicitation. However, where it was granted, a cautionary statement was issued for the data protection and indemnity clause. With the accessibility to such secondary data, it was easier to draw structure composition of agencies to engage for this academic exercise, which the findings computed as;

Figure A2. below, defines the structural component of the Enterprises surveyed as a sample frame of the population size targeted.

Fig. A2

STRUCTURE OF ENTERPRISES SURVEYED FROM THE POPULATION
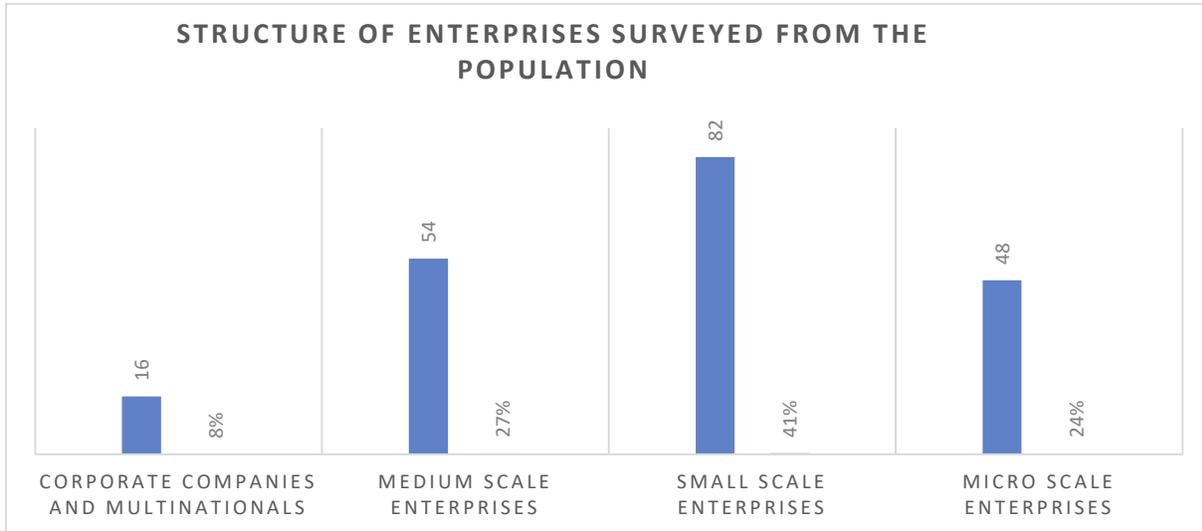
To examine the efficiency of "*Credit-lending-risk-analysis*" of *Model 'E'* in the chosen fragile economies, the following question as a summary was asked as the guideline to the field survey stated below;

Q1. *How many of the companies, had their credit facility approved among the Enterprises who applied for the credit facility? Interrogation to the data submitted to the researcher by the Banks contacted. The findings were tabled as (X1)*

Table X1

Types of Companies	Percentage of Company Size (%)	Granted Credit Facility (%)
Corporate Companies & Multinationals	8%	4%
Medium Scale Enterprise	27%	8%
Small Scale Enterprise	41%	3%
Micro Scale Enterprise	24%	0%
	100%	15%

A total of three hundred (300) companies, did apply for the credit facility marked as 100% sample framework from October 2018- February 2020, with the response observed as follows: only 15% (45 companies) out of the 100% population size, accounting for three hundred (300) companies), which the loan applications were considered for credit facility approval with the selected Banks dealt with within the specific countries engaged as a scope of the study area in their operational jurisdiction, by going through Model 'E' Credit-Lending-Risk-Analysis according to the analyzed data. This empirically submits the high inefficiency rate in the application of the current credit risk analysis method defined in this paper as [Model 'E' Credit-lending-risk-analysis], shown above, which describes its function procedure as p.11.

The next effort of the researcher was to examine, the causes behind the weakness of the application in response to the relation of the lending institutions, which led to a friendly follow-up, of some of these identified clients as Enterperise owners, which, the background check-ups, uphold to some extent their credit worthiness to these lending banks, yet were denied the credit facility, hence, step-in with a posture to offer a special assistance to their companies through international venture financing instruments, and requested to know why they were denied the 'facility' as a potential beneficiaries, in other to establish an overlap response of an objective fact why their application to the banks for a credit facility got rejected. The question below was then asked either to their Chief Executive Officer (CEO) or Chief Financial Officer (CFO)

Q2. Why was your company disqualified, despite meeting the parametric conditions stated above, as the Enterprise being profitable, credible and has historical data of operational performance and competent management of high repute?

