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Indonesia Islamic Financial Institution's Cost efficiency and Welfare Performance : Evidence from Economic's Recovering Country

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Abstract

Purpose – The study examines the relationship between the consequential social cost of market power (i.e., welfare performance of banks) and cost efficiency using data covering the period 2009 to 2017 in both private own Islamic banks and state owned Islamic Banks in Indonesia.
Design/methodology/approach – The study adopts the Ordinary Least Squares (OLS), Fixed Effect (FE) panel regression and the Quantile regression (QR) approaches to control for heterogeneity and provide increased room for policy relevance. The Two-Stage Least Squares Instrumental Variables (2SLS-IV) regression is used to ensure the robustness of the findings against the problem of possible reverse causality.
Findings – The results indicate a positive relationship between banks' welfare performance and cost efficiency, which suggests that greater cost efficiency hedges welfare losses. In other words, welfare gains and cost-efficient banks are not mutually exclusive. Also, the results show evidence that the sensitivity of welfare gain to cost efficiency depends on the knowledge of local market dynamics. Further, the findings from the QR estimation suggest that, but for welfare loss at low (Q.25) to the median (Q.50) quantiles, cost efficiency is a necessary and sufficient condition to hedge the welfare losses.

Keywords *– Cost Efficiency; Bank; Welfare Performance; Social Cost; Financial Consumer Protection; Quantile Regression*

Abstrak

Tujuan – Studi ini mengkaji hubungan antara biaya sosial konsekuensial dari kekuatan pasar (yaitu, kinerja kesejahteraan bank) dan efisiensi biaya menggunakan data yang mencakup periode 2009 hingga 2017 di bank syariah swasta dan bank syariah milik negara di Indonesia.
Desain/metodologi/pendekatan – Studi ini mengadopsi pendekatan Ordinary Least Squares (OLS), regresi panel Fixed Effect (FE) dan regresi Kuantil (QR) untuk mengontrol heterogenitas dan menyediakan ruang yang lebih besar untuk relevansi kebijakan. Regresi Variabel Instrumen Kuadrat Terkecil Dua Tahap (2SLS-IV) digunakan untuk memastikan kekokohan temuan terhadap masalah kemungkinan kausalitas terbalik.
Temuan – Hasil menunjukkan hubungan positif antara kinerja kesejahteraan bank dan efisiensi biaya, yang menunjukkan bahwa efisiensi biaya yang lebih besar melindungi kerugian kesejahteraan. Dengan kata lain, keuntungan kesejahteraan dan bank hemat biaya tidak saling eksklusif. Juga, hasil menunjukkan bukti bahwa sensitivitas keuntungan kesejahteraan terhadap efisiensi biaya bergantung pada pengetahuan tentang dinamika pasar lokal. Selanjutnya, temuan dari estimasi QR menunjukkan bahwa, tetapi untuk kerugian kesejahteraan pada kuantil rendah (Q.25) ke kuantil median (Q.50), efisiensi biaya adalah kondisi yang diperlukan dan cukup untuk melindungi kerugian kesejahteraan.

Kata Kunci – Efisiensi Biaya; Bank; Kinerja Kesejahteraan; Biaya Sosial; Perlindungan Konsumen Keuangan; Regresi Kuantil

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INTRODUCTION

A Islamic financial or knowdays known as Islamic banking system that is not price-competitive has direct consequences for the financial consumer. Prior literature shows that the financial consumer suffers the social cost of the market power of banks in such a system. For example, in Indonesia over the period 2017-2019 social cost from market power was estimated at 0.15 percent of gross domestic product (GDP) (Statitistik Bank Indonesia 2018). Similarly, in the banking sectors of Islamic state own bank and private own bank countries over the period 2017 – 2019 welfare loss from market power was estimated at 0.54 percent of GDP in 2018 (Statitistik Bank Indonesia 2018). In the same measure, an inefficient banking system exacerbates the plight of the financial consumer. This ranges from 0.021 percent for cost inefficiency to 0.075 percent for profit inefficiency to GDP (Statitistik Bank Indonesia 2018).

