Impact Of Efficiency Of Intermediation Functions From Financial Institutions On Consumer Surplus On The Balance Of The Fund Market In Indonesia

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Abstract *: The greater the amount of savings than the loan amount in banking shows that problems on non-performing loan (NPL). The objectives of this study was: to analyze the efficiency of the intermediation function of financial institutions (banking), and the impact of efficiency of financial institution intermediation function to consumer surplus in the fund market. Partial Adjustment Model (PAM) were used to analyze efficiency and consumer surplus using panel data 2000 – 2016. The result showed that the efficiency of the financial institution intermediary function influenced the size of the consumer surplus in the fund market. Therefore, that consumer surplus in the fund market was influenced by the performance of financial institutions. This consumer surplus is of the lack of fund group (deficit unit) due to equilibrium change in fund market. To anticipate future funding needs, it is necessary to conduct a study of the consumer surplus of funds based on the type of use of financial lending in financial institutions in the economy.*

Keywords *: Intermediation Function, Fund Market, Partial Adjustment Model (PAM), Financial Institution*

Abstrak : Jumlah tabungan yang lebih besar dibandingkan jumlah pinjaman dalam perbankan menunjukkan adanya permasalahan pada kredit bermasalah (Non-Performing Loan/NPL). Tujuan dari penelitian ini adalah menganalisis efisiensi fungsi intermediasi lembaga keuangan (perbankan) serta dampak efisiensi fungsi intermediasi lembaga keuangan terhadap surplus konsumen di pasar dana. Model Penyesuaian Parsial (Partial Adjustment Model/PAM) digunakan untuk menganalisis efisiensi dan surplus konsumen dengan data panel periode 2000–2016. Hasil penelitian menunjukkan bahwa efisiensi fungsi intermediasi lembaga keuangan memengaruhi besarnya surplus konsumen di pasar dana. Dengan demikian, surplus konsumen di pasar dana dipengaruhi oleh kinerja lembaga keuangan. Surplus konsumen ini berasal dari kelompok kekurangan dana (deficit unit) akibat perubahan keseimbangan di pasar dana. Untuk mengantisipasi kebutuhan pendanaan di masa depan, perlu dilakukan kajian mengenai surplus konsumen dana berdasarkan jenis penggunaan pinjaman keuangan pada lembaga keuangan dalam perekonomian.

Kata Kunci : Fungsi Intermediasi, Pasar Dana, Model Penyesuaian Parsial (PAM), Lembaga Keuangan

INTRODUCTION

During the financial crisis in 2007 – 2009, small business enterprises experienced difficulties to obtain capital loans as the crisis was seriously affected financial institutions and no modern economy survived without having a well-functioning financial system. Hubbard et al (2012) pointed out that as the financial system provides means of funds flowing from savers to borrowers, the emergence of disruptions in the flow of funds will lead to economic disaster. Therefore, the intermediary function of financial institutions must be optimized to suppress the financial crisis.

The role of financial institution as an intermediation was one of the key factors in the development of a country (Schumpeter, 1911). The financial development, then, encouraged growth as it increased the level of investment as well as its allocation; besides, a faster-growing economy required a higher quality of financial services (McKinnon, 1973). Evidence that the financial sector had a real effect on the economy could be observed from the ability of the financial intermediaries to shift the composition of savings into capital (Maria, 2003) resulted in the intermediation functioned to further promote the growth (Valerie R. Bencivenga and Bruce D. Smith, 1991; Nawazish Mirza, Birjees Rahat, and Krishna Reddy, 2015; Bogdan Dima & Petru Eugen Opris, 2014; Vighneswara Swamy and BK Tulasimala, 2011 ; Dominik Menno &Tommaso Oliviero, 2016).

Endogenous growth theory underlined the starting point of the literature on growth and finance. Classical references from Greenwood and Jovanovic (1990), Bencivenga and Smith (1991, 1993), Levine (1992), and Saint-Paul (1992) have discussed about a market model of financial intermediation credits as they assumed that financial market was an institution to provide risk pooling services and information collection on borrowers. Following the endogenous theory, Bencivenga and Smith (1991) considered financial markets as institutions intended to facilitate the flow of resources from savers to investors in the imperfect market; consequently, the intermediation function thereby reduced the efficiency caused by this imperfection.

