Impact of Promulgation and Enactment of AML/CFT Rules on Resource Mobilization: Case of Ethiopian Banks

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Abstract

The study basically attempts to provide answer to the basic research question: has the implementation of the AML/CFT monitoring system weakened the resource mobilization endeavor of the commercial banks? It has used panel data of ten commercial banks for the period 2005-14. The result with regard to the central question shows that better resource mobilization endeavor has been observed while the banks were operating with AML/CFT compliance than otherwise. In other words, AML/CFT compliance has not resulted in loss of key clients for banks or has not become a hurdle to attract new depositors. On the other front, exposure to low cost deposits like demand deposits as well as deposit structure favoring saving account growth have resulted in a positive and significant relationship. The study has unexpected result with regard to the effect of bank size, deposit price and yield, which are significantly and negatively related with growth of deposit. Therefore, from the study's output, it's interesting to note that despite the fear that pervades the banking system, the optimism and dedication of the FIC has been fruitful to change the image of the country in terms of AML/CFT cooperation and this is done without affecting the growth in the deposit market. Even it has benefited banks through building-up the confidence of correspondent banks and protecting them from risks arising from dirty money. The above mentioned success stories and implications should remain significant in a country where the banking sector has taken above 90% of the financial system asset. Therefore, taking a lesson from such success in the Banking sector, the FIC should build its capacity to effectively execute the AML/CFT proclamations to the financial (like insurance, micro-finance, real-estate which is on progress) and non-financial (real estate, import-export firms and others) firms. In addition, there is a need to enhance the public awareness concerning AML/CFT so as to narrow perception differences. On the resource mobilization front, the focus of banks should be on cost saving and stable deposit types which preferably to be done via increasing the share of demand deposits and boosting the growth of saving accounts. More specifically, banks strategy in resource mobilization should relay on non-price measures like attracting new depositors through utilizing the untapped market, promotion, increasing accessibility, through benefiting the unutilized individual saving market and the booming private businesses.

Keywords: AML/CFT, deposit, bank, Ethiopia, resource, mobilization

Introduction

Financial institutions are claimed to be the medium for channeling illegally or criminally earned money into the financial system. This is for the reason that criminals mostly get the institutions as the simplest channels to clean the illegally earned money through different means such as deposits of cash, cheques, electronic transfers and other financial instruments(Ayodegi and Mohammed, 2012). Literature considers both money laundering and terrorist financing, if not controlled, can weaken individual banks, and they are also a threat to a country's overall financial sector reputation and economy (Brigitte et al.,2006). Bartlett (2002) explains that the economy is affected negatively by money laundering, because the money laundering (ML) effect on economic growth works to reduce productivity and transfer of funds to the acts of crime and corruption. Combating money laundering and terrorist financing is, therefore, a key element in promoting a strong and sound financial sector (Ayodegi and Mohammed, 2012). As part of such commitment, Ethiopia has also promulgated various laws and directives that are instrumental to control money laundering and terrorist financing activities. In 2009, the country has got a separate government organ, the Financial Intelligence Center (henceforth FIC) which is fully dedicated to work on Anti-Money Laundering/Combating Financing of Terrorism (henceforth AML/CFT) and other related activities. Since its establishment the FIC has been busy in setting directives, establishing reporting relationship with various entities, structuring the AML/CFT functions and to remove Ethiopia from public notice via fulfilling the requirement from the Financial Action Task Force (henceforth FATF) among others. Nevertheless, at the initial stage and following the new rules from the FIC for banks to report high value cash transactions and suspicious activities, there was a apprehension from banks that such measure will have impact on the deposit mobilization effort. The fright was mainly originated from the promulgation and enactment of the AML directives despite the low awareness level of the public and more specifically of the business community concerning AML/CFT activities. Therefore, some banks at the time perceived that such action might lead to lose their clients as the public might not be willing to transact with banks under account disclosure. This is mainly due the fear that government might have a chance to use the bank account for tax or other purposes. Consequently, banks were expecting the reporting requirement might insist on clients to limit their transactions at the minimum threshold set by the FIC

for reporting high value transactions. Nevertheless, the FIC has been fierce on the full implementation of its Customer Due Diligence (henceforth CDD) directives and the AML/CFT proclamation which to some extent indicating the buoyancy of the institution at the time about the importance of instituting a robust AML/CFT monitoring system across the financial institutions and other concerned entities. Such optimism has enabled the institution to play a remarkable role in bringing the country out of the black list notice. However, which of the perceptions (the fear vs buoyancy) has reigned after the enactment of the AML/CFT rules has not yet investigated by empirical works of such a kind. Therefore, this paper tries to address which of the two perceptions has been widely observed in the banking industry following the AML/CFT compliance in the system. In other words, the paper aim to assess the core research question: has the implementation of the AML/CFT monitoring system weakened the resource mobilization of commercial banks?