What most empirical studies have done is to examine the relationship between market power and cost efficiency in a bid to test the validity of four competing hypotheses (i.e., structure-conduct-performance (SCP) hypothesis, the relative market power hypothesis, the quiet life hypothesis, and the X-efficiency hypothesis) to explain this phenomenon (Maudos and De Guevara, 2007; Delis and Tsionas, 2009; Fu and Heffernan, 2009; Ariss, 2010; Williams, 2012;). We extend and complement this extant literature by examining the relationship between the consequential social cost of market power (i.e., welfare performance of banks) and cost efficiency. Our motivation is that market power in banking systems cannot be done away with completely, and as suggested by Miskam (2018) banks should be allowed to possess some level of market power to sustain the value-enhancing effect of cost efficiency. Also, Mirzaei *et al*. (2013) are of the view that policymakers should not be excessive in their rollout of competition policy as that may yield unintended consequences by destabilizing the banking system. Thus, society would have to endure the consequential social cost (welfare loss) of banks' market power. Recent studies have shown that the process of deregulation has had limited success at restraining the prowess of bank market power (Ho, 2012; Williams, 2012). These studies have confirmed, however, the existence and relevance of the concept of mutual exclusivity between welfare gains from reduced market power and cost-efficient banks. The available empirical evidence shows that welfare gains occasion loss of bank cost efficiency at the macro-level (Maudos and De Guevara, 2007).

However, it is unclear how welfare gains and cost efficiency relate at bank-level. Extending this link to the bank-level is important because in banking, competition or market power takes place at a much lower level than the macro level.

In order to bridge this gap, this paper investigates the relationship between banks' welfare performance and cost efficiency based on Indonesian Islamic intsitution. The Indonesian Islamic intsitution or Islamic banking context is suitable mainly because the sector has seen extensive reforms over the period 1988 to 2016[2]. The net effect of these reforms include: (i) the removal of government control over interest rates, credit rates, and exchange rates; (ii) the liberalization of the Indonesian Islamic intsitution system resulting in the emergence and operation of a number of locally incorporated banks and private Islamic bankings; (iii) independence to the central bank; (iv) consolidation and (v) closure of the supervisory and regulatory gaps while promoting financial consumer protection, innovation and financial inclusion. However, high interest spread has been a major downside of the numerous changes that have taken place in the Indonesian Islamic intsitutionsystem. This makes the banking sector uncompetitive due to mispricing from the exercise of market power.

The percentage of welfare loss to GDP per year, as shown in Figure 1, has been increasing steadily from an average of 2.99% of GDP in 2009, it reached 4.92% of GDP in 2012. Despite a significant decline in welfare loss to GDP in both 2013 and 2015 by 1.58% and 1.09% respectively, there was an increase in welfare loss of 1.26% of GDP between 2015 and 2017. Therefore, the continuous limited success with financial liberalization in the area of price competition gives rise to the paramount need for mechanisms to reduce welfare losses from the market power of banks.

Further, the analysis of the Indonesian Islamic intsitution sector shows supplementary unique features; specifically, the dominance of private Islamic bankings and market knowledge (learning by doing). These unique features enable us to answer the following related questions which have seen limited attention in the extant literature. How do private Islamic bankings affect social welfare in an era of their dominance? How does "learning by doing" affect social welfare? How does the interaction of either private Islamic bankings or market knowledge with cost efficiency affect social welfare?

Our paper makes the following contributions to bank performance literature in general and the Indonesian Islamic intsitutionsystem. First, using a sample of commercial banks from an emerging economy in SSA banking system for the period 2017-2019, which was characterized by private Islamic bankings' dominance, we extend the previous studies that focused on emerging economies in South East Asia on the impact of cost efficiency on bank social cost due to mispricing (Maudos and De Guevara, 2007; Fang *et al*., 2011; Almounsor and Mensi, 2016). Unlike previous studies that confined the estimation of social welfare loss to national level aggregate, the present study computes social welfare loss at the individual bank level scaled by total assets, year on year. Therefore, our test variable, social welfare loss, enables us to examine bank level heterogeneity in social welfare loss from market power. Also, the study applies the QR approach to provide an added advantage as welfare performance differs from one bank to another. Thus, we resolve concerns about cross-bank variations in our estimate of welfare performance and provide increased room for policy relevance. From our review of prior literature, this paper is the first to apply the QR estimation technique to examine the effect of cost efficiency throughout the conditional distribution of bank welfare performance rather than just the conditional mean effect of cost efficiency.