Findings were tablized as X2, below.

Table X2.
Reasons behind Credit disqualification
*E. T. Senzu, 2020; field reports*

	Response	Rate
1	Credit history suffered discrepancies with the reason of most, to avoid tax burden	34%
2	A weak economic environment due to weak governance capacity	22%
3	Weak collateralization and guarantors	12%
4	High Interest rate, making the credit facility dis-interesting	15%
5	Unreliable location of the Enterprises	2%
		85%

E. T. Senzu, 2020; field reports

Even though the data information, suggest that the targeted respondents, some had more than one reason to be denied credit facility by these banks, however, the data extract and detail analysis suggest that most of the lending Banks rather dwell much on the peripheral reasons in conformation to the method of credit analysis model discussed earlier as falling within *'Model E'* framework, instead of discretional and innovative diagnostic analysis connected uniquely to Enterprise sector performance credibility and capacity to honour credit obligations in a deep retrospect to sector market dynamics.

The outcome of the data diagnostic analysis suggest that the credit application disqualification of the companies by the banks, was well justified, because it strictly conform to the *'Model E'* method, which is a tradition uphold by the Banking credit analysts, any other relevant information beyond the scope of synthesis of *'Model -E'* analysis assumes the project or business is not potentially viable and valuable towards the bank credit system. Which the researcher inductively suggest an alternative model as a proactive method to be considered for credit-risk-analysis as an upgrade of above-defined *Model-E* with a newly proposed name as *Model- 'D'* framework of *Credit-Lending-Risk-Analysis*, which is supposed to be an efficient methodical tool for credit-risk-analysis in fragile economy to the benefit of Enterprise growths in such regions. With the *Model 'D'* framework designed below as Fig. A3
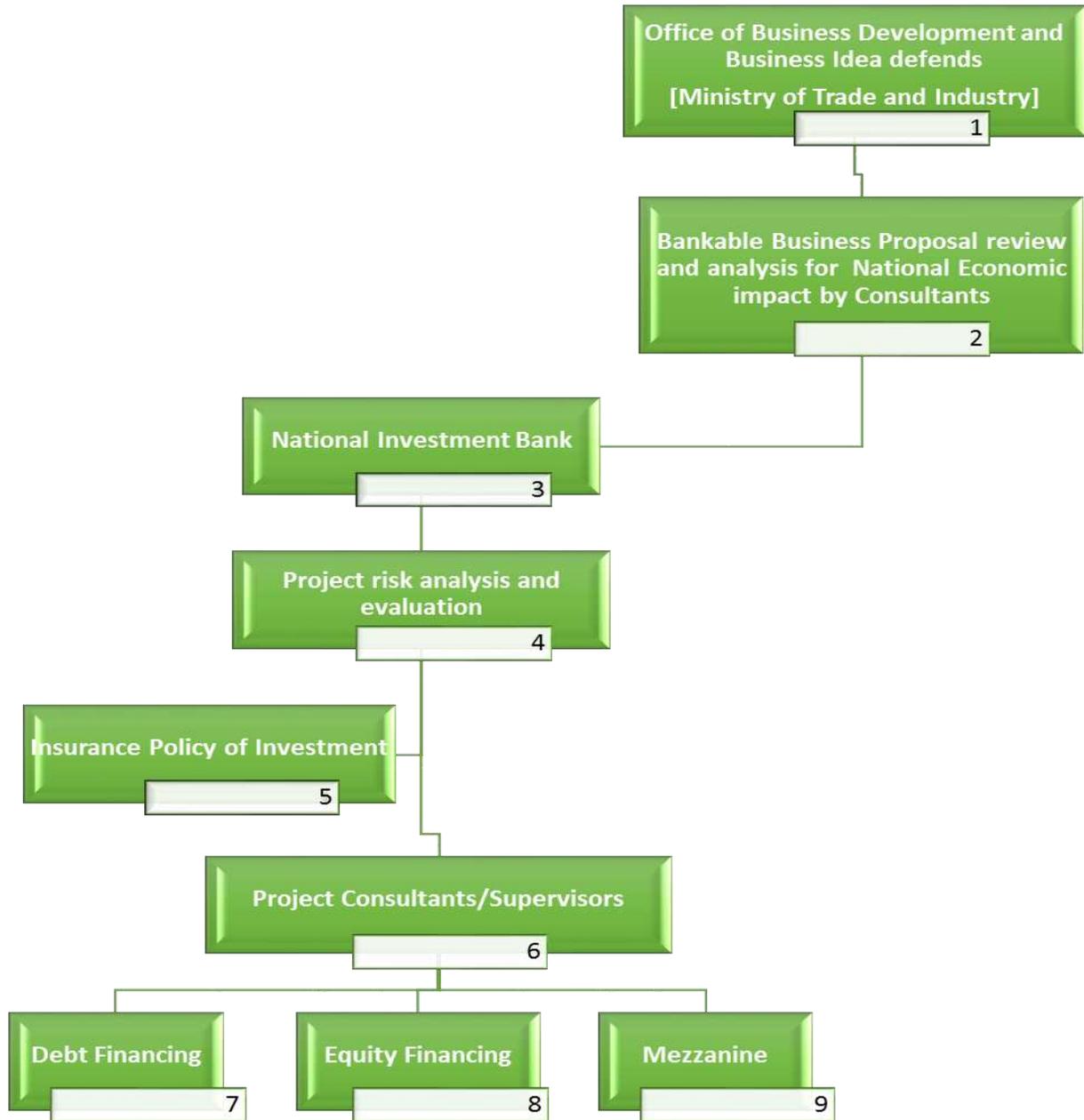
Fig. A3.
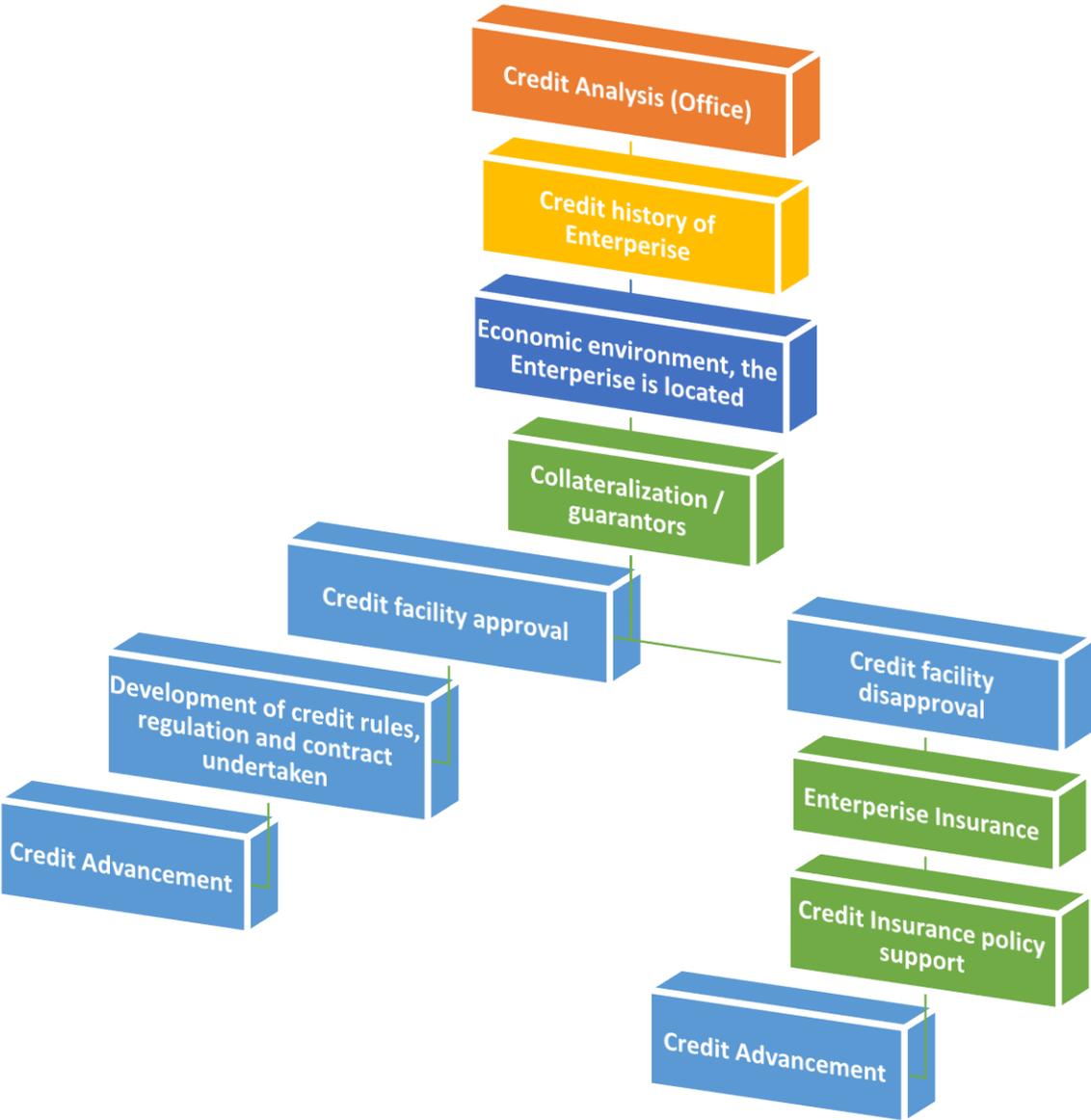
Senzu (2020) Model D- Credit-Lending-risk analysis structure

