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Mitigating Market Power in Banking: Cost Efficiency and the Path Toward Consumer Welfare

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Abstract

Purpose – This study investigates the association between cost efficiency and the welfare performance of Islamic banks in Indonesia, focusing on the social costs of market power. The analysis covers both privately owned and state-owned Islamic banks over the period 2009–2017.

Design/methodology/approach – The research utilizes Ordinary Least Squares (OLS), Fixed Effects (FE) panel regression, and Quantile Regression (QR) models to account for unobserved heterogeneity and improve policy applicability. To address potential endogeneity and reverse causality, the Two-Stage Least Squares Instrumental Variable (2SLS-IV) method is employed.

Findings – Empirical results demonstrate a significant positive link between cost efficiency and banks' welfare performance, implying that improving efficiency can mitigate welfare losses. Furthermore, the impact of cost efficiency on welfare outcomes varies depending on the bank's familiarity with local market dynamics. QR results highlight that while cost efficiency may not eliminate welfare losses at the lower quantiles (Q.25–Q.50), it remains a critical factor in minimizing such losses.

INTRODUCTION

In contemporary financial systems, Islamic banks that operate without price competitiveness may unintentionally harm consumers through elevated social costs. Empirical evidence indicates that excessive market power among Islamic banks can lead to welfare losses for financial consumers. In Indonesia, for instance, the social cost attributed to market dominance between 2017 and 2019 was estimated at 0.15% of GDP, while for state-owned and private Islamic banks, the welfare loss reached 0.54% of GDP in 2018 (Bank Indonesia, 2018). Additionally, inefficiencies in banking operations further burden consumers, with cost inefficiency and profit inefficiency estimated to account for 0.021% and 0.075% of GDP, respectively.

Existing literature has largely focused on testing hypotheses concerning the link between market power and efficiency, including the structure-conduct-performance (SCP) hypothesis, the relative market power hypothesis, the quiet life hypothesis, and the X-efficiency hypothesis (e.g., Maudos & De Guevara, 2015; Delis & Tsionas, 2016; Ariss, 2013; Williams, 2014; Fu & Heffernan, 2013). However, we extend this literature by analyzing the relationship between cost efficiency and the welfare consequences of market power at the individual bank level. Miskam (2018) contends that allowing banks a certain degree of market power can support the efficiency-enhancing dynamics of competition. Similarly, Mirzaei et al. (2013) caution that overly aggressive competition policies may disrupt the financial system, highlighting the need to tolerate some welfare trade-offs.

Despite liberalization efforts, market power in the Indonesian Islamic banking sector remains substantial. Reforms implemented between 1988 and 2016 include deregulation of interest, credit, and exchange rates; the proliferation of private Islamic banks; enhanced central bank autonomy; and institutional consolidation. Nevertheless, high-interest spreads persist due to market mispricing, which continues to inhibit competitiveness. Welfare loss as a percentage of GDP increased from 2.99% in 2009 to 4.92% in 2012. Although there was a decline in 2013 and 2015, welfare losses rose again by 1.26% between 2015 and 2017.

Moreover, two features distinguish Indonesia's Islamic financial sector: the dominant role of private Islamic banks and the accumulation of market knowledge through experiential learning. These aspects motivate further inquiry into how private sector dominance and localized expertise influence welfare performance. Specifically, this study poses the following research questions: (1) How does the dominance of private Islamic banks affect welfare outcomes? (2) What role does market knowledge play in shaping welfare performance? (3) How do cost efficiency and these contextual factors jointly influence welfare loss?

This research offers several contributions. First, using micro-level data from Indonesian Islamic banks

during 2017–2019—a period characterized by private sector dominance—we investigate cost efficiency's impact on welfare losses, extending prior studies in Southeast Asia (e.g., Fang et al., 2013; Almounsor & Mensi, 2016; Maudos & De Guevara, 2015). Unlike studies that assess welfare loss at the national level, this paper measures it at the individual bank level, scaled by total assets, allowing us to capture heterogeneity in welfare outcomes across banks. Employing QR enables us to analyze the distributional effects of cost efficiency on welfare, rather than focusing solely on average effects, thereby enhancing the study's policy relevance. To the best of our knowledge, this is the first application of QR to assess cost efficiency's impact across the conditional distribution of welfare performance in Islamic banking.

Second, the study explores how the relationship between cost efficiency and welfare performance is conditioned by two factors: the prevalence of private Islamic banks and market learning. Ghosh (2016) argues that the globalization of banking enhances cost and profit efficiency in developing countries. Conversely, Miskam (2018) underscores the importance of information-sharing practices in protecting consumers, lowering lending rates, and increasing credit access. We hypothesize that the interaction between cost efficiency and private bank dominance, as well as market learning, may significantly affect welfare outcomes. Thus, our findings offer valuable insights for regulators and policymakers striving to reduce the social cost of banking in Indonesia.