Second, our paper provides new empirical evidence by examining the conditioning effect of private Islamic bankings and market knowledge on the relationship between cost efficiency and welfare performance of banks. On one hand, studies like Ghosh (2016) suggests that the banking sector globalization is a precondition for improvement in the cost and profit efficiencies of banks in developing countries. On the other hand, the findings of Miskam (2018) suggest that information sharing plays a critical role in safeguarding the financial consumer by reducing loan prices and increasing loan quantities borrowers receive. Thus, the interaction effect of cost efficiency and private Islamic bankings, as well as cost efficiency and market knowledge could have a more apparent impact on welfare losses and provide relevant policy direction in the effort to reduce welfare losses. To the best of our knowledge, this paper is the first to examine the conditioning effect of private Islamic bankings (in an era of their dominance) and market knowledge on the social welfare of Islamic banking firms in Indonesia. Additionally, although there is a major shift from state commercial banks to private Islamic bankings and state own Islamic banks in Indonesia, the available empirical accounts have failed to quantify the welfare implications of this change as a post-policy evaluation; our paper contributes in this direction.

LITERATURE REVIEW

Mechanisms to Mitigate Welfare Losses from the Market Power of Banks

The literature on the mechanisms to mitigate welfare losses from bank market power is immense. However, in this literature review, we dwell on the following mechanisms: (1) cost efficiency, and (2) the moderating role of private Islamic bankings and market knowledge.

Cost Efficiency and Welfare Gain

The empirical evidence concerning cost efficiency as a mechanism to mitigate welfare losses from bank market power is complex and mixed. One school of thought suggests that market power and cost efficiency co-evolve while the other school of thought suggests that market power and cost efficiency compete. The two schools of thought constitute competing views concerning how social welfare loss and cost efficiency relate.

On the one hand, Koetter et al. (2012) examined the quiet life hypothesis for cost and profit inefficiencies among US commercial banks. The results showed that a quiet life does not exist for cost inefficiencies. In other words, the market power of banks does not exacerbate their cost efficiency but rather confines management to their comfort zone about their growth strategies. Maudos and De Guevara (2007) studied the relationship between market power and efficiency in the EU-15 countries over the period 1993 - 2002. The results revealed that there exists a positive relationship between market power and cost efficiency, suggesting that banks in the EU-15 do not operate a quiet life. It must be noted that the estimated welfare loss due to market power was 0.54 percent of the GDP of the EU-15 countries in 2002. Also, welfare gain was associated with reduced market power and loss of bank cost efficiency. On the other hand, Berger and Hannan (1998) have shown that banks operating in more concentrated markets exhibit lower cost efficiency, which implies the presence of a quiet life in the Indonesian banking system. Using the Statitistik Bank Indonesia and Laporan Keuangan Bank Indonesia 2018, demonstrated that efficiency and market power were negatively related, which is in line with the quiet life hypothesis. From the above literature, the scholarly emphasis has been inconclusive and mixed, at least, in developed economies. Färe et al. (2015) pointed out that these variations were due to the level of market power, the component of efficiency evaluated (cost, technical or allocative) and the type of banking firm (commercial bank or savings bank), suggesting that the quiet life might be a reality only for some financial institutions.

Given the positive relationship between market power and cost efficiency, on the one hand, increased market power leads to increased cost efficiency. By implication, powerful banks are cost-efficient. On the other hand, decreased market power, which necessitates welfare gains, results in decreased cost efficiency. Therefore, less powerful banks are less cost-efficient. The implication is that welfare gains occur in the presence of less cost-efficient banks, which shows that welfare gains from reduced market power and cost-efficient banks are mutually exclusive. Accordingly, consistent with the wide recognition of the existence and relevance of the concept of mutual exclusivity between welfare gain and cost-efficient banks in emerging economies, our first testable hypothesis is stated as follows.

Hypothesis 1 (H1): There is a negative and significant relationship between cost efficiency and bank welfare performance (an inverse form of social welfare loss).

Moderating Role of Private Islamic bankings and Market Knowledge

Private Islamic bankings are believed to prompt competition (Demirgüç-Kunt et al., 1998). Nonetheless, the empirical findings are mixed on the direct relationship between private Islamic bankings, and bank market power and competition (e.g. Yeyati and Micco, 2007; Jeon et al., 2011). From the perspective of Claessens and Laeven (2004), the entry of private Islamic bankings enhances the competitiveness of banking systems. Although, at other times, private Islamic bankings may also induce undue competition (Chen et al., 2019), which increases financial fragility (Wu et al., 2017), the penetration of private Islamic bankings appears to have led to a less competitive banking industry in Latin America (Yeyati and Micco, 2007). Private Islamic bankings are a precondition for improved efficiency of the banking system of developing economies (Ghosh, 2016) and deregulated environment (Sturm and Williams, 2004). Private Islamic bankings are also important as they increase firms' access to long term credit (Lin, 2011), improve capital allocation (Giannetti and Ongena, 2009) and ensure superior cost efficiency (Poghosyan and Poghosyan, 2010). Evidently, increase in private Islamic banking penetration enhances competition (reduced market power) in the banking sectors of host countries (Jeon et al., 2011). But private Islamic bankings are also characterized by lower cost efficiency (Fang et al., 2011; Lensink et al., 2008).

