Creating contestable banking market: the effect of changes in the regulatory structure in Indonesia

Tri Mulyaningsih*

Faculty of Economics and Business, UNS,
Sebelas Maret Surakarta University,
Jl. Ir Sutami 36A, Surakarta 57126, Indonesia
Email: trimulyaningsih.uns@gmail.com
*Corresponding author

Anne Daly

Faculty of Business, Government and Law,
University of Canberra,
ACT 2610, Australia
Email: anne.daly@canberra.edu.au

Riyana Miranti

National Centre for Social and Economic Modelling,
University of Canberra,
ACT 2610, Australia
Email: riyana.miranti@canberra.edu.au

Abstract: Banks have market power due to the existence of product differentiation, high switching costs, locational characteristics, banks specialised knowledge and segmented customers. Therefore, creating a contestable market is more realistic than establishing perfect competition. This study aims to examine the role of opening the market to create contestability. In the last 30 years, the industry experienced structural changes from a closed-regulated into open-less regulated industry. The Panzar-Rosse method is employed to estimate the degree of competition, find the market structure and assess the impact of opening the market to competition. This study found that in a free entry market, banks are more competitive. The potential entrants act as market discipline so it facilitates the creation of a contestable market as observed in 1989. On the other hand, the absence of potential entrants explains the lack of market discipline for the incumbents to operate efficiently in the 2000s.

Biographical notes: Tri Mulyaningsih is a Lecturer at the Faculty of Economics and Business at the University of Sebelas Maret Indonesia. She has just completed her PhD in Economics with the thesis discussing the competition in Indonesian banking and its relationship with financial stability. Her research interest is in the area of market structure, firms behaviour and market performance.

Anne Daly is a Professor of Economics in the Faculty of Business, Government and Law. Her research interests are wide ranging in the area of applied economics and include the effects of economic reform on the performance of industries; the economic status of women, indigenous Australians and migrants and studies of disadvantage. She is particularly interested in researching in these areas using cross country comparisons.

Riyana Miranti is a Senior Research Fellow at The National Centre for Social and Economic Modelling (NATSEM), Institute for Governance and Policy Analysis, University of Canberra. As a socio-economist, she has a strong research interest and extensive experience to do research related to social wellbeing and equity particularly focusing on the issues of disadvantage and wellbeing including poverty, social exclusion and inequality affecting children, women, older people, families and other groups of population in Australia and Indonesia.

1   Introduction

Many studies conclude that banks in most countries are working in an imperfectly competitive market. Banks have market power due to the existence of product differentiation, high switching costs to move from one bank to others, locational characteristics, and banks' possession of specialised knowledge and segmented customers (Alhadeff, 1967; Berger, 1995). From the welfare point of view, an imperfectly competitive market produces inefficient outcomes with higher prices than marginal cost and lower output than would be produced under perfect competition. The literature suggests that the most efficient market is one with perfect competition where banks produce at their marginal cost; thus, there is no economic profit. In the face of barriers to free entry, creating a contestable market is argued to be a more realistic goal than creating a perfectly competitive market (Baumol, 1982). Perfect competition is rare. Under perfect competition, the number of banks must be large enough (or infinite) in order to assure that none of the banks has influential power over price. In addition, banks have to offer homogenous products where the qualities and the features of the products do not vary across banks. This is inapplicable to the banking industry where customers are segmented and there are geographical differences among different markets.

Furthermore, Baumol (1982) argues that contestable markets produce an optimal equilibrium solution that is close to the perfect competition market. It means that in the contestable market, banks behave efficiently because banks have to offer service at

marginal cost even though banks operate in an imperfect market. Regardless of the market structure of the banking industry, banks must perform efficiently by offering the best services to their customers with price equal to the marginal cost. If the incumbents create an economic profit; new entrants will come into the market. The new entrants, who are assumed to be more efficient, will be able to offer the services at a lower price. Potential entrants or potential competitors are the main instrument of market discipline. With the presumption that there are potential entrants, the incumbents have to produce at an efficient level in order to prevent any new entrant. Having efficient banks in the market means that there is no inefficiency found in the industry, particularly in the long-run (Baumol, 1982). Finally, a contestable market is perceived to be powerful because no product will be sold at a price that is less than the marginal cost (Baumol, 1982). Incumbents generate profits by charging lower prices than the marginal cost; there is an invitation for the new entrants to undercut the incumbents. The new entrants will also charge a slightly lower than marginal cost and make a profit of it. It shows that in the contestable markets, banks will not practice predatory pricing in order to prevent the entry of potential competitors.

Under contestable markets, banks can just earn normal profits where price equals marginal cost if the market provides freedom of entry and exit. Freedom of entry implies that it is costless for entrants to enter the market by assuming "the entrants suffer no disadvantage in term of production technique or perceived product quality relative to the incumbent and the potential entrants find it appropriate to evaluate the profitability of entry in terms of the incumbent firms' pre-entry prices" [Baumol, (1982), p.3]. In regard to freedom of exit, Baumol (1982, p.4) assumes that "any bank or firm can leave without impediment, and in the process of departure can recoup any cost incurred in the entry process". In the case of the banking industry, this assumption requires regulation that allows the timely exit of insolvent banks (World Bank, 2013).

Therefore, opening the market is necessary to create contestable banking. In the case of the banking industry, the condition of entry and exit is determined by the chartering and exit polices introduced by the banking supervisory institution. In Indonesia, prior 2014, the Central Bank of Indonesia was responsible for supervising the banking industry. The supervision authority was shifted to the Indonesia Financial Service Authority (OJK) in 2014. Banking is a highly-regulated industry compared to other industries. State intervention in the banking system is justified by the presumption that banks are treated as a public matter even though banks work for the profit motive (Spong, 2000). In addition, there is the possibility of market failure through asymmetric information and externalities. Thus, this study aims to examine the role of opening the market to create contestable banking. Indonesian banking is suitable to examine this issue because it experienced structural changes in the past 30 years from a closed-regulated industry into an open-less regulated industry.

2 The structural changes in the Indonesian banking

This section discusses the changes of policies in the Indonesian banking industry for the last 30 years. Before the 1980s, banking industry was restricted due to quantitative and qualitative controls, chartering regulation that created barriers to enter the market, and the subsidised loans in the banking industry. The government imposed controls by

determining the level of interest rates for lending and time deposits. The chartering policy restricted the industry for private banks; both domestic and foreign. The restriction was also applied to business expansion. The regulation restricted the opening of new branches. In addition, the intermediary cost was high because banks were required to meet a high reserve-requirement.

Between 1983 and 1992, the authorities reformed the banking industry. In terms of chartering, government removed the barriers to entry by allowing new entrants (domestic private banks and foreign banks) to participate in Indonesian banking. Foreign banks are allowed to enter the local market by setting up of joint venture banks with local partners. The chartering also eased entry by lowering the capital requirements to enter the industry. Deregulation also removed the restriction on business expansion by cutting down the requirement to open new branches. Banks were also free to introduce saving deposit products of their own design. The intermediary cost also reduced as the reforms lowered the reserve requirement from 15% to 2%. In addition, banking deregulation removed control on interest rates, lending limit, and interbank borrowing limits. Finally, the banking reforms removed subsidised loans.

Further, Indonesian banking experienced crisis in 1997. In order to resolve the problem, there were a series of banks recapitalisation, banks closures and mergers. Following the crisis, Indonesian banking was consolidated in the 2000s. The Indonesian Banking Architecture was introduced to create an industry with fewer banks (Bank Indonesia, 2008; Rosengard and Prasetyantoko, 2011). Banking consolidation rather than deregulation was considered to be important for creating a strong and stable industry (Bank Indonesia, 2008). Through consolidation, banks will have a larger capital base that enables them to maintain their business and control risks, develop information technology, and increase the scale to support the expansion of credit capacity. In order to encourage banks to be better capitalised, banks had to comply with a higher minimum requirement for base capital of 100 billion Rupiah by 2010. To increase capital, banks are allowed to receive additional capital injections from existing owners, merge with other banks, be acquired by bigger banks, or sell their shares on the capital market (Bank Indonesia, 2008). Meanwhile, recently banking market entry was tightened with a minimum capital of Rp3 trillion (US\$335 million) compared to 50 billion Rupiah for commercial banks and 100 billion for joint venture banks in 1992. According to the Indonesian Banking Architecture, banking consolidation was predicted to reduce the number of banks by half to 121 banks in 2010 and to 58 banks in 2015. The chartering policy during the consolidation period put restrictions on newly established banks, both local and foreign banks, as the banks' licenses were only granted for the acquisition of local existing banks (Rosengard and Prasetyantoko, 2011).

3   Research methodology

3.1   The Panzar-Rosse method

In order to examine the role of opening the market in creating contestable banking in Indonesia, this study estimates the degree of competition in the banking industry across the observation period between 1980 and 2010. Particularly, this study relies on the recent refinement of the Panzar-Rosse (P-R) method based on Bikker et al. (2011). This method measures the degree of competition through a direct observation on banks

competitive behaviour. This method is suitable for this study because it facilitates the use of bank-level data [Claessens and Laeven, 2004; Liu et al., (2011), p.3631], robust in terms of market definition (Shaffer, 2004) and has been used extensively in empirical studies on banking competition due to the modest data requirements compared to Bresnahan's (1982) and Iwata's (1974) approaches.

The P-R method assumes that banks competitive behaviour is determined by the elasticity of bank revenue with respect to changes in factor prices or known as H-statistics. Equation below is the operationalisation of the reduced-form revenue equation to measure the elasticity by summing the β that measure the change of revenue in regards to the change in input prices. Where *TR* is the bank revenue; *w* refers to three input prices which are the funding price, the wage or personnel costs and the capital price; *BSF* are bank-specific exogenous factors, such as the risk components and differences in the deposit mix and *OI* is the contribution of non-interest income (Bikker et al., 2011; Yeyati and Micco, 2007).

$$LnTR = \alpha + \sum_{i=1}^{n} \beta_i \ln w_i + \sum_{j=1}^{J} \gamma_j \ln BSF_j + \Delta LnOI + \varepsilon \qquad (1)$$

Furthermore, the value of elasticity signals the structure of the banking industry where a highly competitive industry has higher H-statistics than the less competitive market (Vesala, 1995). Some studies suggest that if H-statistics are negative, the market is working under either a monopoly, collusive oligopoly or monopolistic competition without the threat of entry. The existence of perfectly competitive and contestable markets are signalled by positive H-statistics equal to one. The complete information on the discriminatory power of H-statistics is available in Table 1.

Table 1 Summary of discriminatory power of H-statistics

H-statistics	*Market structure*
H ≤ 0	Monopoly equilibrium: each bank operates independently as under monopoly profit maximisation conditions.
	Perfect cartel (collusive oligopoly).[1]
	Monopolistic competition without the threat of entry.[2]
0 < H < 1	Monopolistic competition with some product differentiation.
	Strategic interactions among a fixed number of banks in oligopoly market
H = 1	Perfect competition.
	Contestable market for example natural monopoly or monopolistic competition with a free entry equilibrium.[3]
	Free entry equilibrium with full efficient capacity utilisation.
	Monopolistic competition where banks products are regarded as perfect substitutes of one another.[4]

Notes: [1]Panzar and Rosse (1987) and Vesala (1995); [2]Vesala (1995); [3]Shaffer (1982); [4]Bikker and Haaf (2002)

Source: Panzar and Rosse (1987), Shaffer (1982), Vesala (1995), Bikker and Haaf (2002, p.2195), Bikker et al. (2011)

3.2   The empirical model

By using the P-R method, this study develops two empirical models to examine the existence of a contestable market in Indonesian banking. The first model is developed to investigate the evolution of the degree of competition in Indonesian banking. It estimates the yearly H-statistics between the observation period of 1980 and 2010. The second model imposes interaction variables to capture the role of opening the market on the creation of contestable banking.