The above *Model 'D'* as shown by Fig. A3 as a *Credit-Lending-Risk-Analytical* tool, which is stimulatingly prescribed as a dynamic and relatively efficient in its structural analysis, comparable to *Model 'E'* as shown in Fig. A1 is a suggested analytical method of credit-lending-risk-analysis promoted by this paper as an alternative analytical method to rely upon because it takes into consideration the challenging triggers of a fragile economy, which act as an obstacle to smooth and innovative growth of Enterprises of such an economy under financial constraint situation. The *Model'D'* adopt and stresses its analytical tool on the parametric qualification of the Enterprises as prescribed by '*Model –E'* analysis. If such are met, whatever identified risk, will mitigate it for easy credit accessibility for Enterprise progressive functioning. However, the weakness of *Model 'D' Credit-lending- risk-analysis*, is its inability to assess start-up ventures or businesses having zero years of historical operations and performance.

Which the researcher further postulates *Model 'S'* as an upgrade credit analytical tool of *Model 'D'* for a potentially viable venture, when it is in a quixotic stage. For a country to adopt *Model 'S'*, then the government of such a fragile economy, should have an interest in private sector empowerment as an engine of its economic growth, while it innovatively channel most of its graduate students into entrepreneurship; then the proposed *Model 'S'* designed below to address credit-risk-analysis and lending will require a central institution termed as *[SME-EXIM-BANK]* as a proposed name enacted by Law in its operational existence, with its source of funding generated by Public-Private-Partnership (PPP) to guide successful implementation of the model. Then the ultimate parametric qualification of the venture proposal is to prove the significant contribution of such an idealized venture impacts on Gross Domestic Production of such economy when project risk analysis is carefully analyzed and quantified. It only on such orientation that the *Model 'S'* framework shown below as Fig. A4 will be feasible for application.

Fig.4 Model 'S'

SME-EXIM BANK STRUCTURE FOR CREDIT ANALYSIS

E. T. Senzu (2020) model 'S' credit-lending-risk analysis structure

4. THE RELEVANCE OF PROACTIVE CREDIT-LENDING-RISK-ANALYSIS

Over the years there has been a general impression created by the literature of the political economy of developing countries, arguing in favour of the supremacy of the fiscal policies being an effective tool of government, dictating the success of a welfare state. Which this paper seeks to critique the exuberant nature of such ideological positioning and further prove that, beyond fiscal policy interventions of government, an exceptional attention of government need to be paid-on the quality and vibrancy of its Banking system, in the area of credit lending to Enterprises, in fragile economies or else the hope of a welfare state will fail as time elapses, which is justified below, mathematically;

$K\dot{B} = Bank\ with\ Capital\ Adequacy$

$E_p = Productive\ Enterperise$

$C^l = Credit\ lending\ rate$

$P_{ct} = Productive\ capacity\ at\ time\ t$

$C_{ct} = Consumption\ capacity\ at\ time\ t$

$e^r = Earning\ rate\ of\ employees$

$e^q = Quality\ Employment\ (Labour)$

$\dot{P} = Purchasing\ power$

$F_p = Fiscal\ Policy$

$M_p = Monetary\ Policy$

$WF = Welfare\ State$

It is assumed every sound principled active welfare state comprises of a quality fiscal policy, working in tandem with monetary policy as a corresponding vector.

$$WF = \left[F_p.M_p\right]\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.eq.1$$

It is further assumed, productive Enterprise depends on productive capacity at time (t), quality labour, and consumption capacity at time (t) in the form of purchasing power of the market, if all

other factors held constant. Then the equation below is the summarization of productive Enterprise of a fragile economy.