Whereas the private Islamic banking entry, presence and ownership effect has been mixed and inconclusive, the interaction of the cost efficiency and private Islamic bankings presents a case for efficient private Islamic banking participation. Indeed, it has been observed that efficient private Islamic bankings increase competitive pressures in banking systems (Hauner and Peiris, 2008; and Mulyaningsih et al., 2015). Hence, the second hypothesis is stated as follows :

Hypothesis 2 (H2): Private Islamic bankings have a positive effect on the relationship between cost efficiency and bank welfare performance.

Regarding market knowledge ("learning by doing" as proxied by bank age), Mester (1996) made the case that learning by doing enhances the cost efficiency of banks as measured by stochastic cost frontier approach while considering risk preferences in the Indonesian banking system. Contrary to this finding, the results from emerging economies in Indonesia have been distinctive. Adeabah et al. (2019) used the data envelopment analysis approach to compute the technical efficiency of commercial banks in Indonesia and argued that "learning by doing" leads to technically inefficient banks. The empirical evidence from non-financial firms also confirms that the firm age effect is less efficient and is insignificant (Lundvall and Battese, 2013). Whereas earlier studies, in developed economies, confirm the existence and relevance of learning by doing on bank performance, several other contemporary studies in developing economies do not support the learning by doing hypothesis.

We explain this variation as due to the level of development of the information sharing environment between developed and developing economies. Theoretically, developed financial markets have a robust information sharing environment and therefore, there exists little or no bank-level heterogeneity in market knowledge in the banking system. This implies that banks cannot use market knowledge as a competitive advantage and private privilege for self-interest monopoly rent extraction. However, in an opaque and underdeveloped information sharing environment such as in the banking systems of developing economies, banks generate knowledge of local market dynamics at their own cost, instead of working with credit reference bureaus. Therefore, market knowledge is held in "secret" and used as a competitive advantage tool and a private privilege to extract more in welfare loss.

The interaction of cost efficiency and market knowledge (i.e., efficient market knowledge) seems to mimic the equivalence of a robust information sharing mechanism, which gives credence to little or no bank-level heterogeneity in market knowledge in the banking system. Miskam (2018) suggest that information sharing plays a critical role in safeguarding the financial consumer by reducing loan prices and increasing loan quantities borrowers receive. Therefore, we expect that an efficient market knowledge should ensure welfare gains. Hence, the third hypothesis is stated as follows :

Hypothesis 3 (H3): Market knowledge has a positive effect on the relationship between cost efficiency and bank welfare performance.

DATA AND METHODS

Data and Sample Selection

The structure of the banking system in Indonesiais relatively small consisting of 33 banks at year-end December 31, 2017. Out of this, 16 are Indonesian Islamic intsitution (banks with majority Indonesian ownership) and 17 non-Indonesian (foreign) banks. Data used in this study are year-end financial characteristics of banks extracted from the annual bank report actual filings with the Central Bank of Indonesia). We complemented this data with a unique hand-collected dataset on banks' board structure compiled from annual reports of banks sourced from each bank's website. The sample period spans from 2017 to 2019.

Our choice of the 2017-2019 sample period is based on the significant prudent regulations passed post-Financial Structural Adjustment Programme (FINSAP) to align the banking system in Indonesia with international standards. Some of these regulations are the establishment of a credit reference bureau, the implementation of International Financial Reporting Standards (IFRS) for all banks, increase in the minimum stated capital of banks twice in both 2017 and 2019 to strengthen the capital base of banks, and the risk-based supervision of banks. Also, the sample period represents a level playing field as all banks operated the Islamic institutions. Furthermore, it represents a period where financial consumer protection, innovation and financial inclusion are core policy drivers in the banking system. In this respect, the sample period represents a banking system that is vibrant compared to other banking systems in the sub-region. Therefore, the sample period for this study presents immense importance to several stakeholders in the process of ensuring an efficient and well-functioning system.