This state was identified by Swamy (2011) by showing that the encouragement of the financial institutions to growth was implied by a more efficient allocation of resources; although Andrus (2001) suggested that the financial sector would affect growth only in equilibrium. Previously, Levine (1997) explained the efficiency of banking system channeling financial resources to productive use as a powerful mechanism for economic growth. Guide et all. (2006) furthered this idea by validating the ability of the efficiently financial intermediaries to mobilize savings from multiple sources and allocate them to more productive activities as benefited approach not only for the investors but also for the entire economy. Previous discussion led efficiency as the essential aspect in this issue.

Efficiency can be written mathematically as the ratio of output and input or the amount of output generated from the input used, or efficiency is the ratio between output and input (Gordo, 2013). Matthews & Ismail (2006) described efficiency of company, particularly banking, as efficiency of the banking market, efficiency of an intermediation process, and efficiency in implementing monetary policy through regulation of bank loans. Several related studies on the measurement of efficiency in the financial sector applied using Data Envelopment Analysis (DEA) method based on input and output variables were conducted by Bar et al (1999), Garsia (2012), Meita (2012), Fitria (2012), Gordo (2013), Dadang et al (2014), and Sufian et al (2016). Their research found a close relationship between efficiency and bank soundness, in which the level of bank health was measured by indicators of banking performance.

As economic integration caused global finance to become more integrated, the question was whether domestic financial institutions would become irrelevant in promoting economic growth. Meshach Aziakpono (2004) examined this question using the Southern African Customs Union (SACU) and the Common Area Monetary, which was often cited as an example of successful economic integration in Africa. His finding showed that the empirical evidence indicated that domestic financial intermediation is still relevant in a financially integrated market. Meanwhile, Meshach (2004) believed that to be part the economic integration, especially the monetary sector, a state must develop its financial system and address other institutional and structural issues. This

was a prerequisite for obtaining optimal benefits from such integration. The benefits of economic integration are used to evaluate overall welfare.

Several studies to indicated the presence of welfare by estimating the size of the consumer surplus done by Duk Hee Lee & Dong Hee Lee (2006), Charles B & David Donaldson (1999), and Johan Stennek (1999). Their researches were conducted under the assumption that should no income be effected, then consumer surplus is consistent with the social welfare function. The consumer surplus is a value approaching consumer welfare, because it can be interpreted as the potential for willingness to pay by consumers (Koutsoyiannis, 1975). In addition, the expected consumer surplus (ECS) can also be a monetary measure for consumer welfare (Johan Stennek, 1999). Therefore, as the efficiency of the intermediation function of a financial institution affected the consumer surplus in the fund market, analyzing the interaction between financial activity and productive economy was very important.

Chin-Chan et al (2016) stated that market-product cooperation provides benefit to consumers by inducing the entry of new companies. Higher product-market cooperation tends to reduce consumer surplus by reducing competition. On the other hand, the competition of higher-market products tends to increase consumer surplus by increasing the number of active companies in the market. Therefore, the objective of this paper was to analyze the impact of bank efficiency on the consumer surplus of funds by using equilibrium market balance in the state of perfect competition. In this case, the efficiency of the intermediation function of the financial institution was determined by equilibrium condition of fund market. In addition, the analysis used in this paper was Partial Adjustment Model (PAM) with panel data. The analysis was in contrast to many previous studies used Data Envelopment Analysis (DEA) in the measurement of efficiency and the correlation coefficients to analyze the effect of financial sector on real economic activity (growth).

The paper is expected to contribute to the literature in three main areas. First, to develop the efficiency model of financial institution intermediary function derived from the equilibrium of the fund market. Second, to develop a consumer surplus model from the equity market balance. Third, to develop a model of the impact of the efficiency of the financial institution's intermediary function on the consumer surplus of funds in the financial sector. The paper is divided into five sections. Section 2 of the literature review, Section 3 presents data and models, Section 4 presents the results and discussion, and Section 5 concludes this paper.