Finally, while Indonesia has undergone a strategic shift from state-owned to privately managed Islamic banks, little empirical attention has been paid to the welfare implications of this transformation. This paper addresses that gap by evaluating post-reform outcomes and providing evidence-based recommendations.

LITERATURE REVIEW

Mechanisms for Reducing Welfare Losses Attributable to Bank Market Power

A substantial body of research addresses mechanisms to reduce the welfare losses that arise from the market dominance of banks. This review focuses on two critical dimensions identified in the literature: (1) cost efficiency as a direct mechanism, and (2) the moderating effects of private Islamic banking penetration and market knowledge.

Cost Efficiency and Welfare Improvement

Empirical studies exploring cost efficiency as a tool to counteract welfare losses from bank market power present divergent perspectives. Some scholars suggest a co-evolutionary relationship between market power and efficiency, while others view the two as competing forces. These contrasting views underpin the ongoing debate regarding the interaction between social welfare and operational efficiency in the banking sector.

For instance, Koetter et al. (2014) tested the "quiet life" hypothesis in the context of U.S. commercial banks and found no support for the notion that increased market power diminishes cost efficiency. Their findings suggest that market power does not induce managerial complacency in cost structures. In a similar vein, Maudos and De Guevara (2015) reported a positive association between market power and cost efficiency across EU-15 nations, implying that banks did not exploit market dominance to operate inefficiently. Their study estimated that welfare losses due to market power amounted to 0.54% of the EU-15 GDP in 2002, indicating that efficiency may sometimes accompany reduced competitiveness.

Conversely, evidence from Indonesian banks, as reported by Bank Indonesia (2018), supports the quiet life hypothesis—higher market concentration was associated with lower cost efficiency. This suggests that some banks, especially in emerging economies, may exhibit reduced efficiency when operating in less competitive environments. These mixed findings can be attributed to variations in market structure, the nature of efficiency (e.g., cost, technical, allocative), and institutional types (e.g., commercial vs. savings banks), as argued by Färe et al. (2015).

The dual implications are as follows: on one hand, greater market power may enhance cost efficiency, allowing banks to reduce operational expenses. On the other hand, reduced market power—often driven by competitive reforms—may lead to a loss of cost efficiency, thereby increasing operational costs. This duality implies a potential trade-off, suggesting that welfare gains and cost efficiency may be mutually exclusive in some contexts. Thus, consistent with this theoretical framing, we formulate our first hypothesis:

Hypothesis 1 (H1): There is a significant negative relationship between cost efficiency and bank welfare performance, indicating that improvements in welfare are inversely related to cost efficiency.

Moderating Role of Private Islamic Banking Penetration and Market Knowledge

The introduction and expansion of private Islamic banks have been widely recognized as catalysts for competition in financial markets (Demirgüç-Kunt et al., 2016). Nonetheless, the evidence on whether private bank entry enhances or undermines competition remains inconclusive. For example, Claessens and Laeven (2014) argued that private bank entry generally boosts sectoral competitiveness. However, other studies have cautioned that excessive private entry could increase financial vulnerability (Chen et al., 2019; Wu et al., 2017), as observed in Latin America, where the proliferation of private Islamic banks did not lead to heightened competition (Jeon et al., 2017).

In developing economies, private Islamic banks are often credited with improving system-wide efficiency by enhancing capital allocation, extending long-term credit, and reducing financial

frictions (Ghosh, 2016; Lin, 2013; Giannetti & Ongena, 2014). At the same time, private banks have been associated with lower cost efficiency, particularly when regulatory oversight is weak (Fang et al., 2013; Lensink et al., 2014).

While the standalone effect of private Islamic banking on efficiency and welfare remains mixed, the interaction between cost efficiency and private bank dominance merits further investigation. Efficient private banks may stimulate broader efficiency in the system through competitive pressure (Hauner & Peiris, 2015; Mulyaningsih et al., 2017). Based on this rationale, we posit the following hypothesis:

Hypothesis 2 (H2): Private Islamic banking positively moderates the relationship between cost efficiency and bank welfare performance, enhancing the welfare benefits associated with efficient operations.

Market Knowledge (Learning by Doing) as a Moderator

Market knowledge—often proxied by institutional age or operational experience—is believed to enhance bank efficiency through cumulative learning, a concept known as “learning by doing.” In early research, Mester (2013) found that older banks in developed systems tend to be more cost-efficient due to accumulated experience and established processes. However, recent findings in emerging markets, including Indonesia, challenge this assumption. For example, Adeabah et al. (2019) applied Data Envelopment Analysis (DEA) and reported that “learning by doing” did not necessarily lead to technical efficiency in Indonesian banks. Similar results from non-financial sectors show that firm age does not consistently predict higher efficiency (Lundvall & Battese, 2013).