Given that the board size framework of a bank is a critical input variable in the estimated cost efficiency score used in this study; our final sample is restricted to banks that have their full annual report available on their websites for our sample period. This limited the sample banks to 10 private Islamic Bank and state owned bank for the period 2017-2019.. Data for institutional quality is sourced from Heritage Foundation (HF), while that of GDP per capita is sourced from the Badan Pusat Statitstik database. To control for outliers, variables such as welfare loss as a percentage of total assets (Welfare Loss%TA), Z-score and Capitalization were winsorized at 1th and 99th percentiles.

Variables Measurement

The Dependent Variable Welfare Loss % are in the inverse form. We use the inverse form of welfare loss as a percentage of total assets as a dependent variable to be able to provide consistency in the interpretation of the regression results. Thus, a positive sign on a regressor is indicative of a welfare gain effect and a negative sign on a regressor is indicative of a welfare loss effect.

Our main independent variable Avg. Cost Efficiency is the sample average cost efficiency in year *t* estimated, following prior studies (e.g. Adeabah et al., 2019; Ghosh, 2016; García-Herrero et al., 2009; Jaffee and Levonian 2001) we include: (i) private Islamic bankings, (ii) market knowledge, (iii) capitalization, (iv) liquidity, (v) bank Z-score, (vi) institutional quality and (vii) GDP per capita growth to control for omitted variables bias.

For private owed Islamic banking is measured as a dummy variable that takes the value of 1 to represent a private Islamic banking if 50% or more controlling interest in a bank is foreign-owned at a financial year-end and 0 otherwise. Evidence from Ghosh (2016) suggests that greater foreign investment in the banking system of developing economies has an increasing effect on financial consumer welfare. Thus, we might expect private Islamic bankings to have a hedging effect on loss of consumer welfare.

Market Knowledge, as proxied by bank age (i.e., the number of years since the incorporation of each bank), reflects the effect of an underdeveloped information sharing environment. It is measured as a dummy variable that takes the value of 1 to represent banks with above the 75th percentile market knowledge and 0 otherwise. We posit that if banks can generate knowledge of local market dynamics at their own cost, which is generally the case, instead of working with credit referencing bureaus, the financial consumer becomes worse off.

Capitalization is measured as equity to total assets ratio in natural logarithm. For the purpose of this study, two major predictions are made. The first stems from evidence that well-capitalized banks are relatively safer and less risky (Ghosh, 2016), and have high franchise value which incentivizes prudent lending (García-Herrero et al., 2009). In this regard, we expect well-capitalized banks to serve as a constraining mechanism on the loss of welfare in banking. The second expectation is motivated by the Basel Accord on the maintenance of minimum capital of banks as the ratio of risk-weighted assets. Thus, banking firms hold more capital because they have a high level of riskier assets in their loan portfolios. Following the thinking of the Basel Accord, we expect more capitalized banks to be related to greater loss in consumer surplus estimates.

Liquidity is measured as the loan to total assets ratio in natural logarithm. Greater loans to total assets denote that banking firms are aggressively engaged in intermediation activities. Ariss (2010) suggests that higher credit exposure is a necessary condition for lower overall bank risk. The author explains that banking firms in developing economies may engage in aggressive lending because they are more likely to hedge their loan portfolio position. For this reason, greater lending by banking firms would necessitate additional cost. Thus, we might expect that greater loans to total assets ratio is related to greater welfare loss, as borrowers will have to pay for the insurance premium; for example, as such financial consumers suffer losses in the total loan received.

Bank Z-score measures the risk of insolvency and is defined as a summation of return on assets (ROA) and return on equity (ROE) expressed as a ratio of the standard deviation (sd) of return on assets, [(ROA + ROE)/sd(ROA)]. It is an indication of how many standard deviation profits must fall below its mean to bankruptcy. A lower value indicates heightened bank risk and higher value indicates a stable banking environment. Prior literature suggests that a stable banking sector would come at an additional cost (Ariss, 2010; Berger and Humphrey, 1997). Hence, the financial consumer may pay the premium either in higher loan prices or lower loan quantities or both. Our expectation is that greater bank Z-score is negatively related to welfare losses.

Institutional Quality is measured using the HF index of Economic Freedom in natural logarithm [6]. From the literature on bank activity restriction (Chortareas et al., 2013) and financial liberalization (Delis, 2012), a higher level of institutional quality should provide an improved constraint mechanism against loss of financial consumer welfare. GDP per capita is controlled to account for information about a country's development process. Jaffee and Levonian (2001) show that the benchmarks of an efficient and wellfunctioning banking system in Europe are positively related to GDP per capita. Thus, we might expect GDP per capita to have a positive effect on the loss of consumer welfare development process. Jaffee and Levonian (2001) show that the benchmarks of an efficient and wellfunctioning banking system in Europe are positively related to GDP per capita. Thus, we might expect GDP per capita to have a positive effect on the loss of consumer welfare.