METHODS

This study employed both micro and macro data to analyse efficiency and consumer surplus. The micro data were obtained from the Financial Services Authority (FSA), covering the performance of financial institutions (banking), lending rates, and loan amounts (bank credit). Meanwhile, the macro data were sourced from the Central Bureau of Statistics (CBS), including income and inflation. The panel data covered the period of 2000–2016, comprising 102 observations. The research applied the intermediation approach to measure the efficiency of conventional banking. Based on the equilibrium condition in the fund market, the efficiency of the intermediation function of financial institutions was empirically formulated in a model in which the optimal loan interest rate was influenced by loan amount and bank soundness indicators. Since the optimal loan interest rate could not be directly observed, it was predicted using a Partial Adjustment Model (PAM).

In this framework, the efficiency function was formulated by incorporating loan amounts and banking soundness indicators, such as NPL, LDR, BOPO, NIM, ROA, and CAR. The consumer surplus function, on the other hand, included income change, interest rate, inflation, and the lag of loan amounts. As both equations were simultaneous, the analysis employed the Two Stage Least Squares (TSLS) approach after fulfilling order and rank conditions, which yielded reduced-form equations. In the first stage, the reduced-form equations of efficiency and consumer surplus functions involving exogenous variables were derived. In the second stage, the equations were specified with only one endogenous variable, which could then be estimated using the Ordinary Least Squares (OLS) method. Accordingly, the combination of PAM, TSLS, and OLS enabled a more accurate estimation of banking intermediation efficiency and consumer surplus.

RESULTS AND DISCUSSION

1. Estimated Investment Loan

The first objective of this study is to analyze the banking intermediation function on the equilibrium of the fund market. This study examines whether the efficiency of the banking intermediary function is influenced by the performance of the banking system or that the efficiency is due to the market conditions faced by the banks, which forces the banks to perform their intermediary function.

Table 1. Result of Running Data for Efficiency and Consumer Surplus
In Case Demand for Leonable funds For Investment

Variables	Efficiency				Consumer Surplus			
	Stage 1		Stage 2		Stage 1		Stage 2	
	Coefft	t-Statc	Coefft	t-Statc	Coefft	t-Statc	Coefft	t-Statc
Constanta	8,508	2,005	14,219	2,887	1,713	5,534	0,516	2,485
i	-	-	-	-	-	-	-	-1,641**
LLI	-	-	-0,925	-	-	-	0,010	-
i(t-1)	0,411	4,522*	0,355	2,633*	-0,031	-4,749	-	-
LLI(t-1)	-	-0,888	-	3,597*	0,911		-	
Y	0,267	-3,074*	-	-	0,006	41,451*	0,953	42,755*
Inflasi	-	5,541*	-	-	-0,006	0,303	-	-
CAR	0,816	0,226	0,014	-	-0,002	-	0,017	0,950
ROA	0,248	-1,973**	-0,776	0,432	-0,051	1,704**	0,004	1,191
BOPO	0,006	1,142	0,018	-2,735*	-0,005	-	-	-
LDR	-	0,119	-0,020	0,522	-0,002	0,842	-	-
NIM	0,492	2,767*	0,169	-2,028*	-0,002	-	-	-
NPL	0,035	0,318	0,079	1,342	0,006	2,810	-	-
	0,001			2,198*		-	-	-
	0,309					2,222	-	-
	0,011					-		
						3,227		
						-		
						0,285		
						2,549		
R^2		0,724		0,619		0,976		0,983
F-Statistik		27,537		21,531		368,079		649,270
DW		1,826		1,827		1,701		1,879

Source: result of the Running data
Note, *significance at 5% and **significance at 10%

Table 1 shows that the performance indicators of the bank that greatly affected the efficiency were not only ROA, LDR, NIM, and NPL, but also macro variables such as changes in national income and inflation at 5 percent and 10 percent confidence level (stage 1 and stage 2). There was still another banking performance ratio in the model that does not individually affect the efficiency of the banking system. Statistical test result showed that there was no negative autocorrelation of information magnitude on Durbin-Watson value (1.826 and 1.827).

The efficiency could be explained by variations of the independent variables of 72.4 percent (stage 1) and 61.9 percent (stage 2). Those values meant that there were about 27.6 percent (stage 1) and 38.1 percent (stage 2) variations of the independent variables outside the model that might affect the efficiency. The F-count value was greater than the F-table value in step 1 (27,537 > 1,94) and stage 2 (21,531 > 2.04), meaning that the efficiency was affected by together all independent variables on the model.