Literature Review
Conceptual and AML/CFT Laws in Ethiopia

Money laundering is a process whereby identity of illegally possessed money is changed so that it appears to have originated from a legitimate source (Conyers and Pearman, 2013). It is the process whereby criminals attempt to hide and disguise the true origin and ownership of the fund. The source may include terrorism, organized crime, fraud, drug trafficking, human trafficking, etc. On the other hand, Terrorist Financing can be defined as the financial support, in any form, of terrorism or of those who encourage, plan or engage in terrorism (World Bank, 2006). The difference of terrorist financing with money laundering is that, the money used for terrorist activities might not originate from crime (World Bank 2006). Money laundering as per Prevention and Suppression of Money Laundering and Financing of Terrorism Proclamation No.780/2013 stated as any person who knows or should have known that a property is the proceeds of a crime and who:

a.   converts or transfers the property for the purpose of concealing or disguising the illicit origin of the property or of assisting any person who is involved in the commission of the predicate offence to evade the legal consequences of his actions;
b.   conceals or disguises the true nature, source, location, disposition, movement or ownership of or rights with respect to the property;
c.   acquires, possesses or uses the property; or
d.   participates in the commission, conspires to commit, attempts to commit or aids, abets, facilitates or counsels the commission of any of the elements of the offence mentioned in paragraphs (a) to (c) above commits an offence

In terms of AML/CFT Laws in Ethiopia, until 2005, money laundering was not punishable offence under the provisions of Ethiopian penal law. However, after the enactment of the Criminal Code of the FDRE (2005), money laundering is sanctioned as punishable criminal offense. As stated in the Preamble of this Criminal Code, one of the fundamental reasons that necessitated its promulgation is "… the discernible gap in the Penal Code (of 1957) is its failure to properly address crimes born of advances in technology and the complexities of modern life. The Penal Code (of 1957) does not incorporate crimes such as the hijacking of aircrafts, computer crimes and money laundering." The new code therefore regards money laundering as one of the offense that falls under "Crimes against Property"; especially "Crimes against movable property" [from Article 665 to 684]. Some of the other offenses that fall under this category are theft, robbery, looting, piracy, breach of trust, misappropriation of property and receiving.

In line with the above provision of the Criminal Code the Ethiopian Government has enacted detailed law that came into effect as of December 16th 2009; this Proclamation on "Prevention and Suppression of Money Laundering and the Financing of Terrorism" [Proclamation No. 657/2009] has 27 Articles and has made financial institutions to be one of the accountable persons for proper execution of the AML Proclamation. This Proclamation has also provided for establishment of one government organization called Financial Intelligence Center to be responsible for ensuring proper execution of the provisions of the proclamation. The Proclamation among other things provides that financial institutions are obliged to properly identify their customers and provide information relating to their customer to the Center; in addition, the law states that Ethiopia will assist the international cooperation to suppress AML. This proclamation later revised and detailed law came into effect on the 4th day of February 2013; this Proclamation on "Prevention and Suppression of Money Laundering and Financing of Terrorism" [Proclamation No. 780/2013] has 58 Articles and further endorsed the previous proclamations content on the role of financial institutions for proper execution of the AML Proclamation.

To effectively implement this Proclamation, National Bank of Ethiopia has issued Directives on "Customer Due Diligence of Banks" No.SBB/46/2010 that came into force effective March 4th 2010.