3.2.1   The yearly estimates of H-statistics

Particularly, this study employs the unscaled-revenue specification of the P-R method. This specification is preferred compared to price and scaled-revenue specification based on Bikker et al. (2011). The comparison between the three specifications in estimating the competition in the banking industry is also available in Mulyaningsih (2014).

As the objective of this study is estimating the degree of competition in the Indonesian banking industry across time, thus we modified the model by incorporating the interaction variables to capture the year dummies and input prices. Below is the econometric model to assess changes in competition over time.

Unscaled-revenue specification with time-varying H-statistics.

$$LnTR_{it} = \propto_0 + \left(\sum_{i=1}^{3} \beta_j \ln\left(w_{jit} \mid \text{with } t \, E \text{ year} = 1 \mid\right) + \gamma_1 \ln EQ_{it} \right)$$
$$+ \gamma_2 \ln DEP_{it} + \gamma_3 LnOI_{oit} + \gamma_4 \ln DDC_{it} + \sigma_1 + \varepsilon_{i,t} \qquad (2)$$
$$\ln\left(w_{jit} \mid \text{with } t \, E \text{ year} = 1 \mid\right) = \ln\left(w_{jit}\right) \text{ if } t \text{ is in year} = 1, \text{ otherwise} = 0$$

In estimating the evolution of the degree of competition, we model the whole panel from 1980 to 2010, but there is a concern over the number of parameters to be estimated. If the number of parameters to be estimated is too large, this reduces the degrees of freedom. Another consideration is related to the uneven number of observations in the panel of 31 years, from 1980 and 2010, because of entry, exit or unavailability of data. This creates an unbalanced panel.

Due to this limitation, this study divided the panel based on the break in the number of banks by breaking the panel based on the year where there is a significant change in the number of banks. Conducting the panel split has a number of advantages. Firstly, this split method creates a more balanced panel. Secondly, the break of the number of banks is aligned with the structural changes in the banking industry because policy changes alter the competitive environment. During the deregulation and liberalisation period, banks faced fewer barriers and constraints compared to the period during the crisis or under consolidation. Therefore, this has more observations under the deregulation and the liberalisation period than other periods (prior to deregulation, economic and banking crisis, and consolidation).

According to data, we have four year breaks so we have five panels. The first break is 1989 when 18 new local private and nine joint venture banks were established. In the second break of 1993, there were 86 new entrants, consisting of 75 local private banks and 11 joint ventures. The third break is in the crisis period when 33 banks exited from the market in 1998 through closure or merger. The fourth break was another reduction in

the number of banks in 2000 (21 banks). Table 3 provides information on the number of panels with the number of banks and total observations for each panel.

Table 2 Specification of variables of the competitive environment test

Variable	Variable specification
i	Is the index for bank
t	Is the index for year between 1980 and 2010
j	Is the index for three input price variables which are w_1, w_2, w_3
TR_{it}	Is bank revenue measured by the values of total revenue or interest income of banks i and time t
w_{1it}	Is funding rate measured by the ratio of annual interest expenses to total deposits of bank i and time t
w_{2it}	Is wage rate/personnel expenses measured by the ratio of annual wage and salary expenses to total deposits plus total loans of bank i and time t
w_{3it}	Is capital rate measure by the ratio of other expenses to fixed assets of bank i and time t
OI_{it}	Is the proportion of non-interest income measured by the ratio of non-interest income to interest income of bank i and time t
EQ_{it}	Is capital risk measured by the ratio of equity to total assets of bank i and time t
DEP_{it}	Is deposit mix measured by the ratio of total deposits on total assets of bank i and time t
DDC_{it}	Is deposits mix measured by the ratio of demand deposits to total deposit of bank i and time t
σ	Is the bank fixed-effect (unobserved heterogeneity)
ε	Is a white-noise error term that includes errors in the competition measure.

Table 3 The five panels based on the break in number of banks

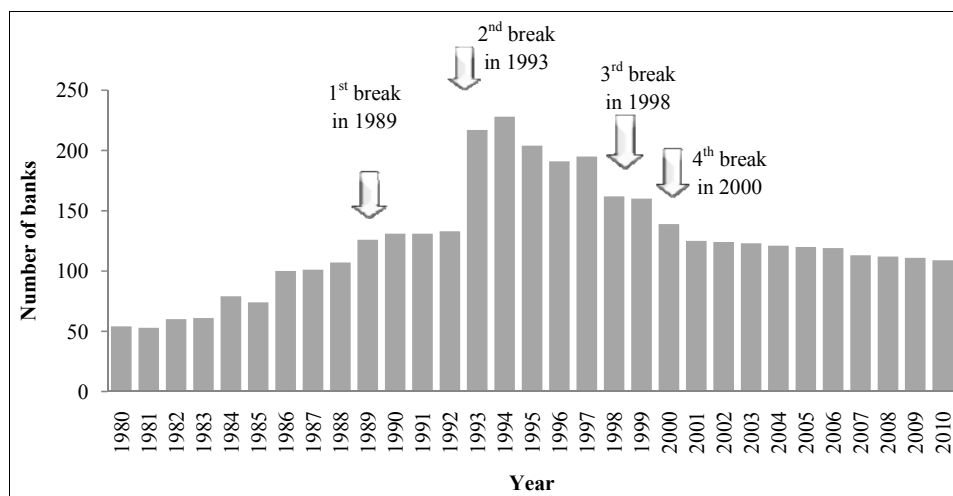| Panel	Period	Total number of banks within the observation period	Number of observation
1st panel	1980–1988	120	668
2nd panel	1989–1992	287*	3,689
3rd panel	1993–1997	287*	3,688
4th panel	1998–1999	287*	3,684
5th panel	2000–2010	145	1,242

Notes: *The number of observations is same for the 2nd, 3rd and 4th panels because they cover the total number of banks within the observation period. This paper divided them into three panels rather than collapse them to one panel because there were significant break in the number of observation in 1989, 1993 and 1998.

In order to assure the robustness of the panel split method, we also estimated the evolution of the degree of competition by using two other methods. First is dividing the panel into four, based on structural changes, prior deregulation; deregulation/liberalisation; banking and economic crisis; consolidation, assuming that each period of the structural changes has the same competitive environment. Secondly, this study divides the panel for every ten years to cover one period for one decade. The number of panels is three and the number of years is ten, except for the last period which

has 11 years of observation. Figure 1 shows the evolution of the number of banks and the break years.

Further, this study estimates the evolution of banking competition based on model 1. The evolution of elasticity of the reduced form of revenues with respect to factor prices is calculated by summing up the coefficient of the interaction variables. The interaction variables are the multiplication of input prices variables and years dummies. Further, the elasticity of banks' revenue with respect to changes of input prices is calculated by summing the coefficient of three input prices. The first input price (w_1) is the funding rate. The second input price (w_2) is the wage rate and the third input price (w_3) is the capital rate. Regarding the H-statistics, higher values imply a higher level of competition.

Figure 1   The break of the number of banks between 1980 and 2010

Notes: The increase in the number of banks in 1986 occurred as the Central Bank officially incorporated the data of 27 development banks owned by the regional government. Those banks actually entered the industry before 1986 and they may have entered in various times. Considering this fact, this study does not consider 1986 as a break year even though 27 development banks appeared in the database.

Source: The Annual Financial Report of Banks, published by the Central Bank of Indonesia

3.2.2   *The impact of structural changes on market structure of Indonesian banking*

The second model captures the impact of opening the market by introducing the structural changes which are the introduction of banking reforms, 1992 banking liberalisation, the occurrence of the 1997 crisis and banking consolidation in the model. This study tests the changes on input price coefficients to understand the impact of the structural changes on competition. Referring to Gelos and Roldos (2002), the test of changes on input price coefficients can be implemented by adding interaction variables. The variables will capture structural changes in the banking industry. Further, the study divided the observation period into some sub-periods and "interacting the input price variables ($\log(w_1)$, $\log(w_2)$ and $\log(w_3)$) with a dummy variable that takes the value of one

in the tested sub-period" [Gelos and Roldos, (2002), p.15]. The interaction variables will show whether opening the market significantly altered banks' competitive behaviour. "If the interaction variables generate significant values, they indicate a structural break in the statistical relationship between revenues and input prices" (Gelos and Roldos, 2002). In addition, the value of interaction variables will determine the direction of changes on competition. If they are positive, we can conclude if the structural changes increase competition or not. Further, if the H-statistics are positive between 0 and 1 and the cumulative value of the interaction variables is positive, it implies stronger competition [Vesala, (1995), p.56].[1]

Further, the interaction dummies were employed to identify different periods of regulations to assess the impact of structural changes on banking competition. The first group of interaction dummies measure the impact of the 1988 deregulation on competition covering the period 1988 to 1991 as the deregulation period. The second group of interaction dummies measure the impact of banking liberalisation (to represent the larger foreign penetration) on competition covering the period 1992 to 1996 as the liberalisation period. The periods designated for banking deregulation and liberalisation relate with the time when the initial effect was mostly felt. Thus, this means that the dummy does not preclude effects continuing on into the future. So for example banking reforms in the early 1990s may still have an effect on outcome today but more dominant will be the effects of regulation changes made after 1997 crisis. The third group of interaction dummies shows the influence of 1997 crisis management on competition covering the period of 1997 to 2000 as the crisis period. Finally, the fourth group of interaction dummies covers the impact of banking consolidation in 2001 and covers the period 2001 to 2010. In order to examine the impact of structural changes on banking competition, the interaction dummies were estimated by using a panel data approach. Below is the specification of the model that is used to estimate the impact of structural change on competition.

Unscaled revenue specification with interaction variables (1980 to 1987 as base period)

$$
\begin{aligned}
\ln TR_{ot} = {} & \alpha_0 + \sum_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \\
& + 1988D * \left[\alpha_0 + \sum_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \right] \\
& + 1992D * \left[\alpha_0 + \sum_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \right] \\
& + 1997D + \left[\alpha_0 + \sum_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \right] \\
& + 2001D * \left[\alpha_0 + \sum_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \right] \\
& + \sigma_i + \varepsilon_{it}
\end{aligned} \tag{3}
$$

Table 4 provides detailed information about the specification of dummies variables. It explains the definitions and proxies used to measure the dummy variables. The specifications of dependent and independent variables other than the dummy variables are available in Table 2.