$$E_p = [(P_{ct} . e^r) + (\dot{P}. C_{ct})] \dots\dots\dots\dots\dots\dots\dots eq.2$$

It further assumed that quality employments are a correspondent of good wage-earning in a fragile economy, hence with the below formula;

$$e^q \cong e^r \dots\dots\dots\dots\dots\dots\dots\dots\dots eq.i$$

The paper therefore argue that a quality functional banking in every economy depends on the credit lending rate to the market, and efficient Enterprise productivity to build capital adequacy with the summarized formula below;

$$K\dot{B} = Constant \left(C^l + E_p\right) \dots\dots\dots\dots\dots\dots\dots eq.3$$

$$K_{t+1}\dot{B} = \{(C_t^{l+1} + ([P_{ct+1} \times e^r] + [\dot{P} \times C_{ct+1)}])\} \dots\dots\dots\dots\dots\dots eq.4$$

The equation (4) depicts that a capitalized bank will sustain its adequacy of capital at the optimum level in respect to its market transaction, if only it performs well in its credit lending rate within an economic environment of a good earning rate for employees, high production, with increasing market demand or consumption rate.

In the contemporary Africa economy, its welfare states depend on the quality of policy in both fiscal and monetary, relating effectively to each other, hence in reference to equation (1) above and assuming that monetary policy's core goal is to promote a vibrant banking system of adequate capital, then the equation below justify that condition.

$$M_p \cong K_{t+1}\dot{B} \dots\dots\dots\dots\dots\dots\dots\dots eq.ii$$

$$WF = [F_p . M_p] \dots\dots\dots\dots\dots\dots\dots\dots eq.1$$

$$WF = F_p\{(C_t^{l+1} + ([P_{ct+1} \times e^r] + [\dot{P} \times C_{ct+1)}])\} \dots\dots\dots\dots\dots\dots\dots eq.5$$

The final model equation depicts that in a sound functioning Welfare state, it will require a quality fiscal policy, which is consistent and defined as constant to the equation (5) to activate a high credit lending rate, high productive capacity of the economy, high earning rate, including a high purchasing power in the form of a market consumption demand. When inflationary rate remains constant or under a marginal rate control.

5. CONCLUSION AND RECOMMENDATION

There are three models, which the paper has presented, beginning with the old traditional Credit-lending-risk-analysis as an approach adopted generally by the domestic financial market of Africa, mostly the banking sector, with the first model framework defined by this paper as Model 'E' with it the weakness of application explored and discussed in respect to fragile economies. As a result, the researcher further, postulate an advanced version of credit-lending-risk-analysis termed as Model 'D' and 'S' methods, which is structurally defined in the earlier pages for efficient application in fragile economy, depending on the 'life-span' of the venture, either with three (3) years historical performance of productive existence, or Zero (0) year productive existence, in other words, a venture in an idealistic stage, for the Banks to re-sought to the use of Model-S' and 'D', instead of 'E' model analysis framework for credit lending. These additional models developed theoretically, are to help widen the risk analytics and assessment scope of Enterprises in accessing funds in a fragile economy, unlike the straight-jacket approach, which denied most potential and successful ventures the platform to prove their viability in both the short, medium and long term productivity growth, due to financial constraint.

The researcher does recommend, any further research in this focus area should be on lending behaviours of Banks in a fragile economy, approach, and methods to improve its potency and sustainability.

REFERENCE

1. Adji, S. S., Ahn, Y. S., Holsey, M. C. & Willett, D. T. (1997), Political capacity, macroeconomic factors and capital flows. pp.127: Political Capacity and Economic Behaviour. ISBN 13:978-0-8133-03073-0

2. Boot, A. W. and Thakor, A. V. (1997), financial system architecture. Review of Financial studies 10, 693-733

3. Boot, A. W., Greenbaum, S. I. and Thakor, A. V. (1993), Reputation and discretion in financial contracting, American Economic Review 83, 1165-83.

4. Bulow, J. and P. Klemperer, (2015), Equity recourse notes: Counter-cyclical Bank Capital, Economic Journal, 125, 131-1977.

5. Bruce Kate and Jennifer Brandley (2013), the metropolitan revolution. ISBN 978-8157-2151-2. Published by Brooking Institution.