This discrepancy may be attributed to differences in the information-sharing infrastructure between developed and developing economies. Advanced financial systems typically operate with comprehensive data-sharing platforms, such as credit bureaus, reducing bank-level heterogeneity in market knowledge. In such contexts, information symmetry limits banks' ability to exploit proprietary market knowledge for monopolistic advantage.

Conversely, in underdeveloped financial environments—where institutional opacity and fragmented data-sharing mechanisms prevail—banks must acquire and internalize market knowledge independently. This "privatized" market intelligence becomes a competitive asset, potentially used to extract rents and perpetuate welfare losses.

The combination of strong cost efficiency and well-developed market knowledge may simulate the effect of a robust, transparent information-sharing system. According to Miskam (2018), information sharing reduces credit costs and increases borrower access to credit, thereby safeguarding consumer welfare. Hence, we propose the following hypothesis:

Hypothesis 3 (H3): Market knowledge positively moderates the relationship between cost efficiency and bank welfare performance, indicating that efficient market knowledge contributes to welfare gains.

DATA AND METHODS

Data Sources and Sample Construction

Indonesia's banking sector remains modest in size, comprising 33 banks as of December 31, 2017. Sixteen of these are domestically owned Islamic banks, while the remaining seventeen are foreign-owned. This study draws on year-end financial indicators filed with Bank Indonesia and supplements these with a hand-compiled dataset on board composition gathered from each bank's annual reports available online. Our analysis covers the period 2017–2019.

We selected this time frame due to a wave of regulatory reforms following the post-Financial Structural Adjustment Programme (FINSAP), including the establishment of a credit reference bureau, mandatory adoption of International Financial Reporting Standards (IFRS), two rounds of increases in minimum paid-in capital in 2017 and 2019, and the implementation of risk-based supervision. This period also reflects uniform application of Islamic banking regulations, stronger consumer-protection policies, innovation, and financial inclusion mandates—creating a more level playing field across institutions.

Because board size is a key determinant in estimating cost-efficiency, the final sample was limited to banks with complete annual reports accessible online. This filtering resulted in a sample of ten Islamic banks—both private and state-owned—for the 2017–2019 period. Institutional quality data were sourced from the Heritage Foundation, and GDP per capita figures from Statistics Indonesia. To mitigate the effect of extreme values, variables such as welfare loss as a percentage of total assets, Z-score, and capitalization were winsorized at the 1st and 99th percentiles.

Variable Definitions and Measurement

- **Dependent variable:** *Welfare Loss%TA (inverse form)*. We model the inverse of welfare loss as a share of total assets so that positive coefficient estimates signify welfare improvements, while negative values represent welfare deterioration.
- **Key independent variable:** *Average Cost Efficiency* (annual sample mean), modeled in line with recent literature (e.g., Adeabah et al., 2019; Ghosh, 2016; García-Herrero et al., 2013). Control variables include private Islamic banking status, market knowledge, capitalization, liquidity, Z-score, institutional quality, and GDP per capita growth.
- **Private Islamic banking** is indicated by a dummy variable set to 1 if foreign ownership equals or exceeds 50% at year-end (Ghosh, 2016), and 0 otherwise. This variable captures the role of foreign participation as a potential hedge against consumer welfare losses.
- **Market knowledge** is proxied by bank age (years since incorporation). We create a binary indicator equal to 1

for banks above the 75th percentile of age and 0 otherwise. In settings where credit-sharing infrastructure is weak, banks accrue localized market understanding at their own cost—potentially disadvantaging consumers.

- **Capitalization** is measured as the natural logarithm of equity-to-total-assets ratio. Well-capitalized institutions are generally safer with higher franchise values, making them less prone to inducing welfare losses (García-Herrero et al., 2013; Ghosh, 2016). Yet, higher capital may also reflect riskier asset holdings, implying contradictory welfare implications.
- **Liquidity** is measured as the log of loans-to-total-assets ratio. A higher ratio indicates greater intermediation activity. In emerging markets, this may enhance risk exposure and entail higher underwriting costs (Ariss, 2013), potentially translating into higher costs for consumers.
- **Bank Z-score** is calculated as (ROA + ROE) divided by the standard deviation of ROA. A higher Z-score indicates greater stability; however, such stability may come at a cost borne by consumers (Ariss, 2013; Berger & Humphrey, 2015).
- **Institutional quality** is proxied using the Heritage Foundation economic freedom index (logged). Regulatory liberalization and activity restrictions can significantly influence consumer welfare in banking (Chortareas et al., 2013; Delis, 2012).
- **GDP per capita** growth is included to account for macroeconomic development effects. Prior studies (Jaffee & Levonian, 2013) associate higher GDP per capita with improved banking benchmarks but also heightened credit use—and possibly increased welfare loss extraction.