Table 4   Specification of dummies variables for assessing the impact of structural changes on competition

Variable	Variable specification
$1988D_{jit}$	Is dummy of deregulation in 1988 multiplied by input price j, bank i and t
	$1988D_{jit} = 1$ if $t = 1988$; 1989; 1990; 1991
$1992D_{jit}$	Is dummy of liberalisation in 1992 multiplied by input price j, bank i and time t
	$1992D_{jit} = 1$ if $t = 1992$; 1993; 1994; 1995; 1996
$1997D_{jit}$	Is dummy of economic and banking crisis in 1997 multiplied by input price j, bank i and time t
	$1997D_{jit} = 1$ if $t = 1997$; 1998; 1999; 2000
$2001D_{jit}$	Is dummy of consolidation in 2001 multiplied by input price j, bank i and time t
	$2001D_{jit} = 1$ if $t = 2001$; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010

4   Analysis and discussion

Both empirical models are estimated by employing the fixed-effect (FE) panel data regression. Based on the Hausman test, the FE method is more suitable than the RE to estimate the degree of competition in the banking industry. In addition, this study conducted the equilibrium test to assure that the model fulfilled the assumptions of the P-R method.[2] Table 5 provides relevant sample statistics for the dependent variables, input prices, and control variables. The data for total revenue, interest income, and total assets are expressed in units of millions of Rupiah (deflated by using the GDP deflator where 2005 is the base year). The other variables are stated in ratio form. The reported means, minimum, and maximum values of each variable demonstrate that the size of banks varies strongly. As measured by revenues, data confirms that there was significant variation in banks capacity.

As explained in the empirical method section, to conduct yearly estimates of the degree of banking competition, this study considered breaking the panel based on the structural changes and equally split the panel into three. The estimations from two methods do not differ from the proposed method based on the break in the number of banks. This implies that the measure of evolution of banking competition is robust using the three methods. The degree of competition, as represented by the H-statistics, reached the highest level in 1989 with 0.84. The second highest level of competition was observed in 2000 with 0.46. The third highest level of competition was in 1992 with 0.41.

Figure 2 shows the evolution of the degree of competition in the Indonesian banking industry. It demonstrates the changes of the values of H-statistics during the observation period. Three different methods of the panel splits generate similar information on the evolution of competition in the Indonesian banking industry. The competition was weak prior to 1988. The industry became very competitive between 1988 and 1992. The degree of competition was reduced in the mid to late 1990s. Competition was strengthened in the early 2000s, however the H-statistics were further lowered in the mid and late 2000s.

Table 5 Descriptive statistics of dependent and independent variables

Variable	Symbol	Means	Minimum value	Maximum value
Dependent variable				
Total revenue in real value (in millions of Rupiah, in real value after deflated with GDP deflator)	TR	7,269	–278[a]	341,000
Independent variable				
Fund price	w_1	0.2	0.0008	107[b]
Personnel cost	w_2	0.018	0.00002	6.6[b]
Capital price	w_3	3.03	–15.91[c]	539[d]
Ratio of non-interest income to interest income	OI	0.18	–1.5[a]	17[e]
Ratio of equity to total assets	EQ	0.12	–4.6[f]	1.3
Ratio of deposits to total assets	DEP	0.66	0.0002	4.1[g]
Ratio of demand deposits to total deposits	DDC	0.3	0.0001	1

Notes: The descriptive statistics is based on author calculation.
[a]The negative values recorded from 1999 data. Some banks had negative values of their non-interest income in 1999 which originated from foreign exchange transactions.
[b]The values of fund price and personnel cost are higher than one. It s recorded by Bank Barclay in 2010. It experienced financial difficulties where the costs were much higher that the values of the assets.
[c]The negative values recorded in 1998 to 1999 which originated from other operational costs.
[d]The value of capital price is higher than one. Some banks experienced financial difficulty in the banking crisis, particularly in 1998. During crisis, the value of non-operational expenses exploded because there was a substantial reduction in the values of productive assets.
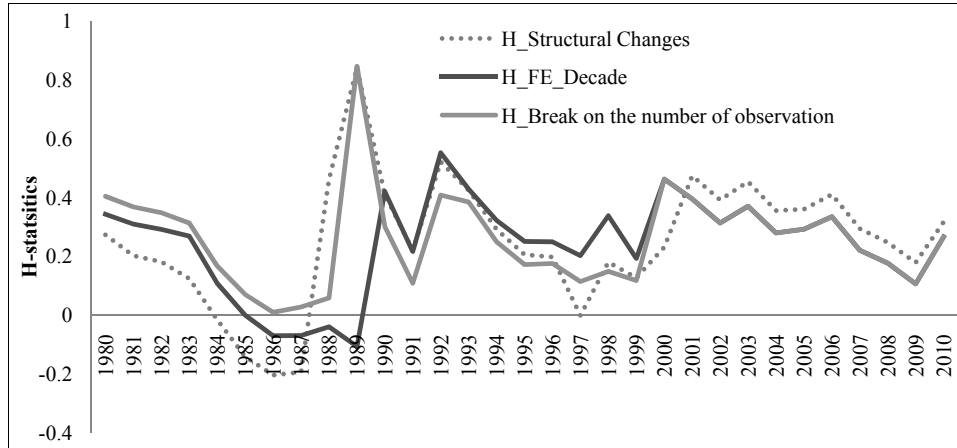[e]In some years, banks had higher non-interest income than their interest income. It was contributed by the spot and derivatives investment.
[f]The negative values recorded in 1998 to 1999 because some banks experienced negative equity as the impact of economic and banking crisis in 1997 to 1998.
[g]The value is more than one because the value of deposits of Bank Tamara in 1998 was negative. In addition to that, the value of equity was negative.
   Source: the Annual Financial Report of Banks, published by the Central Bank of Indonesia

Hypothesis testing was conducted to examine the existence of a contestable market. An F-test was carried out to find out whether the joint coefficient of yearly input prices (H-statistics) equals one or not. The hypothesis testing shows that Indonesian banking was operating under a contestable market in 1989. As described above, the H-statistics in 1989 is 0.84 or close to one. The tests of joint coefficients (H-statistics) show that the H-statistics in 1989 could not reject contestable banking at the 99% level of confidence.

Figure 2   The competition evolution using three different methods

The second estimation of the impact of opening the market on the degree of competition confirmed that the banking deregulations in 1988 and banking liberalisation in 1992 significantly enhanced competition, thus created a contestable market. On the contrary, the crisis management in 1997 and banking consolidation in 2001 did not introduce a significant change to improve banking competition. Table 6 reveals the estimation of the impact of structural changes on banking competition between 1980 and 2010. Figure 3 provides the summary of values of the interaction variables of input prices and dummy for each structural break. The H-statistic for the base years, 1980 to 1987, is –0.01. The sum of the interaction variables of input prices and the dummy of deregulation for 1988 is 1.15. Its value is significantly larger than zero using the 99% confidence level. It implies that opening the market introducing the deregulation policies between 1988 and 1991 improved competition in the banking industry. Regarding the liberalisation policy in 1992, the interaction variables of input prices and the dummy of liberalisation is also significantly different from zero. The sum of interaction variables of banking liberalisation is 0.74 and it is significant at the 99% confidence level.

The findings also implied that restricting the new entrants reduces competition in the banking industry. The interaction variables capture the elasticity of revenue with respect to input prices within the crisis period 1997 to 2000 at 0.31. It is not significantly different from zero thus crisis management in 1997 did not lead to a substantial improvement in banking competition compared to the base period, 1980 to 1987. For the period of banking consolidation in the 2000s, the sum of interaction variables of input prices and the dummy of consolidation is 0.42. The statistical test shows that the value is not significantly different from zero. This finding reveals that banking consolidation in the 2000s did not improve competition. The degree of competition during the consolidation period is not different compared to the degree of competition during the base period of 1980 to 1987.

Table 6 The impact of structural changes on competition between 1980 and 2010

Explanatory variables	Unscaled revenue specification[a]	
w_1	0.41	***
	(0.13)	
w_2	−0.62	***
	(0.16)	
w_3	0.19	***
	(0.07)	
OI	0.07	
	(0.05)	
EQ	−0.30	***
	(0.1)	
DEP	0.37	*
	(0.20)	
DDC	−0.23	*
	(0.14)	
$1988D_{it}$	1.17[b]	***
	(0.05)	
$1992D_{it}$	0.75[c]	***
	(0.06)	
$1997D_{it}$	0.32[d]	
	(0.15)	
$2001D_{it}$	0.43[e]	*
	(0.13)	
Number of observation	3,639	
R^2 within	0.73	
H-statistics for the base period (1980–1987)	−0.01	
Standard deviation of the H-statistics for the base period (1980–1987)	(0.01)	

Notes: Total revenue as proxy of bank revenue with and without time effect dummies.
   ***Denotes significance at the 1% level; **denotes significance at the 5% level;
   *denotes significance at the 10% level. FE means fixed effect estimates. Figures
   in parentheses are *t* ratios. Clustered standard errors have been used to deal with
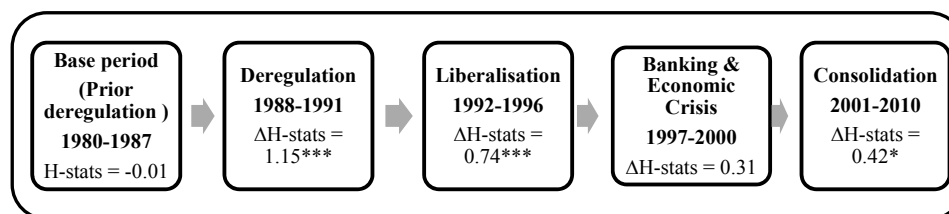   general heteroskedaticity and cross-sectional correlation in the model error
   (Baum, 2006).
   [a]Total revenue as dependent variable.
   [b]The joint coefficients of interaction variables of deregulation 1988 are
   significantly different from zero (level of confidence 99%).
   [c]The joint coefficients of interaction variables of liberalisation 1992 are
   significantly different from zero (level of confidence 99%).
   [d]The joint coefficients of interaction variables of banking and economic crisis
   1997 are not significantly different from zero (level of confidence 99%).
   [e]The joint coefficients of interaction variables of consolidation 2001 are not
   significantly different from zero (level of confidence 99%).

Figure 3   The banking competition (H-statistics) across periods based on estimation from Table 6

| Base period (Prior deregulation) 1980-1987 H-stats = -0.01 | Deregulation 1988-1991 ΔH-stats = 1.15*** | Liberalisation 1992-1996 ΔH-stats = 0.74*** | Banking & Economic Crisis 1997-2000 ΔH-stats = 0.31 | Consolidation 2001-2010 ΔH-stats = 0.42* |

Notes: *** denotes significance at the 1% level; *denotes significance at the 10% level.

5   Conclusions

This study found that opening the market substantially enhanced competition in the banking industry in Indonesia. Furthermore, free entry facilitated the creation of a contestable market by opening the industry for any potential entrants. This had a disciplinary effect on the incumbents to operate efficiently. The estimation of the degree of competition in Indonesian banking shows that the market was contestable in 1989 after the introduction of banking deregulation in 1988. Moreover, banking liberalisation in 1992 opened the industry wider for foreign banks. This also, contributed to enhancing competition in the banking industry. Finally, this study suggests that restricting the market for new entrants as observed in the consolidation period in the 2000s explains the lower degree of competition in the Indonesian banking industry. This finding is consistent with the contestable market theory. The absence of potential entrant explains the lack of market discipline for the incumbents to operate efficiently.

References

Alhadeff, D.A. (1967) 'Monopolistic competition and banking markets', in Kuenne, R.E. (Ed.): *Monopolistic Competition Theory: Studies in Impact: Essays in Honor of Edward H. Chamberlin*, John Willey & Sons, New York.