6. Calomiris, C., and Wilson, B. (2004), Bank Capital and portfolio management: The 1930's "capital crunch" and the scramble to shed risk. Journal of Business, 77,421-455

7. Diamond, D. (1984), 'Financial intermediation and delegated monitoring'. Review of Economics Studies

8. Feng, Y. and Chen, B. (1997), Political Capacity and Private Investment. pp.97: Political Capacity and Economic Behaviour. ISBN 13:978-0-8133-03073-0

9. Fink, A., & Kosecoff, J. (1998). How to conduct surveys: A step-by-step guide.Beverly Hills, CA: Sage Publication, Inc.

10. Fowler, F. (2002). Survey Research Method (3rd edition).Thousand Oaks: SAGE Publications, Inc.

11. Haldane, A. (2014), Constraining discretion in Bank regulation, In: Good hart, C.D. Gabor, J. Vestergaard, and I. Erturk (Eds.), Central Banking of a crossroads: Europe and Beyond. Anthem Press, London.

12. Haldane, A. and V. Madouros (2012), The Dog and the Frisbees, In: Economic policy symposium proceedings: The Changing policy landscape, Jackson hole, Wyo. Federal Reserve Bank of Kansas City.

13. Jim´enez, G., S. Ongena, J.Peydr´o, and J.Saurina, 2012, Credit Supplyand MonetaryPolicy: Identifying the Bank Balance-Sheet Channel with Loan Applications, American Economic Review, 102, 2301–2326.

14. Jim´enez, G., S. Ongena, J. Peydr´o, and J. Saurina, 2014, Hazardous Times for Monetary Policy: What Do Twenty-Three Million Bank Loans Say About the Effects of Monetary Policy on Credit Risk-Taking? Econometrica, 82, 463–506.

15. Julia Kagan (2018), Financial Analysis. retrieved https://www.investopedia.com

16. Jonathan Golin and Philippe Delhaise (2013) the Bank Credit Analysis; Hand Book. (2nd Ed) ISBN.978-0-470-82157-2

17. Khwaja, A., and A. Mian, 2008, Tracing the Impact of Bank Liquidity Shocks: Evidence from an Emerging Market, American Economic Review, 98, 1413–1442.

18. Ludwig Von Mises (1944) Bureaucracy, Libertarian Press, Yale University. ISBN: 0-86597-663-5

19. Max Weber (1864-1920) Bureaucratic management

20. Mocan, N. (2008), "What determines corruption; International evidence from microdata". Economics Inquiry 46:493-510.

21. Niskanen Jr. A. W. (1970), Bureaucracy and representation government. ISBN. 9781351530415; Taylor & Francis Group. New York

22. Olken, A. B. (2007), Monitoring corruption: evidence from a field experiment in Indonesia. Journal of Political Economics. 115:200-49

23. Olken A. B. & Pande, R. (2012) Corruption in developing countries. Annual review of economics. Vol. 4: 479-509.

24. Reinikka, R., & Svensson, J. (2004), Local capture: evidence from a central government transfer program in Uganda. Journal of Quantitative Economics. 119: 679-71

25. Roger H. Hale (1983) Credit Analysis: A complete guide. Vol. 7 of Wiley professional banking and finance series

26. Sarin, W. and Summers, L. (2016), Understanding Bank risk through market measures, Brookings paper on Economic Activity, 2, 57-109.

27. Senzu, T.E. & Ndebugri, H. (2018), The Economic evidence in the relationship between corporate tax and private investment in Ghana. Published; University Library of Ligwig-Maximilians (https://mpra.ub.uni-muenchen.de/84729). Re-published by Social Science Research Network, USA. (https://hq.ssrn.com) Elsevier; ISSN.1556-5068

28. Stiglitz, J. E., (1985), Credit markets and the control of capital, Journal of Money, Credit and Banking, 17, 133-52.

29. Smith, A. Anthony (1985), Kant's political philosophy: Council democracy. The review of politics, 47 (2)253-280. Jstor-1406673

30. Syed Fida Hussain Sha, Tahira Nazir, Khalid Zaman & Muhammad Shabir (2013), Factors affecting the growth of Enterperise: A survey of the Literature from the perspective of small- and Medium –size Enterperise.

31. Ufuk D. Demirel (2009), optimal monetary policy in a financially fragile economy. Vol.9, Issue 1. ISBN 1935-1690. B. E. Journal of Macroeconomics.

32. Vladmir Lenin (1917) The State and revolution. Aziloth Books, London. 2017. ISBN: 978-1614271925.