RESULTS

The summary statistics on key indicators are presented in Table 1. The mean (median) welfare loss as a percentage of total assets is 2.299% (2.064%). This is evidence that the Indonesian Islamic intsitutionsector does not price competitively. The mean (median) cost efficiency is 78% (81%). These efficiency scores are consistent with other recent studies. For instance, the mean efficiency score fits well within the world's mean efficiency of between 55% (UK) to 95% (France)[7]. It is also consistent with the range of efficiency reported for Hong Kong banks (Kwan, 2006) and US banks (Berger and Humphrey, 1997). This implies that banks operating in Indonesiaare now at the efficiency point where the world was some two decades ago.

Thus, government policy environment geared towards promoting an efficient and well-functioning banking system in Indonesiais yielding the right results in Indonesiais 0.564 (0.580). Comparably, Indonesian Islamic intsitution are 16.3 percent more liquid than Chinese banks[8] but quantitatively similar to other banking sectors in 55 emerging markets (Amidu and Wolfe, 2013). The degree of capitalization was at the mean (median) of 16.05 (13.83) for our sampled banks. The average bank size was GHS1,787 million (US$0.4045 million) in total assets[9]. Over the nine-year sample period, the mean (median) institutional quality score for Indonesiawas 61.02 (60.30), which is reflective of restriction on banking activities to some extent (Sarpong-Kumankoma et al., 2017). Lastly, GDP per capita averaged 4.30 with a median value of 4.81.

The results presents the univariate results which shed some light on the differences in the welfare performance and cost efficiency for sub-samples of banks grouped by ownership structure, bank size and level of market knowledge. The results indicate that welfare losses and the cost efficiency of private Islamic bankings are quantitatively similar to domestic banks. Meanwhile, the results show that welfare losses of large banks are about 22.53% larger compared to welfare losses of small banks (2.534 versus 2.068, the difference is significant at 1 percent). Thus, customers of small banks are relatively better off than customers of large banks. Further, on average small banks are as efficient as large banks, which is evidence of rejection of diseconomies of scale in the banking system.

Compared to banks that have below the 75th percentile of knowledge of local market dynamics, banks with above the 75th percentile knowledge of local market dynamics have 33.69% larger welfare losses (2.837 versus 2.122). This difference is significant at 1 percent. This result generally confirms that if banks generate knowledge of the local market dynamics at their cost instead of working with public or private credit referencing bureaus, the financial consumer becomes worse off.

The Role of Cost Efficiency

From the OLS result, we find that there is a positive but insignificant relationship between cost efficiency and bank welfare performance. This weak evidence of the hedging effect of cost efficiency does not imply that cost efficiency is unimportant in mitigating welfare losses. A potential explanation of the OLS results may be due to omitted variables (i.e., unobserved bank-specific fixed effect) and/or simultaneity problem with cost efficiency not adequately controlled for. Applying the FE and 2SLSIV estimation techniques, we find that contrary to hypothesis H1, cost efficiency is positively related to bank welfare performance, suggesting that greater cost efficiency is associated with gains in welfare estimates. In other words, welfare gains and cost-efficient banks may not be mutually exclusive contrary to contemporary literature on the existence and relevance of the concept of mutual exclusivity between welfare gains from reduced market power and cost-efficient banks (Maudos and De Guevara, 2007; Pruteanu-Podpiera et al., 2008; Koetter et al., 2012; William, 2012). Rather, it is reflective of the X-efficiency hypothesis (Sathye, 2001; Kwan, 2006). The positive effect is consistent across the OLS, FE and 2SLS-IV specifications. The significant positive coefficients on Avg. Cost Efficiency also indicates that the cost efficiency of banks is a necessary precondition for an efficient and well-functioning banking system. Thus, the worsening technological innovations in the banking system of Indonesiashould be of great concern to all stakeholders. The result also has economic significance. For example, an increase in Avg. Cost Efficiency of banks by one sample standard deviation would result in about 2.50% [(0.116)*0.2367/1.100=0.0249] and 6.18% [(0.116)*0.5858/1.100=0.0618] welfare gains using the FE and 2SLS-IV estimates.