The second objective of this study is to analyze the effect of bank efficiency on consumer surplus in the fund market, Table 1 shows the result that consumer surplus was influenced by the

loan interest rate (i), the amount of loan of the previous period (LLIt-1), and the inflation for about 5 percent and 10 percent confidence (stage 1 and stage 2). The value of DW = 1,701 (stage 1) and DW = 1,879 (stage 2) showed that as no detectable residual value existed, there were positive autocorrelation and negative autocorrelation.

Consumer surplus could be explained by variation of the independent variables of 97.6 percent (stage 1) and 98.3 percent (stage 2), meaning that there were about 2.4 percent (stage 1) and 1.7 percent (stage 2) variations of the independent variables outside the model that might affect the consumer surplus. As the F-count value was greater than the F-table value in step 1 (368,079> 1,94) and stage 2 (649,270> 2,47), together all the independent variables existed in the model were capable of affecting the consumer surplus.

2. Discussion

This study used a sample of six conventional bank groups with total data of 102 panel data from 2000 - 2016. The analytical tool used was PAM of Two Stage Least Squares (TSLS). The results shown in Table 1 exhibited that efficiency was influenced by banking performance indicators consisting of ROA, LDR, NIM, and NPL. This was in accordance with banking health assessment which emphasizes on risk aspect. (PBI No.13 / 1 / PBI / 2011).

In this study, the efficiency value was equal to the real interest rate in equity market balance, which was in contrast to the previous research of Fitria, (2012); Meita, (2012); and Dadang, (2014); which measured the efficiency using Data Envelopment Analysis (DEA) based on the ratio between outputs banking and inputs banking. However, from the regression analysis, the results of this study were similar to those of the previous research of Fitria, (2012); Meita, (2012); and Dadang, (2014); that banking efficiency is influenced by banking performance. This can be interpreted that only banks with good performance would be efficient in channeling funds to the community in need.

The result of this research was that consumer surplus was influenced by the real interest rate, the previous loan amount, and the inflation as in the investment theory of Mankiw (2013). According to Mankiw (2013), the consumer surplus in the fund market is as large as the amount of investment loan, which is influenced by changes in income, investment return and risk; whereas, the variable return investment is the real interest rate, and as the risk variable is inflation. In this study, the real interest rate was identic to the value of bank efficiency in the fund market. Therefore, the results of this study indicated that consumer surplus is influenced by banking efficiency.

In this study the consumer surplus was identic to the size of the investment loan; therefore, if the investment loan increases, the greater the investment, so that the national capacity can be increased, and this will have an impact on the increase of public income (Gregory P, 2015; NM Kadagi, Ahmad & Wafula, 2015). So that consumer surplus can be used as an indication of the prosperity enjoyed by the community, as research from Johan S (1999), Charles B & David D, (1999), and Duk HL & Dong HL (2006). Thus, the result of the ordinary least squares regression (OLS) of this study showed that the efficiency of banking affected consumer surplus could be interpreted that the efficiency of banking affected the welfare of society.

CONCLUSIONS

With the enactment of risk-based bank risk assessment (PBI No 13/1 / PBI / 2011), banks are required to be efficient in channeling funds. Therefore, banking performance indicators such as ROA, NPL, NIM and LDR as reflecting the risk in channeling funds by banks to the public. Consumer surplus is strongly influenced by the efficiency of banking, also by variable investment behavior, namely; return on investment, risk and revenue growth. Thus the rational behavior of investors, in obtaining loans also depends on the efficiency of the banking system.

On the other hand banks in channeling funds are also faced with the risk of stalled credit. Therefore it can be concluded that the new banks can distribute credit (loans) to the community when it is efficient. Thus banking efficiency is a prerequisite for disbursing funds as the implementation of the intermediation function in the fund market. If the equity market is in equilibrium, then the real interest rate determines the welfare effect. Because there are two types of usage of bank loan, that is for investment and consumption, so welfare study is needed in each kind of loan usage. This is to know what kind of loan usage of banking which is more effective to

influence public welfare. So the results of this study will be able to establish a policy to improve welfare.

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