Bank Indonesia (2008) *The Program of Indonesian Banking Architecture* [online] http://www.bi.go.id/web/id/Publikasi/Perbankan+dan+Stabilitas+Keuangan/Arsitektur+ Perbankan+Indonesia/api18.htm (accessed 22 May 2013).

Baum, C.F. (2006) *An Introduction to Modern Econometrics Using Stata*, Stata Press Books, College Station, Tex.

Baumol, W.J. (1982) 'Contestable markets: an upraising in the theory of industry structure', *The American Economic Review*, Vol. 72, No. 1, pp.1–15.

Berger, A.N. (1995) 'The profit-structure relationship in banking – tests of market power and efficient-structure hypotheses', *Journal of Money, Credit and Banking*, Vol. 27, No. 2, pp.404–31.

Bikker, J.A. and Haaf, K. (2002) 'Competition, concentration and their relationship: an empirical analysis of the banking industry', *Journal of Banking & Finance*, Vol. 26, No. 11, pp.2191–214.

Bikker, J.A., Shaffer, S. and Spierdijk, L. (2011) 'Assessing competition with the Panzar-Rosse model: the role of scale, costs, and equilibrium', *Review of Economics and Statistics*, Vol. 94, No. 4, pp.1025–1044.

Bresnahan, T.F. (1982) 'The oligopoly solution concept is identified', *Economics Letters*, Vol. 10, Nos. 1–2, pp.87–92.

Claessens, S. and Laeven, L. (2004) 'What drives bank competition? Some international evidence', *Journal of Money, Credit & Banking*, Vol. 36, No. 3, pp.563–83.

Gelos, G.R. and Roldos, J. (2002) *Consolidation and Market Structure in Emerging Market Banking Systems*, Vol. 2, No. 186, pp.1–29, IMF Working Paper.

Iwata, G. (1974) 'Measurement of conjectural variations in oligopoly', *Econometrica*, Vol. 42, No. 5, pp.947–966, doi: 10.2307/1913800.

Liu, H., Molyneux, P. and Nguyen, L.H. (2011) 'Competition and risk in South East Asian commercial banking', *Applied Economics*, Vol. 44, No. 28, pp.3627–3644.

Mulyaningsih, T. (2014) *Banking Competition and Its Relationship with Banking Stability: Evidence from Indonesia 1980–2010*, University of Canberra, Canberra [online] http://webpac.canberra.edu.au/search/?searchtype=X&SORT=D&searcharg=tri+ mulyaningsih&searchscope=4&submit.x=0&submit.y=0 (accessed 28 January 2014).

Panzar, J.C. and Rosse, J.N. (1987) 'Testing for 'monopoly' equilibrium', *The Journal of Industrial Economics*, Vol. 35, No. 4, pp.443–456.

Rosengard, J.K. and Prasetyantoko, A. (2011) 'If the banks are doing so well, why can't I get a loan? Regulatory constraints to financial inclusion in Indonesia', *Asian Economic Policy Review*, Vol. 6, No. 2, pp.273–296.

Shaffer, S. (1982) 'A non-structural test for competition in financial markets', Paper presented to *Conference on Bank Structure and Competition*, Federal Reserve Bank of Chicago.

Shaffer, S. (2004) 'Patterns of competition in banking', *Journal of Economics and Business*, Vol. 56, No. 4, pp.287–313.

Spong, K. (2000) *Banking Regulation: Its Purposes, Implementation and Effects*, 5th ed., http://www.kc.frb.org (accessed 8 August 2013).

Vesala, J. (1995) 'Testing for competition in banking: behavioral evidence from Finland', *Bank of Finland Studies*, Vol. E, No. 1, pp.1–167.

World Bank (2013) 'Global financial development report', *Rethinking the Role of State in Finance* [online] http://econ.worldbank.org/ (accessed 18 September 2012).

Yeyati, E.L. and Micco, A. (2007) 'Concentration and foreign penetration in Latin American banking sectors: impact on competition and risk', *Journal of Banking & Finance*, Vol. 31, No. 6, pp.1633–1647.

Notes

1 Bikker and Haaf (2002) and Vesala (1995) explain that the result of the interpretation of H-statistics between 0 and 1 is a continuous measure of the level of competition. Further, the higher value of H can be used as an indication of the stronger level of competition.

2 The results of Hausman and equilibrium test are available upon request to the authors.

HASIL - Mulyaningsih et al 2016, creating contestable banking

by Tri Mulyaningsuh

149

Creating contestable banking market: the effect of changes in the regulatory structure in Indonesia

Tri Mulyaningsih*

Faculty of Economics and Business, UNS,
Sebelas Maret Surakarta University,
Jl. Ir Sutami 36A, Surakarta 57126, Indonesia
Email: trimulyaningsih.uns@gmail.com
*Corresponding author

Anne Daly

Faculty of Business, Government and Law,
University of Canberra,
ACT 2610, Australia
Email: anne.daly@canberra.edu.au

Riyana Miranti

National Centre for Social and Economic Modelling,
University of Canberra,
ACT 2610, Australia
Email: riyana.miranti@canberra.edu.au

Abstract: Banks have market power due to the existence of product differentiation, high switching costs, locational characteristics, banks specialised knowledge and segmented customers. Therefore, creating a contestable market is more realistic than establishing perfect competition. This study aims to examine the role of opening the market to create contestability. In the last 30 years, the industry experienced structural changes from a closed-regulated into open-less regulated industry. The Panzar-Rosse method is employed to estimate the degree of competition, find the market structure and assess the impact of opening the market to competition. This study found that in a free entry market, banks are more competitive. The potential entrants act as market discipline so it facilitates the creation of a contestable market as observed in 1989. On the other hand, the absence of potential entrants explains the lack of market discipline for the incumbents to operate efficiently in the 2000s.

Keywords: contestable market; Panzar-Rosse method; potential entrants; emerging economies; Indonesia.

Biographical notes: Tri Mulyaningsih is a Lecturer at the Faculty of Economics and Business at the University of Sebelas Maret Indonesia. She has just completed her PhD in Economics with the thesis discussing the competition in Indonesian banking and its relationship with financial stability. Her research interest is in the area of market structure, firms behaviour and market performance.

Anne Daly is a Professor of economics in the Faculty of Business, Government and Law. Her research interests are wide ranging in the area of applied economics and include the effects of economic reform on the performance of industries; the economic status of women, indigenous Australians and migrants and studies of disadvantage. She is particularly interested in researching in these areas using cross country comparisons.

Riyana Miranti is a Senior Research Fellow at The National Centre for Social and Economic Modelling (NATSEM), Institute for Governance and Policy Analysis, University of Canberra. As a socio-economist, she has a strong research interest and extensive experience to do research related to social wellbeing and equity particularly focusing on the issues of disadvantage and wellbeing including poverty, social exclusion and inequality affecting children, women, older people, families and other groups of population in Australia and Indonesia.

This paper is a revised and expanded version of a paper entitled 'Examining banking industry competitiveness: structural changes and market contestability in the case of Indonesian banking' presented at SIBR-RDINRRU 2014 Conference on Interdisciplinary Business and Economic Research, Kimberley Hotel, Hong Kong, 27–28 September 2014.

---

1   Introduction

Many studies conclude that banks in most countries are working in an imperfectly competitive market. Banks have market power due to the existence of product differentiation, high switching costs to move from one bank to others, locational characteristics, and banks' possession of specialised knowledge and segmented customers (Alhadeff, 1967; Berger, 1995). From the welfare point of view, an imperfectly competitive market produces inefficient outcomes with higher prices than marginal cost and lower output than would be produced under perfect competition. The literature suggests that the most efficient market is one with perfect competition where banks produce at their marginal cost; thus, there is no economic profit. In the face of barriers to free entry, creating a contestable market is argued to be a more realistic goal than creating a perfectly competitive market (Baumol, 1982). Perfect competition is rare. Under perfect competition, the number of banks must be large enough (or infinite) in order to assure that none of the banks has influential power over price. In addition, banks have to offer homogenous products where the qualities and the features of the products do not vary across banks. This is inapplicable to the banking industry where customers are segmented and there are geographical differences among different markets.

Furthermore, Baumol (1982) argues that contestable markets produce an optimal equilibrium solution that is close to the perfect competition market. It means that in the contestable market, banks behave efficiently because banks have to offer service at

marginal cost even though banks operate in an imperfect market. Regardless of the market structure of the banking industry, banks must perform efficiently by offering the best services to their customers with price equal to the marginal cost. If the incumbents create an economic profit; new entrants will come into the market. The new entrants, who are assumed to be more efficient, will be able to offer the services at a lower price. Potential entrants or potential competitors are the main instrument of market discipline. With the presumption that there are potential entrants, the incumbents have to produce at an efficient level in order to prevent any new entrant. Having efficient banks in the market means that there is no inefficiency found in the industry, particularly in the long-run (Baumol, 1982). Finally, a contestable market is perceived to be powerful because no product will be sold at a price that is less than the marginal cost (Baumol, 1982). Incumbents generate profits by charging lower prices than the marginal cost; there is an invitation for the new entrants to undercut the incumbents. The new entrants will also charge a slightly lower than marginal cost and make profit of it. It shows that in the contestable markets, banks will not practice predatory pricing in order to prevent the entry of potential competitors.

Under contestable markets, banks can just earn normal profits where price equals marginal cost if the market provides freedom of entry and exit. Freedom of entry implies that it is costless for entrants to enter the market by assuming "the entrants suffer no disadvantage in term of production technique or perceived product quality relative to the incumbent and the potential entrants find it appropriate to evaluate the profitability of entry in terms of the incumbent firms' pre-entry prices" [Baumol, 1982), p.3]. In regard to freedom of exit, Baumol (1982, p.4) assumes that "any bank or firm can leave without impediment, and in the process of departure can recoup any cost incurred in the entry process". In the case of the banking industry, this assumption requires regulation that allows the timely exit of insolvent banks (World Bank, 2013).

Therefore, opening the market is necessary to create contestable banking. In the case of the banking industry, the condition of entry and exit is determined by the chartering and exit polices introduced by the banking supervisory institution. In Indonesia, prior 2014, the Central Bank of Indonesia was responsible for supervising the banking industry. The supervision authority was shifted to the Indonesia Financial Service Authority (OJK) in 2014. Banking is a highly-regulated industry compared to other industries. State intervention in the banking system is justified by the presumption that banks are treated as a public matter even though banks work for the profit motive (Spong, 2000). In addition, there is the possibility of market failure through asymmetric information and externalities. Thus, this study aims to examine the role of opening the market to create contestable banking. Indonesian banking is suitable to examine this issue because it experienced structural changes in the past 30 years from a closed-regulated industry into an open-less regulated industry.

2   The structural changes in the Indonesian banking

This section discusses the changes of policies in the Indonesian banking industry for the last 30 years. Before the 1980s, banking industry was restricted due to quantitative and qualitative controls, chartering regulation that created barriers to enter the market, and the subsidised loans in the banking industry. The government imposed controls by

determining the level of interest rates for lending and time deposits. The chartering policy restricted the industry for private banks; both domestic and foreign. The restriction was also applied to business expansion. The regulation restricted the opening of new branches. In addition, the intermediary cost was high because banks were required to meet a high reserve-requirement.