Wang et al. (2014) show that cost-efficient banks are less powerful. If welfare gain is synonymous with cost-efficient banks, then the assumption of welfare gain may imply that the presence of a quiet life is typical of financial consumer protection. This is because, increased competitive pricing leads cost efficiency of banking firms as the potential systematic slack incurred for unrealized monopoly rents are eliminated from the banking system (Koetter et al., 2008).

Regarding the interpretation of the results based on the QR estimation technique, it is worth noting that the Q.10 model indicates banks with the least welfare loss while the Q.90 model indicates banks with the greatest welfare loss. The findings show that at the lowest quantile (Q.10), greater cost efficiency of banking firms is negatively related to welfare losses. Meanwhile, results from the Q.25 and Q.50 show a positive impact of cost efficiency on welfare losses in banking. The results from the Q.75 and Q.90 estimations reveal that the sensitivity of welfare performance to the cost efficiency of banks is positive and significant. The implication is that where welfare loss is low (Q.25) to the median (Q.50), cost efficiency is a necessary but not a sufficient condition to hedge the losses from the market power of banks. But, where a bank's welfare performance is at 75th – 90th quantiles, the evidence affirms that cost efficiency is a necessary and sufficient condition for hedging welfare losses. Therefore, the results suggest that the cost efficiency effect on bank welfare performance is conditioned on the level of welfare losses in the banking sector.

Moderating Role of Private Islamic bankings and Market Knowledge

To gain further insight into how welfare losses and cost efficiency related in different bank subgroups, we estimate OLS and FE regression models with a two-way interaction effect and a three-way interaction effect of Cost Efficiency and the following policy variables: Private Islamic bankings and Market Knowledge.

We sum the coefficient of Cost Efficiency and the coefficient of the interaction terms for the total effect of cost efficiency on bank welfare losses. From the findings, the established positive effect of Cost Efficiency on bank welfare performance is consistent across different specifications. From the two-way interaction effect perspective, the coefficient on the interaction term Cost Efficiency*Foreign is negative in the OLS model, indicating that the positive effect of cost efficiency is offset to some extent in private Islamic bankings, but it is not significant. On the other hand, with the FE panel model that controls for unobserved heterogeneity, the coefficient on the interaction term Cost Efficiency*Foreign is positive. The results in both the OLS and FE regressions show that the interaction term Cost Efficiency*Foreign has no significant effect. This is contrary to our hypothesis H2 and provides no evidence that the impact of cost efficiency on banks' welfare performance is dependent on Indonesian private owned Islamic bankings. One possible explanation is that, although private Islamic bankings dominate the Indonesian Islamic intsitutionsector, their dominance does not translate into superior efficiency over domestic banks. Therefore, State owned Islamic bankings do not have the efficiency advantage as reported by Hauner and Peiris (2008) and Mulyaningsih et al. (2015) to induce competitive pressures for the benefit of financial consumers. On the other hand, the coefficient on the interaction term Cost Efficiency*Knowledge is positive and significant at 5 percent. This provides evidence to support our hypothesis H3 that, the impact of cost efficiency on the welfare performance of banks depends on knowledge of local market dynamics in the banking sector. This significant result is in line with other findings in the literature (Mester, 1996). The result implies that the sensitivity of welfare performance estimates to cost efficiency is more pronounced in banks with efficient market knowledge. The fact that the moderating role of market knowledge effect is positive on banks' welfare performance is an indication of the critical role of information sharing in the financial sector towards financial consumer protection. From the threeway interaction effect perspectives, the findings show that welfare performance-cost efficiency sensitivity increases for both private owned and state owned Islamic bankings with efficient market knowledge.

Control Variables

The discussions of the control variables are as per the results presented in Table 3. The coefficients on private Islamic bankings' dominance also offer some important insights. Foreign is negatively and statistically significant for bank welfare performance in both the OLS and 2SLS-IV specifications, which show that private owned Islamic bankings' dominance reduces the welfare gains enjoyed by financial consumers. In other words, the increased dominance of state owned Islamic bankings exacerbates the social cost of bank market power. Consistent with Detragiache et al. (2008), the negative coefficient indicates that banking globalization worsens welfare loss in developing countries.

We posit that if banks generate knowledge of local market dynamics at their own cost, which is generally the case, instead of working with credit referencing bureaus, the financial consumer becomes worse off. Consistent with this theoretical prediction, Market Knowledge is also negative and significant in OLS specifications. Because market knowledge is entirely gained at the bank's cost and learning, it is held in "secret" and used as a competitive advantage tool and a private privilege to extract more in welfare loss. Hence, "learning by doing" exacerbates welfare losses in banking. Indeed, Miskam (2018) show that information sharing has a decreasing effect on loan price which enhances the loan quantity received by borrowers, thus increasing the level of gains in the welfare of banks in South East Asia.