These Directives obliges banks to design and implement KYC policies and to report all deposits, withdrawals or transfers in excess of Birr 200,000 or USD 10,000 to the Financial Intelligence Unit. In addition to such transactions banks are also obliged to report any suspicious or unusually large transactions. However, this directives later revised by the Financial Intellegence Center following the revision of the 2013 Proclamation on

Prevention and Suppression of Money Laundering and Financing of Terrorism No.780/2013. The Financial Intelligence Center of Ethiopia has issued the Directive on "Customer Due Diligence of Banks" No.CDD 01/2014 that came into force effective 24th day of January 2014. The directives has among others has increase the threshold for reporting to a minimum transactions that exceeds Birr 300,000, USD 15,000 or equivalent in other foreign currencies. On top of the above laws, the Ethiopia government has also promulgated Proclamation on Anti-Terrorism [Proclamation No.652/2009] that came into effect as of August 28th 2009, which has 38 provisions. Such an act is an offence beginning from its planning until its execution; both principal as well as secondary offenders are made liable. As per this Anti-Terrorism Law, all persons are obliged to report any suspicious acts and the law enforcement authorities are allowed to make sudden searches based on the warrant of courts; and similar to AML law statute of limitations is inapplicable for anti-terrorism offences. Properties that are dedicated for terrorism financing are also susceptible for forfeiture. National Anti-Terrorism Coordinating Committee is established as per the provisions of this Proclamation.

Empirical

There are few literature that attempted to investigate the effect of AML on deposit mobilization. Studies were much focused on AML/CFT's impact on the wider economy. However, such attempt is also not satisfactory considering the wider effect of AML on the one hand and the problem in the quantification of the real effect of AML. For instance, Bertlett (2002) remarked that the negative effects of money laundering on economic development are difficult to quantify. Nevertheless, he has admitted that AML/CFT activities can damage the economic growth via affecting the financial sector institutions. This is in addition to AML's effect in reducing productivity by diverting resources and encouraging crime and distorting the economy's external sector – international trade and capital flows. Therefore, AML has both short-term and long-term implication to the performance of the economy. On the other, front there are formal studies that attempt to look at in to the effect of AML on specific sector or variables of the economy. A case in point is Khrawish (2014) who attempted to o examine the impact of Anti money laundering (AML) on investment funding via applying a multiple linear regression model. Others mostly use a descriptive survey design which is to collect detailed and factual information that describes an existing phenomenon with regard to AML/CFT. Studies of such a kind include: Idowu (2012). There are also recent attempts to integrate and evaluate AML issues based on Economic theories and model. For instance, Mei and Zhou (2015) analyzed the equilibrium strategies of banking institutions and employees under different anti-money laundering (AML) efforts based on dynamic game model. Therefore, current research trend appear to recognize the considerable effect of AML/CFT activities on the economy, hence, the area seems attracting researchers interest. But the available research works are still limited with growing possibilities in the forthcoming following the importance of the subject and its notable effect of economic performances.

Methodology

A multiple regression model was employed to estimate the effect of AML/CFT regulation enactment on deposit performance of commercial banks. The study is a two period, the time after and before AML/CFT laws and enactments, observation on the aforesaid topic. Therefore, the bank selection mainly considered the length of banks' stay in the industry. In other words, all banks that ensured their existence before the AML/CFT rules were incorporated in the study. Consequently, 10 banks out of the 18 commercial banks in Ethiopia are observed to assess their performance in resource mobilization front during pre and post AML/CFT laws. The study used secondary data sources mainly of publicly available financial records of these commercial banks for the period 2005-2014. It has used unbalanced panel data for 10 years with a total, mean and min observations of 94, 9.4, and 6, respectively.

Model

The effect of AML/CFT regulation on resource mobilization is observed through multiple regression model. Therefore, AML/CFT Implementation impact is estimated as a function of banks' resource growth rate. This can be expressed as:
Resource mobilization= f(AML/CFT laws, control variables)……………………………(a)
The main intent of the resource mobilization is to enhance the liquidity status of banks, which can be well defined by the level of deposit banks are able to mobilize from the public or the market. In such regard, the liquidity aspect should incorporate both the foreign and local currencies. However, the level of foreign currency inflows is not publicly available records of banks and cannot be accurately estimated from other measures. Therefore, the study uses the level of growth of local (birr dominated) deposits as proxy measure for local resource mobilization endeavor which to some extent has incorporated foreign currency deposits. Therefore, the equation above can be redefined as:
Deposit Growth= f (AML/CFT, Control variables)   …………………………..(b)

The control variables included are intended to show bank size, deposit costs, deposit yield, price and deposit mix which are represented by LGTA, DDTD, EII, COF, and GSD. In addition a dummy variable has been added to represent the two periods of comparison (0 is assigned for pre and 1 for post AML//CFT laws). The Ordinary Least Squares (OLS) regression that is used to estimate the relationship is as follows:

$DG = \beta_0 + \beta_1 AML + \beta_2 LGTA + \beta_3 DDTD + \beta_4 EII + \beta_5 COF + \beta_6 GSD + \acute{\epsilon}$……………….. (c)

Where (i) DG is the deposit growth rate, AML- period of AML/CFT laws, LGTA- log of total asset, DDTD- share of demand deposit from total deposit, EII- Effective interest rate, COF- cost of fund, GSD- Growth rate of saving deposit and $\acute{\epsilon}$ = error term.