Between 1983 and 1992, the authorities reformed the banking industry. In terms of chartering, government removed the barriers to entry by allowing new entrants (domestic private banks and foreign banks) to participate in Indonesian banking. Foreign banks are allowed to enter the local market by setting up of joint venture banks with local partners. The chartering also eased entry by lowering the capital requirements to enter the industry. Deregulation also removed the restriction on business expansion by cutting down the requirement to open new branches. Banks were also free to introduce saving deposit products of their own design. The intermediary cost also reduced as the reforms lowered the reserve requirement from 15% to 2%. In addition, banking deregulation removed control on interest rates, lending limit, and interbank borrowing limits. Finally, the banking reforms removed subsidised loans.

Further, Indonesian banking experienced crisis in 1997. In order to resolve the problem, there were a series of banks recapitalisation, banks closures and mergers. Following the crisis, Indonesian banking was consolidated in the 2000s. The Indonesian Banking Architecture was introduced to create an industry with fewer banks (Bank Indonesia, 2008; Rosengard and Prasetyantoko, 2011). Banking consolidation rather than deregulation was considered to be important for creating a strong and stable industry (Bank Indonesia, 2008). Through consolidation, banks will have a larger capital base that enables them to maintain their business and control risks, develop information technology, and increase the scale to support the expansion of credit capacity. In order to encourage banks to be better capitalised, banks had to comply with a higher minimum requirement for base capital of 100 billion Rupiah by 2010. To increase capital, banks are allowed to receive additional capital injections from existing owners, merge with other banks, be acquired by bigger banks, or sell their shares on the capital market (Bank Indonesia, 2008). Meanwhile, recently banking market entry was tightened with a minimum capital of Rp3 trillion (US$335 million) compared to 50 billion Rupiah for commercial banks and 100 billion for joint venture banks in 1992. According to the Indonesian Banking Architecture, banking consolidation was predicted to reduce the number of banks by half to 121 banks in 2010 and to 58 banks in 2015. The chartering policy during the consolidation period put restrictions on newly established banks, both local and foreign banks, as the banks' licenses were only granted for the acquisition of local existing banks (Rosengard and Prasetyantoko, 2011).

3   Research methodology

3.1   The Panzar-Rosse method

In order to examine the role of opening the market in creating contestable banking in Indonesia, this study estimates the degree of competition in the banking industry across the observation period between 1980 and 2010. Particularly, this study relies on the recent refinement of the Panzar-Rosse (P-R) method based on Bikker et al. (2011). This method measures the degree of competition through a direct observation on banks

competitive behaviour. This method is suitable for this study because it facilitates the use of bank-level data [Claessens and Laeven, 2004; Liu et al., (2011), p.3631], robust in terms of market definition (Shaffer, 2004) and has been used extensively in empirical studies on banking competition due to the modest data requirements compared to Bresnahan's (1982) and Iwata's (1974) approaches.

The P-R method assumes that banks competitive behaviour is determined by the elasticity of bank revenue with respect to changes in factor prices or known as H-statistics. Equation below is the operationalisation of the reduced-form revenue equation to measure the elasticity by summing the β that measure the change of revenue in regards to the change in input prices. Where *TR* is the bank revenue; *w* refers to three input prices which are the funding price, the wage or personnel costs and the capital price; *BSF* are bank-specific exogenous factors, such as the risk components and differences in the deposit mix and *OI* is the contribution of non-interest income (Bikker et al., 2011; Yeyati and Micco, 2007).

$$LnTR = \alpha + \sum_{i=1}^{n} \beta_i \ln w_i + \sum_{j=1}^{J} \gamma_j \ln BSF_j + \Delta LnOI + \varepsilon \qquad (1)$$

Furthermore, the value of elasticity signals the structure of the banking industry where a highly competitive industry has higher H-statistics than the less competitive market (Vesala, 1995). Some studies suggest that if H-statistics are negative, the market is working under either a monopoly, collusive oligopoly or monopolistic competition without the threat of entry. The existence of perfectly competitive and contestable markets are signalled by positive H-statistics equal to one. The complete information on the discriminatory power of H-statistics is available in Table 1.

Table 1   Summary of discriminatory power of H-statistics

H-statistics	Market structure
H ≤ 0	Monopoly equilibrium: each bank operates independently as under monopoly profit maximisation conditions.
	Perfect cartel (collusive oligopoly).[1]
	Monopolistic competition without the threat of entry.[2]
0 < H < 1	Monopolistic competition with some product differentiation.
	Strategic interactions among a fixed number of banks in oligopoly market
H = 1	Perfect competition.
	Contestable market for example natural monopoly or monopolistic competition with a free entry equilibrium.[3]
	Free entry equilibrium with full efficient capacity utilisation.
	Monopolistic competition where banks products are regarded as perfect substitutes of one another.[4]

Notes: [1]Panzar and Rosse (1987) and Vesala (1995); [2]Vesala (1995); [3]Shaffer (1982); [4]Bikker and Haaf (2002)
Source: Panzar and Rosse (1987), Shaffer (1982), Vesala (1995), Bikker and Haaf (2002, p.2195), Bikker et al. (2011)

3.2   The empirical model

By using the P-R method, this study develops two empirical models to examine the existence of a contestable market in Indonesian banking. The first model is developed to investigate the evolution of the degree of competition in Indonesian banking. It estimates the yearly H-statistics between the observation period of 1980 and 2010. The second model imposes interaction variables to capture the role of opening the market on the creation of contestable banking.

3.2.1   The yearly estimates of H-statistics

Particularly, this study employs the unscaled-revenue specification of the P-R method. This specification is preferred compared to price and scaled-revenue specification based on Bikker et al. (2011). The comparison between the three specifications in estimating the competition in the banking industry is also available in Mulyaningsih (2014).

As the objective of this study is estimating the degree of competition in the Indonesian banking industry across time, thus we modified the model by incorporating the interaction variables to capture the year dummies and input prices. Below is the econometric model to assess changes in competition over time.

Unscaled-revenue specification with time-varying H-statistics.

$$LnTR_{it} = \propto_0 + \left(\sum_{i=1}^{3} \beta_j \ln \left(w_{jit} \mid \text{with } t \; E \; \text{year} = 1 \mid \right) + \gamma_1 \ln EQ_{it} \right)$$
$$+ \gamma_2 \ln DEP_{it} + \gamma_3 LnOI_{oit} + \gamma_4 \ln DDC_{it} + \sigma_1 + \varepsilon_{i,t} \qquad (2)$$
$$\ln \left(w_{jit} \mid \text{with } t \; E \; \text{year} = 1 \mid \right) = \ln \left(w_{jit} \right) \text{if } t \text{ is in year} = 1, \text{otherwise} = 0$$

In estimating the evolution of the degree of competition, we model the whole panel from 1980 to 2010, but there is a concern over the number of parameters to be estimated. If the number of parameters to be estimated is too large, this reduces the degrees of freedom. Another consideration is related to the uneven number of observations in the panel of 31 years, from 1980 and 2010, because of entry, exit or unavailability of data. This creates an unbalanced panel.

Due to this limitation, this study divided the panel based on the break in the number of banks by breaking the panel based on the year where there is a significant change in the number of banks. Conducting the panel split has a number of advantages. Firstly, this split method creates a more balanced panel. Secondly, the break of the number of banks is aligned with the structural changes in the banking industry because policy changes alter the competitive environment. During the deregulation and liberalisation period, banks faced fewer barriers and constraints compared to the period during the crisis or under consolidation. Therefore, this has more observations under the deregulation and the liberalisation period than other periods (prior to deregulation, economic and banking crisis, and consolidation).

According to data, we have four year breaks so we have five panels. The first break is 1989 when 18 new local private and nine joint venture banks were established. In the second break of 1993, there were 86 new entrants, consisting of 75 local private banks and 11 joint ventures. The third break is in the crisis period when 33 banks exited from the market in 1998 through closure or merger. The fourth break was another reduction in

the number of banks in 2000 (21 banks). Table 3 provides information on the number of panels with the number of banks and total observations for each panel.

Table 2 Specification of variables of the competitive environment test

Variable	Variable specification
i	Is the index for bank
t	Is the index for year between 1980 and 2010
j	Is the index for three input price variables which are w_1, w_2, w_3
TR_{it}	Is bank revenue measured by the values of total revenue or interest income of banks i and time t
w_{1it}	Is funding rate measured by the ratio of annual interest expenses to total deposits of bank i and time t
w_{2it}	wage rate/personnel expenses measured by the ratio of annual wage and salary expenses to total deposits plus total loans of bank i and time t
w_{3it}	Is capital rate measure by the ratio of other expenses to fixed assets of bank i and time t
OI_{it}	Is the proportion of non-interest income measured by the ratio of non-interest income to interest income of bank i and time t
EQ_{it}	Is capital risk measured by the ratio of equity to total assets of bank i and time t
DEP_{it}	Is deposit mix measured by the ratio of total deposits on total assets of bank i and time t
DDC_{it}	Is deposits mix measured by the ratio of demand deposits to total deposit of bank i and time t
σ	Is the bank fixed-effect (unobserved heterogeneity)
ε	Is a white-noise error term that includes errors in the competition measure.

Table 3 The five panels based on the break in number of banks

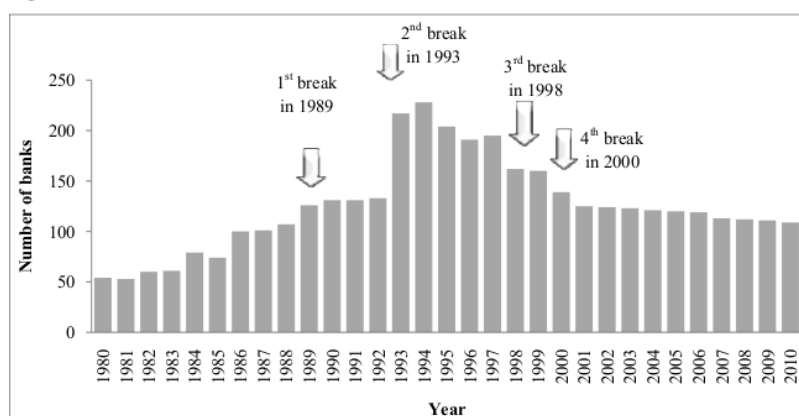| Panel	Period	Total number of banks within the observation period	Number of observation
1st panel	1980–1988	120	668
2nd panel	1989–1992	287*	3,689
3rd panel	1993–1997	287*	3,688
4th panel	1998–1999	287*	3,684
5th panel	2000–2010	145	1,242

Notes: *The number of observations is same for the 2nd, 3rd and 4th panels because they cover the total number of banks within the observation period. This paper divided them into three panels rather than collapse them to one panel because there were significant break in the number of observation in 1989, 1993 and 1998.

In order to assure the robustness of the panel split method, we also estimated the evolution of the degree of competition by using two other methods. First is dividing the panel into four, based on structural changes, prior deregulation; deregulation/liberalisation; banking and economic crisis; consolidation, assuming that each period of the structural changes has the same competitive environment. Secondly, this study divides the panel for every ten years to cover one period for one decade. The number of panels is three and the number of years is ten, except for the last period which

156   *T. Mulyaningsih et al.*

has 11 years of observation. Figure 1 shows the evolution of the number of banks and the break years.