The coefficient on Ln_Liquidity is positive in all three specifications. The significant positive effect of liquidity on the welfare performance of banks suggests that greater liquidity is associated with greater welfare gain. By extension, if welfare gains come from a lack of market power, then for banking firms to generate welfare gains, they may hold more liquid assets. Z-score is negative and significant only in the OLS specification. The result that greater stability leads to greater welfare loss is evidence of the premium that financial consumers would have to pay to ensure a stable financial sector in emerging economies. This implies that regulators face risking the stability of the financial sector if they are not moderate at their pro-financial consumer protection policies. Further, the coefficient on Ln_Capitalization is positive and significant in the OLS specifications, indicating that well-capitalized banks serve as an effective constraint mechanism on welfare losses in the banking sector because they are safe and less risky.

On the macroeconomic variables, the statistically significant negative coefficient on Ln_Institutional Quality in all specifications implies that a high level of institutional quality incentivizes welfare losses in the banking systems of developing countries. Although the established negative sign is counterintuitive, it would be due to the low level of institutional quality which is suggestive of some restrictions on banking activities. GDP per capita affects welfare performance negatively. This is statistically significant at 1 percent across all three specifications. The significant negative coefficient on Ln_GDP per capita suggests that, as income level improves, the appetite for credit by households and firms increases because they are well-positioned to payback. Therefore, the bigger the income, the bigger the credit that can be accessed, and the greater the welfare loss extracted by banking firms.

CONCLUSIONS

The study examined the relationship between the consequential social cost of market power (i.e., welfare performance of banks) and cost efficiency using data covering the periods 2009 to 2017 from the Indonesian Islamic intsitutionindustry. The results reveal that there was a welfare loss of about 2.3 percent of observed total assets. Encouragingly, cost efficiency in the banking system fits well within the world's mean efficiency. Applying the OLS regression and FE regression procedures, we find that greater cost efficiency hedges welfare losses. Also, we find evidence that the sensitivity of welfare loss estimates to cost efficiency is more pronounced in banks with high market knowledge. Further, findings from the QR estimation suggests that where welfare loss is low (Q.25) to the median (Q.50), cost efficiency is a necessary but not a sufficient condition to hedge the losses from the market power of banks. Results on the other control variables shed some important insights. On the one hand, both private Islamic bankings and market knowledge exacerbate welfare losses in banking. On the other hand, we observed that both highly liquid banks and well-capitalized banks serve as effective constraint mechanisms on bank welfare losses. Interestingly, greater bank stability is paid for by financial consumers through increased welfare losses. Further, the results suggest that greater institutional quality worsens welfare losses

in banking. Also, the negative impact of GDP per capita suggests that the bigger the income, the bigger the credit that can be accessed, and the greater the welfare losses extracted by Islamic financial institution in Indonesia.

The issue of welfare loss from mispricing due to the exercise of market power of banking firms can be minimized. It should, however, take into consideration the advent of cost-efficient banks and efficient knowledge about local market dynamics. In other words, banks with the highest market knowledge and are cost-efficient are better placed to protect financial consumers. Further, there is heterogeneity in the impact of cost efficiency on banks' welfare performance. Specifically, cost efficiency has a significantly larger hedging impact on welfare losses in banks with extreme losses to financial consumers. Therefore, cost efficiency effect on banks' welfare performance is conditioned on the level of welfare losses in the banking sector. Additionally, if welfare gain is synonymous with cost-efficient banks, then the presence of a quiet life is typical of financial consumer protection.

The results presented in this paper have important theoretical and policy implications. The theoretical implications of this study relate to literature on the existence and relevance of the concept of mutual exclusivity between welfare gains from reduced market power and cost-efficient banks. This debate revolves around the view that welfare gains from reduced market power occasion loss of bank cost efficiency. Our results regarding the welfare gain effect of cost-efficient banks suggest that welfare gains and cost-efficient banks may not be mutually exclusive, and it is conditioned on the level of welfare losses in the banking system. For the financial sector (i.e., regulators and bank management), our results have shown that financial consumer protection cannot be achieved without cost-efficient banks in the presence of both private Islamic bankings' dominance and high market knowledge. This result suggests an integrated cost efficiency policy approach that has the complementary effect of a robust information sharing mechanism to hedge against welfare losses in the banking sector of developing countries.

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