Descriptive statistics

The growth pattern of the industry's deposit performance shows that the sector's annual average deposit has grown by about 30%. This is despite the high variation noted in the resource mobilization front among banks overtime where some banks have managed to double their deposit in some periods and others showing stagnancy or lower growth rate. This to some extent is justified by the stage in the life cycle of banks where recently formed banks has managed to easily register high growth rate over their lower deposit stock during entry times. However, the industry as a whole as shown in 'between' statistics has been enjoying a notable growth hallmark in the resource mobilization front during the periods. In terms of cost of fund as well, a material variation was not registered where most banks were comfortably mobilizing deposit at lower interest rate i.e. a maximum 3.5% cost of fund which is lower than the minimum deposit rate to be paid for saving and fixed time deposits. Such reduction in cost of fund is a result of the considerable share of demand deposits in the deposit structure. Despite the high variation, the deposit structure of banks supports the low cost (almost zero) deposit types. This is supported by high share and growth rate in saving deposit which are usually paid at the minimum floor price set by the NBE. Therefore, overall stability in deposit structure and reliance on cost saving deposits for liquidity source has been the norm in the Ethiopian banking system. The share of such kind of low cost and core deposits (saving and demand) still remained on the high front, 90%. Not only the lower cost of deposits but also the relatively high expected yield from deposits seems to provide advantage to the Banks. As shown in the table, the effective interest rate, which shows the productivity of deposits, remained on average about 11% and sometimes in some banks could reach up to 15%. Therefore, banks could have a positive and wide spread ranging from 7-12%.

Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
DG	Overall	.3038457	.2305991	-.0786	1.8265	N = 94
	Between		.1468677	.22	.702175	n = 10
	Within		.1897162	-.1775293	1.428171	T-bar = 9.4
LGTA	Overall	3.663168	.5295811	2.4425	5.286	N = 94
	between		.4680279	3.160117	4.77941	n = 10
	within		.2894449	2.943543	4.237543	T-bar = 9.4
AML	overall	.5425532	.5008572	0	1	N = 94
	between		.1586619	.5	1	n = 10
	within		.4849897	-.0824468	1.042553	T-bar = 9.4
COF	overall	.022916	.0058955	.0072	.0347	N = 94
	between		.0044925	.01343	.02708	n = 10
	within		.0040206	.013841	.031556	T-bar = 9.4
EII	overall	.1061223	.0194687	.0629	.1458	N = 94
	between		.0047139	.09825	.11383	n = 10
	within		.0189443	.0650223	.1446723	T-bar = 9.4
DDDP	overall	.3411011	.1300988	.1001	.7021	N = 94
	between		.1150764	.22588	.57408	n = 10
	within		.0670624	.1125677	.745201	T-bar = 9.4
GSD	overall	.4050823	.867707	-.8253652	8.031378	N = 94
	between		.2773483	.2138502	.9439957	n = 10
	within		.8274631	-1.325325	7.531418	T-bar = 9.4

Where (i) DG is the deposit growth rate, AML- period of AML/CFT laws, LGTA- log of total asset, DDTD- share of demand deposit from total deposit, EII- Effective interest rate, COF- cost of fund, GSD- Growth rate of saving deposit .

Estimation Result

Before running the model both normality and panel unit root tests were conducted. The Shapiro-Wilk Test which is more appropriate for small sample sizes but can also handle large sample sizes is used to test normality (Ghasemi & Zahediasl, 2012). The significance value of the test is greater than 0.05 witnessing the normality of the data. In

addition, the fisher options ADF panel unit-root test is computed to mitigate the impact of cross-sectional dependence(Levin, Lin, and Chu,2002) The main advantage of using the test is that the test can handle unbalanced panels and the lag lengths of the individual augmented Dickey-Fuller tests are allowed to differ(Choi, 2001) . The Fisher-type test uses p-values from unit root tests for each cross-sections with the hypothesis of Ho: All panels contain unit roots   and Ha: At least one panel is stationary. The test rejected the null hypotheses.