Further, this study estimates the evolution of banking competition based on model 1. The evolution of elasticity of the reduced form of revenues with respect to factor prices is calculated by summing up the coefficient of the interaction variables. The interaction variables are the multiplication of input prices variables and years dummies. Further, the elasticity of banks' revenue with respect to changes of input prices is calculated by summing the coefficient of three input prices. The first input price (w_1) is the funding rate. The second input price (w_2) is the wage rate and the third input price (w_3) is the capital rate. Regarding the H-statistics, higher values imply a higher level of competition.

Figure 1   The break of the number of banks between 1980 and 2010

Notes: The increase in the number of banks in 1986 occurred as the Central Bank officially incorporated the data of 27 development banks owned by the regional government. Those banks actually entered the industry before 1986 and they may have entered in various times. Considering this fact, this study does not consider 1986 as a break year even though 27 development banks appeared in the database.

Source: The Annual Financial Report of Banks, published by the Central Bank of Indonesia

3.2.2   The impact of structural changes on market structure of Indonesian banking

The second model captures the impact of opening the market by introducing the structural changes which are the introduction of banking reforms, 1992 banking liberalisation, the occurrence of the 1997 crisis and banking consolidation in the model. This study tests the changes on input price coefficients to understand the impact of the structural changes on competition. Referring to Gelos and Roldos (2002), the test of changes on input price coefficients can be implemented by adding interaction variables. The variables will capture structural changes in the banking industry. Further, the study divided the observation period into some sub periods and "interacting the input price variables ($\log(w_1)$, $\log(w_2)$ and $\log(w_3)$) with a dummy variable that takes the value of one

in the tested sub-period" [Gelos and Roldos, (2002), p.15]. The interaction variables will show whether opening the market significantly altered banks' competitive behaviour. "If the interaction variables generate significant values, they indicate a structural break in the statistical relationship between revenues and input prices" (Gelos and Roldos, 2002). In addition, the value of interaction variables will determine the direction of changes on competition. If they are positive, we can conclude if the structural changes increase competition or not. Further, if the H-statistics are positive between 0 and 1 and the cumulative value of the interaction variables is positive, it implies stronger competition [Vesala, (1995), p.56].[1]

Further, the interaction dummies were employed to identify different periods of regulations to assess the impact of structural changes on banking competition. The first group of interaction dummies measure the impact of the 1988 deregulation on competition covering the period 1988 to 1991 as the deregulation period. The second group of interaction dummies measure the impact of banking liberalisation (to represent the larger foreign penetration) on competition covering the period 1992 to 1996 as the liberalisation period. The periods designated for banking deregulation and liberalisation relate with the time when the initial effect was mostly felt. Thus, this means that the dummy does not preclude effects continuing on into the future. So for example banking reforms in the early 1990s may still have an effect on outcome today but more dominant will be the effects of regulation changes made after 1997 crisis. The third group of interaction dummies shows the influence of 1997 crisis management on competition covering the period of 1997 to 2000 as the crisis period. Finally, the fourth group of interaction dummies covers the impact of banking consolidation in 2001 and covers the period 2001 to 2010. In order to examine the impact of structural changes on banking competition, the interaction dummies were estimated by using a panel data approach. Below is the specification of the model that is used to estimate the impact of structural change on competition.

Unscaled revenue specification with interaction variables (1980 to 1987 as base period)

$$
\begin{aligned}
\ln TR_{ot} = {} & \alpha_0 + \sum\nolimits_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \\
& + 1988D * \left[\alpha_0 + \sum\nolimits_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \right] \\
& + 1992D * \left[\alpha_0 + \sum\nolimits_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \right] \\
& + 1997D + \left[\alpha_0 + \sum\nolimits_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \right] \\
& + 2001D * \left[\alpha_0 + \sum\nolimits_{j=1}^{3} \beta_j \ln w_{jit} + \gamma_1 \ln EQ_{it} + \gamma_2 \ln DEP_{it} + \gamma_3 \ln OI_{it} + \gamma_4 \ln DDC_{it} \right] \\
& + \sigma_i + \varepsilon_{it}
\end{aligned} \tag{3}
$$

Table 4 provides detailed information about the specification of dummies variables. It explains the definitions and proxies used to measure the dummy variables. The specifications of dependent and independent variables other than the dummy variables are available in Table 2.

Table 4   Specification of dummies variables for assessing the impact of structural changes on competition

Variable	Variable specification
$1988D_{jit}$	Is dummy of deregulation in 1988 multiplied by input price j, bank i and t
	$1988D_{jit} = 1$ if $t = 1988; 1989; 1990; 1991$
$1992D_{jit}$	Is dummy of liberalisation in 1992 multiplied by input price j, bank i and time t
	$1992D_{jit} = 1$ if $t = 1992; 1993; 1994; 1995; 1996$
$1997D_{jit}$	Is dummy of economic and banking crisis in 1997 multiplied by input price j, bank i and time t
	$1997D_{jit} = 1$ if $t = 1997; 1998; 1999; 2000$
$2001D_{jit}$	Is dummy of consolidation in 2001 multiplied by input price j, bank i and time t
	$2001D_{jit} = 1$ if $t = 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010$

4   Analysis and discussion

Both empirical models are estimated by employing the fixed-effect (FE) panel data regression. Based on the Hausman test, the FE method is more suitable than the RE to estimate the degree of competition in the banking industry. In addition, this study conducted the equilibrium test to assure that the model fulfilled the assumptions of the P-R method.[2] Table 5 provides relevant sample statistics for the dependent variables, input prices, and control variables. The data for total revenue, interest income, and total assets are expressed in units of millions of Rupiah (deflated by using the GDP deflator where 2005 is the base year). The other variables are stated in ratio form. The reported means, minimum, and maximum values of each variable demonstrate that the size of banks varies strongly. As measured by revenues, data confirms that there was significant variation in banks capacity.

As explained in the empirical method section, to conduct yearly estimates of the degree of banking competition, this study considered breaking the panel based on the structural changes and equally split the panel into three. The estimations from two methods do not differ from the proposed method based on the break in the number of banks. This implies that the measure of evolution of banking competition is robust using the three methods. The degree of competition, as represented by the H-statistics, reached the highest level in 1989 with 0.84. The second highest level of competition was observed in 2000 with 0.46. The third highest level of competition was in 1992 with 0.41.

Figure 2 shows the evolution of the degree of competition in the Indonesian banking industry. It demonstrates the changes of the values of H-statistics during the observation period. Three different methods of the panel splits generate similar information on the evolution of competition in the Indonesian banking industry. The competition was weak prior to 1988. The industry became very competitive between 1988 and 1992. The degree of competition was reduced in the mid to late 1990s. Competition was strengthened in the early 2000s, however the H-statistics were further lowered in the mid and late 2000s.

Table 5 Descriptive statistics of dependent and independent variables

Variable	Symbol	Means	Minimum value	Maximum value
Dependent variable				
Total revenue in real value (in millions of Rupiah, in real value after deflated with GDP deflator)	TR	7,269	-278^a	341,000
Independent variable				
Fund price	w_1	0.2	0.0008	107^b
Personnel cost	w_2	0.018	0.00002	6.6^b
Capital price	w_3	3.03	-15.91^c	539^d
Ratio of non-interest income to interest income	OI	0.18	-1.5^a	17^e
Ratio of equity to total assets	EQ	0.12	-4.6^f	1.3
Ratio of deposits to total assets	DEP	0.66	0.0002	4.1^g
Ratio of demand deposits to total deposits	DDC	0.3	0.0001	1

Notes: The descriptive statistics is based on author calculation.
[a]The negative values recorded from 1999 data. Some banks had negative values of their non-interest income in 1999 which originated from foreign exchange transactions.
[b]The values of fund price and personnel cost are higher than one. It s recorded by Bank Barclay in 2010. It experienced financial difficulties where the costs were much higher that the values of the assets.
[c]The negative values recorded in 1998 to 1999 which originated from other operational costs.
[d]The value of capital price is higher than one. Some banks experienced financial difficulty in the banking crisis, particularly in 1998. During crisis, the value of non-operational expenses exploded because there was a substantial reduction in the values of productive assets.
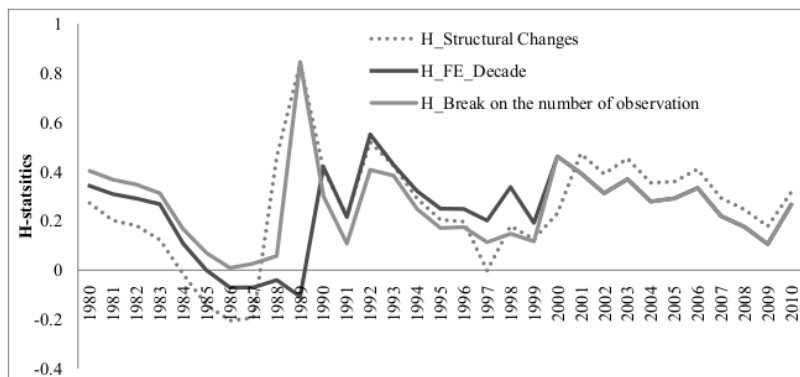[e]In some years, banks had higher non-interest income than their interest income. It was contributed by the spot and derivatives investment.
[f]The negative values recorded in 1998 to 1999 because some banks experienced negative equity as the impact of economic and banking crisis in 1997 to 1998.
[g]The value is more than one because the value of deposits of Bank Tamara in 1998 was negative. In addition to that, the value of equity was negative.

Source: the Annual Financial Report of Banks, published by the Central Bank of Indonesia

Hypothesis testing was conducted to examine the existence of a contestable market. An F-test was carried out to find out whether the joint coefficient of yearly input prices (H-statistics) equals one or not. The hypothesis testing shows that Indonesian banking was operating under a contestable market in 1989. As described above, the H-statistics in 1989 is 0.84 or close to one. The tests of joint coefficients (H-statistics) show that the H-statistics in 1989 could not reject contestable banking at the 99% level of confidence.

Figure 2   The competition evolution using three different methods

The second estimation of the impact of opening the market on the degree of competition confirmed that the banking deregulations in 1988 and banking liberalisation in 1992 significantly enhanced competition, thus created a contestable market. On the contrary, the crisis management in 1997 and banking consolidation in 2001 did not introduce a significant change to improve banking competition. Table 6 reveals the estimation of the impact of structural changes on banking competition between 1980 and 2010. Figure 3 provides the summary of values of the interaction variables of input prices and dummy each structural break. The H-statistic for the base years, 1980 to 1987, is –0.01. The sum of the interaction variables of input prices and the dummy of deregulation for 1988 is 1.15. Its value is significantly larger than zero using the 99% confidence level. It implies that opening the market introducing the deregulation policies between 1988 and 1991 improved competition in the banking industry. Regarding the liberalisation policy in 1992, the interaction variables of input prices and the dummy of liberalisation is also significantly different from zero. The sum of interaction variables of banking liberalisation is 0.74 and it is significant at the 99% confidence level.

The findings also implied that restricting the new entrants reduces competition in the banking industry. The interaction variables capture the elasticity of revenue with respect to input prices within the crisis period 1997 to 2000 at 0.31. It is not significantly different from zero thus crisis management in 1997 did not lead to a substantial improvement in banking competition compared to the base period, 1980 to 1987. For the period of banking consolidation in the 2000s, the sum of interaction variables of input prices and the dummy of consolidation is 0.42. The statistical test shows that the value is not significantly different from zero. This finding reveals that banking consolidation in the 2000s did not improve competition. The degree of competition during the consolidation period is not different compared to the degree of competition during the base period of 1980 to 1987.

Table 6 The impact of structural changes on competition between 1980 and 2010

Explanatory variables	Unscaled revenue specification[a]	
w_1	0.41	***
	(0.13)	
w_2	−0.62	***
	(0.16)	
w_3	0.19	***
	(0.07)	
OI	0.07	
	(0.05)	
EQ	−0.30	***
	(0.1)	
DEP	0.37	*
	(0.20)	
DDC	−0.23	*
	(0.14)	
$1988D_{it}$	1.17[b]	***
	(0.05)	
$1992D_{it}$	0.75[c]	***
	(0.06)	
$1997D_{it}$	0.32[d]	
	(0.15)	
$2001D_{it}$	0.43[e]	*
	(0.13)	
Number of observation	3,639	
R^2 within	0.73	
H-statistics for the base period (1980–1987)	−0.01	
Standard deviation of the H-statistics for the base period (1980–1987)	(0.01)	

Notes: Total revenue as proxy of bank revenue with and without time effect dummies. ***Denotes significance at the 1% level; **denotes significance at the 5% level; *denotes significance at the 10% level. FE means fixed effect estimates. Figures in parentheses are *t* ratios. Clustered standard errors have been used to deal with general heteroskedaticity and cross-sectional correlation in the model error (Baum, 2006).
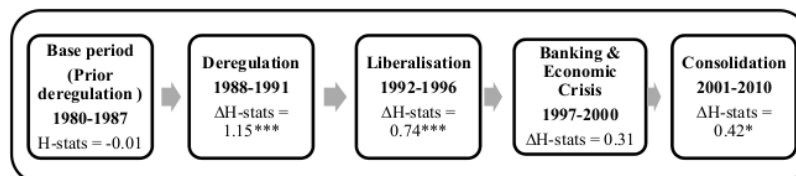[a]Total revenue as dependent variable.
[b]The joint coefficients of interaction variables of deregulation 1988 are significantly different from zero (level of confidence 99%).
[c]The joint coefficients of interaction variables of liberalisation 1992 are significantly different from zero (level of confidence 99%).
[d]The joint coefficients of interaction variables of banking and economic crisis 1997 are not significantly different from zero (level of confidence 99%).
[e]The joint coefficients of interaction variables of consolidation 2001 are not significantly different from zero (level of confidence 99%).

Figure 3   The banking competition (H-statistics) across periods based on estimation from Table 6

Notes: *** denotes significance at the 1% level; *denotes significance at the 10% level.

5   Conclusions

This study found that opening the market substantially enhanced competition in the banking industry in Indonesia. Furthermore, free entry facilitated the creation of a contestable market by opening the industry for any potential entrants. This had a disciplinary effect on the incumbents to operate efficiently. The estimation of the degree of competition in Indonesian banking shows that the market was contestable in 1989 after the introduction of banking deregulation in 1988. Moreover, banking liberalisation in 1992 opened the industry wider for foreign banks. This also, contributed to enhancing competition in the banking industry. Finally, this study suggests that restricting the market for new entrants as observed in the consolidation period in the 2000s explains the lower degree of competition in the Indonesian banking industry. This finding is consistent with the contestable market theory. The absence of potential entrant explains the lack of market discipline for the incumbents to operate efficiently.

References

Alhadeff, D.A. (1967) 'Monopolistic competition and banking markets', in Kuenne, R.E. (Ed.): *Monopolistic Competition Theory: Studies in Impact: Essays in Honor of Edward H. Chamberlin*, John Willey & Sons, New York.

Bank Indonesia (2008) *The Program of Indonesian Banking Architecture* [online] http://www.bi.go.id/web/id/Publikasi/Perbankan+dan+Stabilitas+Keuangan/Arsitektur+Perbankan+Indonesia/api18.htm (accessed 22 May 2013).

Baum, C.F. (2006) *An Introduction to Modern Econometrics Using Stata*, Stata Press Books, College Station, Tex.

Baumol, W.J. (1982) 'Contestable markets: an uprasing in the theory of industry structure', *The American Economic Review*, Vol. 72, No. 1, pp.1–15.

Berger, A.N. (1995) 'The profit-structure relationship in banking – tests of market power and efficient-structure hypotheses', *Journal of Money, Credit and Banking*, Vol. 27, No. 2, pp.404–31.

Bikker, J.A. and Haaf, K. (2002) 'Competition, concentration and their relationship: an empirical analysis of the banking industry', *Journal of Banking & Finance*, Vol. 26, No. 11, pp.2191–214.

Bikker, J.A., Shaffer, S. and Spierdijk, L. (2011) 'Assessing competition with the Panzar-Rosse model: the role of scale, costs, and equilibrium', *Review of Economics and Statistics*, Vol. 94, No. 4, pp.1025–1044.

Bresnahan, T.F. (1982) 'The oligopoly solution concept is identified', *Economics Letters*, Vol. 10, Nos. 1–2, pp.87–92.

Claessens, S. and Laeven, L. (2004) 'What drives bank competition? Some international evidence', *Journal of Money, Credit & Banking*, Vol. 36, No. 3, pp.563–83.

Gelos, G.R. and Roldos, J. (2002) *Consolidation and Market Structure in Emerging Market Banking Systems*, Vol. 2, No. 186, pp.1–29, IMF Working Paper.

Iwata, G. (1974) 'Measurement of conjectural variations in oligopoly', *Econometrica*, Vol. 42, No. 5, pp.947–966, doi: 10.2307/1913800.

Liu, H., Molyneux, P. and Nguyen, L.H. (2011) 'Competition and risk in South East Asian commercial banking', *Applied Economics*, Vol. 44, No. 28, pp.3627–3644.

Mulyaningsih, T. (2014) *Banking Competition and Its Relationship with Banking Stability: Evidence from Indonesia 1980–2010*, University of Canberra, Canberra [online] http://webpac.canberra.edu.au/search/?searchtype=X&SORT=D&searcharg=tri+mulyaningsih&searchscope=4&submit.x=0&submit.y=0 (accessed 28 January 2014).

Panzar, J.C. and Rosse, J.N. (1987) 'Testing for 'monopoly' equilibrium', *The Journal of Industrial Economics*, Vol. 35, No. 4, pp.443–456.

Rosengard, J.K. and Prasetyantoko, A. (2011) 'If the banks are doing so well, why can't I get a loan? Regulatory constraints to financial inclusion in Indonesia', *Asian Economic Policy Review*, Vol. 6, No. 2, pp.273–296.

Shaffer, S. (1982) 'A non-structural test for competition in financial markets', Paper presented to *Conference on Bank Structure and Competition*, Federal Reserve Bank of Chicago.

Shaffer, S. (2004) 'Patterns of competition in banking', *Journal of Economics and Business*, Vol. 56, No. 4, pp.287–313.

Spong, K. (2000) *Banking Regulation: Its Purposes, Implementation and Effects*, 5th ed., http://www.kc.frb.org (accessed 8 August 2013).

Vesala, J. (1995) 'Testing for competition in banking: behavioral evidence from Finland', *Bank of Finland Studies*, Vol. E, No. 1, pp.1–167.

World Bank (2013) 'Global financial development report', *Rethinking the Role of State in Finance* [online] http://econ.worldbank.org/ (accessed 18 September 2012).

Yeyati, E.L. and Micco, A. (2007) 'Concentration and foreign penetration in Latin American banking sectors: impact on competition and risk', *Journal of Banking & Finance*, Vol. 31, No. 6, pp.1633–1647.

Notes

1   Bikker and Haaf (2002) and Vesala (1995) explain that the result of the interpretation of H-statistics between 0 and 1 is a continuous measure of the level of competition. Further, the higher value of H can be used as an indication of the stronger level of competition.

2   The results of Hausman and equilibrium test are available upon request to the authors.

HASIL - Mulyaningsih et al 2016, creating contestable banking

Tai-Hsin Huang, Nan-Hung Liu. "Bank

19 competition in transition countries: Are those markets really in equilibrium?", Empirical Economics, 2013
Publication
<1%

20 Haghighat, Jafar, and Tanaz Salahesh. "The role of money multiplier in monetary transmission mechanism in Iran (bank lending and money supply)", International Journal of Monetary Economics and Finance, 2016.
Publication
<1%

21 digilib.uns.ac.id
Internet Source
<1%

22 tind-customer-agecon.s3.amazonaws.com
Internet Source
<1%

23 African Journal of Economic and Management Studies, Volume 7, Issue 2 (2016)
Publication
<1%

24 eprints.port.ac.uk
Internet Source
<1%

25 www.bostonfed.org
Internet Source
<1%

26 Submitted to University of Bradford
Student Paper
<1%

27 www.mydocument.ir
Internet Source
<1%

28   V. Perovic, A. Perovic, G.C. Weatherly, G.R. Purdy. "The distribution of Nb and Fe in a Zr-2.5 wt% Nb alloy, before and after irradiation", Journal of Nuclear Materials, 1995
Publication   <1%

29   www.suomenpankki.fi
Internet Source   <1%

30   Riyana Miranti, Alan Duncan, Rebecca Cassells. "Revisiting the Impact of Consumption Growth and Inequality on Poverty in Indonesia during Decentralisation", Bulletin of Indonesian Economic Studies, 2014
Publication   <1%

31   hdl.handle.net
Internet Source   <1%

32   Submitted to University of Queensland
Student Paper   <1%

33   programs.business.utsa.edu
Internet Source   <1%

34   Aminah, N.A., N.A. Lindrianasari, and N.A. Rosmiaty. "Good government governance and opinions of the audit board of Republik Indonesia", International Journal of Monetary Economics and Finance, 2016.
Publication   <1%

35   Tae-Kyu Ha, H.H. Gunthard. "Quantum chemical investigation of stability and structure related to the geometrical isomerism of tautomeric forms of cytosine and uracil", Journal of Molecular Structure: THEOCHEM, 1992
Publication   <1%

36   iises.net
Internet Source   <1%

37   Submitted to University of Reading
Student Paper   <1%

38   www.murdoch.edu.au
Internet Source   <1%

39   Submitted to University College London
Student Paper   <1%

40   Submitted to University of Adelaide
Student Paper   <1%

41   Submitted to Universiti Malaysia Sarawak
Student Paper   <1%

42   kdijep.org
Internet Source   <1%

43   www2.wiwi.uni-jena.de
Internet Source   <1%

44   Submitted to Broward Community College
Student Paper   <1%

45 www.tandfonline.com
Internet Source
<1%

46 Olga Pak, Mira Nurmakhanova. "The Effect of Market Power on Bank Credit Risk-Taking and Bank Stability in Kazakhstan", Transition Studies Review, 2013
Publication
<1%

47 www.imf.org
Internet Source
<1%

48 globaljournals.org
Internet Source
<1%

49 Yew-Kwang Ng. "Should a 'Natural Monopolist' Be Subject to Competition?: With Special Reference to Cellular Mobile Telephone Services in Australia", The Australian Economic Review, 4/1991
Publication
<1%