Both the F-test and the LM test with large chi-square result rejects the null hypothesis, hence the fixed and random effect models appear better than pooled OLS. The Hausman test taking the coefficients of the fixed and random models supported the null hypotheses that Ho: difference in coefficients not systematic. The chi-square result is with probability higher than 0.05 supporting our initial hypothesis that the individual-level effects are adequately modeled by a random-effects model. Therefore, the estimation result has been done through the random effect model.

$$DG = \beta_0 + \beta_1 \, AML + \beta_2 \, LGTA + \beta_3 DDTD + \beta_4 \, (EII) + \beta_5 COF + \beta_6 \, GSD + u_i + v_{it} \ldots\ldots\ldots\ldots.. \text{ (d)}$$

The measure of goodness of fit, the R-square shows the relatively good representativeness of the model.

In addition, muliticollinarity of variables is not serious (see the correlation matrix table in the annex).

The estimation result provided response to the central research question: what is the effect of AML/CFT rules on resource mobilization? The result shows that AML/CFT laws have positive association with the deposit growth of banks. In other words, banks in the Ethiopian industry were able to mobilize more resources after the promulgation and enactment of the AML/CFT rules. Hence, better resource mobilization endeavor has been observed while the banks were operating with AML/CFT compliance than otherwise. However, the relationship was not significant. The result justified the buoyancy of the FIC to pursue on firm AML/CFT compliance and the measure taken by the institution has not resulted in loss of key clients for banks or has not become a hurdle to attract new depositors. This will be a great lesson for the institution to cascade same principles towards the implementation of the laws in other financial and non-financial institutions.

With regard to bank size, a surprising result has been noted where big banks were having a lower deposit growth rate record than the small private banks. Even if the absolute size of resource mobilized by big banks will obviously exceeds the size of deposit mobilized by small banks, the small banks were mobilizing deposits at much better growth rate than their big counterparts. This is a result of the difference in the stage in the life cycle of banks where recently formed banks has managed to easily register high growth rate over their lower deposit balance during entry times. Besides, small banks seem to have spent the enthusiasm to grow their market share in the deposit market and build their liquidity standing, which is a determinant factor for their stay in the business.

In terms of focus on cost saving deposits, there appear a positive relationship between the share of demand deposits and deposit growth. Such fact has witnessed the fact that demand deposits besides reducing the funding cost of the banks has been contributing towards the positive deposit growth pattern. Therefore, increasing the share of demand deposits has a double edge merit of rewarding banks in terms of widening the spread through reducing the cost of funds paid to saving and fixed time deposits as well as in boosting the deposit stock (and hence the liquidity status). On the other front, the deposit mix structure also favors a positive and significant link with another deposit type, the saving account. The growth in saving account also indulges a growth in the deposit portfolio. Nevertheless, the rate of relationship as described by the standardized coefficient is small witnessing the small change in growth of the portfolio due to change in saving account growth. Such relationship seems to emanate from the high level of stock of saving account in the deposit structure of banks which might be affecting to divulge a high growth record from such account type. However, the relationship is significant and remained as one of the key area for deposit mobilization endeavor. The relatively low cost status of the deposit type as compared to time deposits and its wider availability from the larger community will also be another justification to direct banks' attention in their deposition mobilization effort.

One of the surprising result from the study is both deposit price and yield were negatively related to deposit growth rate. This seems exceptional considering the expected positive relationship as a high deposit interest rate will offer a leverage to mobilize more deposits. Nevertheless, the studies result deviates from such expectation and reveals banks attempting to collect deposits through relatively high price offer were not mobilizing resources as equivalent to banks with relatively low prices for deposits. In the other front, the finding is justified considering the practice in the industry of attempting to attract deposits at higher rate whenever banks are in tight liquidity status or deposit growth is heading at slower rate. The same fact has been revealed for the deposit yield earned from extending credit to borrowers. The finding shows the increase in deposit rate which is forced by tight liquidity status not only affect the cost of fund of banks but also forces them to adjust their lending interest so that they can protect themselves from narrow spread and net interest margin.

Regression Results

DG	Pooled OLS	Fixed Effect Model	Random Effect Model
LGTA	-.1905 *	-.06425	-.1899*
	(.0399)	(.1423)	(.04612)
AML	.07657	.0031	.0666*
	(.0476)	(.0625)	(.04480)
EII	1.6185	-2.0508	-1.6089
	(1.4819)	(1.7799)	(1.4224)
DDDP	.2973	.6239*	.3754*
	(.1924)	(.2514)	(.2023)
GSD	.0719*	.07694*	.07323*
	(0.000)	(.0192)	(.0192)
COF	-1.0751*	-1.0415*	-1.6298*
	(.0193)	(.7918)	(.9757)
_cons	1.3468*	.8100*	1.2893*
	(.2040)	(.4086)	(.1806)
F-test/Walid (model)	87.6*	81.2*	90.8*
DF	93	78	78
R-square	0.5176	0.4638	0.5477
Root MSE (SEE)	.16016	.1517	.1517
SSE(error/residual)	.05317	0.7949	0.4236
F-test (fixed effect)		21.1*	
LR Test (random effect)			178*
Hausman test		Prob>chi2 = 0.0944	
N	94	94	94

Standard errors in parenthesis * statistical significance :<0.05,>.01

Conclusion and Recommendations

The study basically attempts to provide answer to the basic research question: has the implementation of the AML/CFT monitoring system weakened the resource mobilization of commercial banks? It has used panel data of ten commercial banks for the period 2005-14. The result with regard to the central question shows that better resource mobilization endeavor has been observed while the banks were operating with AML/CFT compliance than otherwise. In other words, AML/CFT compliance has not resulted in loss of key clients for banks or has not become a hurdle to attract new depositors. On the other front, exposure to low cost deposits like demand deposits as well as deposit structure favoring saving account growth has resulted a positive and significant relationship. The study has a unexpected result with regard to the effect of bank size, deposit price and yield, which are significantly negatively related with growth of deposit. Therefore, from the study's output, it's interesting to note that despite the fear that pervades the banking system, the optimism and dedication of the FIC has been fruitful to change the image of the country in terms of AML/CFT cooperation and this is done without affecting the growth in the deposit market. Even it has benefited banks through building-up the confidence of correspondent banks and protecting them from risks arising from dirty money. The above mentioned success stories and implications should remain significant in a country where the banking sector has taken above 90% of the financial system asset. Therefore, taking a lesson from such success in the Banking sector, the FIC should build its capacity to effectively execute the AML/CFT proclamations to the financial (like insurance, micro-finance, real-estate which is on progress) and non-financial (real estate, import-export firms and others) firms. In addition, there is a need to enhance the public awareness concerning AML/CFT so as to narrow perception differences. On the resource mobilization front, the focus of banks should be on cost saving and stable deposit types which preferably to be done via increasing the share of demand deposits and boosting the growth of saving accounts. More specifically, banks strategy in resource mobilization should relay on non-price measures like attracting new depositors through utilizing the untapped market, promotion, increasing accessibility, through benefiting the unutilized individual saving market and the booming private businesses.

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Criminal Code of the FDRE (2005)

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Prevention and Suppression of Money Laundering and Financing of Terrorism Proclamation No.780/2013

Proclamation on Anti-Terrorism [Proclamation No.652/2009]

Correlation Matrix

	DG	LGTA	AML	DDDP	GSD	DCOF	EII
DG	.053176						
LGTA	-.051507	.280456					
AML	.021314	.095919	.250858				
DDDP	.00752	.024771	.009231	.016926			
GSD	.077677	-.079069	.008504	.001847	.752915		
DCOF	-.000435	.000341	.000422	-.000092	-.000574	.000023	
EII	-.001925	.005372	.006318	.000327	-.001434	.000034	.000379

Fisher-type unit-root test for DG

Based on augmented Dickey-Fuller tests

Ho: All panels contain unit roots   Number of panels = 10

Ha: At least one panel is stationary   Avg. number of periods = 9.40

AR parameter: Panel-specific Asymptotics: T -> Infinity

Panel means: Included

Time trend: Not included

Drift term: Not included ADF regressions: 0 lags

	Statistic	p-value
Inverse chi-squared(20)	P 126.6009	0.0000
Inverse normal	Z -6.9382	0.0000
Inverse logit t(54)	L* -10.3728	0.0000
Modified inv. chi-squared	Pm 16.8551	0.0000

P statistic requires number of panels to be finite.

Other statistics are suitable for finite or infinite number of panels.