50 Akter, Hazera, and Suborna Barua. "International trade financing: a comparative study on the performance of state-owned and private commercial banks of Bangladesh", International Journal of Monetary Economics and Finance, 2016.
Publication
<1%

51 Submitted to University of Sheffield
Student Paper
<1%

52 hal.archives-ouvertes.fr
Internet Source
<1%

53 Submitted to University of Edinburgh
Student Paper
<1%

54 Paolo Coccorese. "Estimating the Lerner index for the banking industry: a stochastic frontier approach", Applied Financial Economics, 2014
Publication
<1%

55 bura.brunel.ac.uk
Internet Source
<1%

56 bazybg.uek.krakow.pl
Internet Source
<1%

57 Submitted to University of Salford
Student Paper
<1%

58 e.bangor.ac.uk
Internet Source
<1%

59 www.igidr.ac.in
Internet Source
<1%

60 www.eu-financial-system.org
Internet Source
<1%

61 Journal of Economic Studies, Volume 28, Issue 4 (2006-09-19)
Publication
<1%

62 publications.iadb.org
Internet Source

<1 %

63 "Corporate Governance in Banking and Investor Protection", Springer Science and Business Media LLC, 2018
Publication

<1 %

64 Deni Memić. "Banking Competition and Efficiency: Empirical Analysis on the Bosnia and Herzegovina Using Panzar-Rosse Model", Business Systems Research Journal, 2015
Publication

<1 %

65 Olivero, M.P.. "Competition in banking and the lending channel: Evidence from bank-level data in Asia and Latin America", Journal of Banking and Finance, 201103
Publication

<1 %

66 Submitted to Queen Mary and Westfield College
Student Paper

<1 %

67 docplayer.net
Internet Source

<1 %

68 Saadet Kasman, Adnan Kasman. "Multimarket contact, market power and financial stability in the Turkish banking industry", Empirical Economics, 2015
Publication

<1 %

purl.umn.edu

| 69 | Internet Source | <1% |

| 70 | Submitted to University of Hong Kong
Student Paper | <1% |

| 71 | Submitted to University of Greenwich
Student Paper | <1% |

| 72 | Submitted to Beykent Universitesi
Student Paper | <1% |

| 73 | edisciplinas.usp.br
Internet Source | <1% |

| 74 | Submitted to University of Wales Institute, Cardiff
Student Paper | <1% |

| 75 | "New Issues in Financial Institutions Management", Springer Science and Business Media LLC, 2010
Publication | <1% |

| 76 | www.nber.org
Internet Source | <1% |

| 77 | www.scribd.com
Internet Source | <1% |

| 78 | George Owusu Antwi, Rachna Banerjee, Amal Abeer Mohammed, Mariam Juma Muna-Habib. "The Degree of Competition in the UAE Banking Industry", International Finance and Banking, | <1% |

2017
Publication

79 **Submitted to University of Hull**
Student Paper

<1%

80 Ali Mirzaei, Tomoe Moore. "What are the driving forces of bank competition across different income groups of countries?", Journal of International Financial Markets, Institutions and Money, 2014
Publication

<1%

81 **Submitted to International University of Japan**
Student Paper

<1%

82 Journal of Financial Regulation and Compliance, Volume 17, Issue 2 (2009-05-03)
Publication

<1%

| Exclude quotes | Off | Exclude matches | Off |
| Exclude bibliography | Off | | |

HASIL - Mulyaningsih et al 2016, creating contestable banking

FINAL GRADE

/0

GENERAL COMMENTS

Instructor

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH*

Judul Karya Ilmiah (artikel)	:	Creating contestable banking market: the effect of changes in the regulatory structure in Indonesia
Jumlah Penulis	:	3 Orang (**Tri Mulyaningsih**, Anne Daly, Riana Miranti)
Status Pengusul	:	Penulis pertama / ~~penulis ke~~ / ~~penulis korespondasi**~~

Identitas Jurnal Ilmiah :

	a.	Nama Jurnal	: **International Journal of Monetary Economics and Finance**
	b.	Nomor ISSN	: **1752-0479**
	c.	Volume,nomor,bulan,tahun	: **Vol. 9, No.2, Mei 2016**
	d.	Penerbit	: **Indescience Enterprises Ltd**
	e.	DOL artikel (jika ada)	:
	f.	Alamat web Jurnal	: https://www.inderscience.com/info /inarticle.php?artid=76480
	g.	Terikdeks di Scimagojr/Thomson Reuter ISI knowledge atau di.............**	

Kategori Publikasi Jurnal Ilmiah   :
(beri ˇ pada kategori yang tepat)

☐ Jurnal Ilmiah Internasional / Internasional bereputasi.**
☐ Jurnal Ilmiah Nasional Terakreditasi
☐ Jurnal Ilmiah Nasional/Nasional terindeks di DOAJ, CABI, COPERNICUS**

Hasil Penilaian *Peer Review* :

	Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah **40**			Nilai Akhir Yang Diperoleh
		Internasional/ Internasional bereputasi** ☐	Nasional Terakreditasi ☐	Nasional *** ☐	
a.	Kelengkapan unsur isi artikel (10%)	4			4
b.	Ruang lingkup dan kedalaman pembahasan (30%)	12			12
c.	Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12			11
d.	Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12			12
	Total = (100%)	40			39
	Nilai Pengusul = 60% x 39 = 23.4 (Penulis Pertama)				

Catatan Penilaian artikel oleh Reviewer :

a. Kelengkapan dan kesesuaian unsur isi artikel :

Penulisan artikel sudah mengikuti pola yang diarahkan editor yaitu introduction, , method, result, discusssion dan conclussion. Artikel yang ditulis sesuai antara judul dengan isi dan sistematikanya

b. Ruang lingkup dan kedalaman pembahasan :

Artikel tentang keuangan perbankan sudah cukup banyak dilakukan, namun selalu menarik untuk dibahas. Artikel ini menyorotin tentang peraturan peraturan perundangan yang menjadi novelty dalam tulisan ini. Jumlah referensi yaitu 22 artikel jurnal cukup menjadi bahan yang memperkaya hasil pembahasannya

c. Kecukupan dan pemutakhiran data/informasi dan metodologi :

Penelitian ini menggunakan range data cukup panjang yaitu tahun 1980 sampai dengan tahun 2010 dan menggunakan alat analisis ekonometrik yang meskipun sudah banyak digunakan namun data-data yang dimunculkjan khususnya Negara berkembang yang dipengaruhi oleh perubahan-perubahan peraturan perundangan dan melewati masa krisis menjadi menarik

d. Kelengkapan unsur dan kualitas terbitan :

Artikel nini diterbitkan pada jurnal scopus yang bereputasi sehingga secara kualitas cukup terjamin

e. Indikasi Plagiat :

Tidak terdapat indikasi plagiarsime pada artikel ini

f. Kesesuaian bidang ilmu :

Artikel ini sesuai dengan bidang ilmu penulis yaitu ekonomi pembangunan khususnya moneter

Surakarta, 1.2 MAY 2020

Dr. Izza Mafruhah.,SE.,M.Si
NIP. 197203232002122001

Jabatan	:	Lektor Kepala
Pangkat,Gol Ruang	:	Pembina Tingkat I / IV/b
Unit Kerja	:	Fakultas Ekonomi dan Bisnis
Bidang Ilmu	:	Ekonomi Pembangunan

*Dinilai oleh dua Reviewer secara terpisah
**Coret yang tidak perlu
***Nasional/terindeks di DOAJ CABI Copernicus

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : **JURNAL ILMIAH***

Judul Karya Ilmiah (artikel)	:	Creating contestable banking market: the effect of changes in the regulatory structure in Indonesia
Jumlah Penulis	:	3 Orang (**Tri Mulyaningsih**, Anne Daly, Riana Miranti)
Status Pengusul	:	Penulis pertama / ~~penulis ke~~ / ~~penulis korespondasi**~~
Identitas Jurnal Ilmiah	:	a. Nama Jurnal : **International Journal of Monetary Economics and Finance**

b. Nomor ISSN	:	**1752-0479**
c. Volume,nomor,bulan,tahun	:	**Vol. 9, No.2, Mei 2016**
d. Penerbit	:	**Indescience Enterprises Ltd**
e. DOL artikel (jika ada)	:	
f. Alamat web Jurnal	:	https://www.inderscience.com/info /inarticle.php?artid=76480
g. Terikdeks di Scimagojr/Thomson Reuter ISI knowledge atau		di.............**

Kategori Publikasi Jurnal Ilmiah :
(beri ˇ pada kategori yang tepat)

☐ Jurnal Ilmiah Internasional / Internasional bereputasi.**
☐ Jurnal Ilmiah Nasional Terakreditasi
☐ Jurnal Ilmiah Nasional/Nasional terindeks di DOAJ, CABI, COPERNICUS**

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah 40			Nilai Akhir Yang Diperoleh
	Internasional/ Internasional bereputasi** ☐	Nasional Terakreditasi ☐	Nasional *** ☐	
a. Kelengkapan unsur isi artikel (10%)	4			4
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			9
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12			10
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12			9
Total = (100%)	40			32
Nilai Pengusul = 60% x 32 = 19.2 (Penulis Pertama)				

Catatan Penilaian artikel oleh Reviewer :

a. Kelengkapan dan kesesuaian unsur isi artikel Artikel ini sudah sesuai dengan aturan standar penulisan ilmiah dalam International Journal of Monetary Economics and Finance (abstract, introduction, method, result, discussion and conclusion) (skor=4)

b. Ruang lingkup dan kedalaman pembahasan : Studi ini merupakan kajian yang komprehensif dan mendalam tentang bagaimana tingkat kompetisi industri perbankan Indonesia dalam membuka pasar dan dalam menciptakan persaingan. Studi ini menemukan bahwa pada tingkat kompetisi yang tinggi, industri perbankan akan bekerja lebih efektif. (skor=9)

c. Kecukupan dan pemutakhiran data/informasi dan metodologi : Studi ini menggunakan data dan metode yang cukup frontier yakni Metode Panzar-Rosse digunakan untuk memperkirakan tingkat persaingan, menemukan struktur pasar dan menilai dampak dari pembukaan pasar terhadap persaingan. Data yang dipergunakan pada periode 1980-1988 adalah sebanyak 120 bank, periode 1989-1999 adalah 287 bank, sementara pada periode 2000-2010 terdiri atas 145 bank. (skor =10)

d. Kelengkapan unsur dan kualitas terbitan : Jurnal yang menerbitkan ini adalah termasuk jurnal internasional terindeks scopus dari Indescience Enterprises yang sangat bereputasi. (skor=9)

e. Indikasi plagiat: Tidak ada indikasi plagiarism

f. Kesesuaian bidang ilmu: Sangat sesuai bidang ekonomi terutama dalam bidang ekonomi pembangunan

Surakarta, ... 1 4 MAY 2020

Lukman Hakim.,SE.,M.Si.,Ph.D
NIP. 196805182003121002

Jabatan	: Lektor Kepala
Pangkat,Gol Ruang	: Pembina / IV/a
Unit Kerja	: Fakultas Ekonomi dan Bisnis
Bidang Ilmu	: Ekonomi Pembangunan

*Dinilai oleh dua Reviewer secara terpisah