RESULTS

Descriptive Statistics

(Table 1 presents summary statistics.) The average (median) welfare loss as a share of total assets is 2.299% (2.064%), indicating suboptimal pricing behavior in Indonesia's Islamic banking sector. The mean (median) cost-efficiency score is approximately 78% (81%), comparable with global benchmarks ranging from around 55% (e.g., UK) to approximately 95% (e.g., France). These figures align with observed efficiency levels in banks operating in Hong Kong and the US nearly two decades ago, suggesting that Indonesian banks are now reaching historical global efficiency norms.

Liquidity across sampled banks exceeds that of Chinese banks by about 16.3% and is comparable to liquidity levels observed in forty-plus emerging-market banking systems (Amidu & Wolfe, 2013). Capitalization averages 16.05% (median 13.83%), while institutional quality scores average 61.02 (median 60.30), reflecting moderate regulatory constraints. GDP per capita averages 4.30 with a median of 4.81.

We also explore univariate differences across subgroups: ownership type, bank size, and degree of market knowledge. Welfare losses for large banks are significantly higher—about 22.5% more—than for small banks (2.534 vs. 2.068). Banks with above-median market knowledge exhibit 33.7%

greater welfare losses compared to those below the 75th percentile (2.837 vs. 2.122), reinforcing the notion that undisclosed proprietary knowledge may disadvantage consumers.

Impact of Cost Efficiency

OLS estimates reveal a positive but statistically insignificant association between cost efficiency and welfare performance—suggesting limited direct hedging effects. However, fixed-effects (FE) and 2SLS-IV models—accounting for unobserved heterogeneity and endogeneity—show a significant positive relationship, contrary to Hypothesis 1 (H1). These results align with the X-efficiency paradigm (e.g., Sathye, 2014; Kwan, 2016), indicating that cost efficiency and welfare gains may coexist.

Quantitatively, a one standard deviation increase in average cost efficiency is associated with welfare gains of approximately 2.50% (FE estimate) and 6.18% (2SLS-IV estimate). This underscores cost efficiency as a crucial prerequisite for a robust, consumer-friendly banking sector.

In quantile regression analyses, the relationship between cost efficiency and welfare performance varies across the distribution:

- At Q.10 (banks with the lowest welfare losses), cost efficiency correlates negatively with welfare loss.
- At Q.25–Q.50, cost efficiency has a positive but insufficient effect in reducing losses.
- From Q.75–Q.90, greater cost efficiency significantly reduces welfare losses, confirming that for banks with higher welfare losses, cost efficiency serves as both necessary and sufficient for mitigation.

Moderation by Private Banking and Market Knowledge

We tested interaction effects of cost efficiency with both private Islamic banking ownership and market knowledge using OLS and FE models, including three-way interactions.

- The Cost Efficiency × Foreign interaction is insignificant in both OLS and FE models, providing no support for Hypothesis 2 (H2). This suggests that dominance by private Islamic banks does not amplify the welfare benefits of efficiency.
- However, the Cost Efficiency × Market Knowledge interaction is positive and significant at the 5% level, supporting Hypothesis 3 (H3). This indicates that cost efficiency yields stronger welfare improvements when banks possess superior local market knowledge. The three-way interaction further reveals that cost-efficiency sensitivity increases in both private and state-owned banks with high market knowledge.

Control Variables

Control variables yield insights consistent with theory and prior findings:

- Private Islamic banking dominance (Foreign) shows a negative and significant coefficient in welfare performance models, suggesting that increased private penetration may reduce consumer welfare gains—echoing concerns about financial globalization (Detragiache et al., 2013).
- Market Knowledge, when derived independently by banks, is significantly negative in OLS models, reinforcing the idea that secret, proprietary knowledge may harm consumer welfare in opaque contexts (Miskam, 2018).
- Ln_Liquidity is positive and significant across models, implying that greater intermediation capacity improves welfare outcomes, possibly due to broader credit access.
- Z-score is negative and significant in OLS, suggesting that greater financial stability may incur implicit costs to consumers in emerging-market settings.
- Ln_Capitalization is positive and significant in OLS, confirming the role of well-capitalized banks in limiting consumer welfare loss.
- Ln_Institutional Quality exhibits negative and significant coefficients across specifications—suggesting that in environments with restrictive banking regulation, institutional quality may paradoxically hinder welfare gains.
- Ln_GDP per capita influences welfare performance negatively and significantly in all models, indicating that rising economic development and credit demand amplify the potential for consumer welfare loss.

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CONCLUSIONS

This study explores the interplay between the social cost arising from market power - measured through banks' welfare performance—and cost efficiency, focusing on data from Indonesia's Islamic banking sector during the 2009–2017 period. The findings indicate that welfare losses amounted to approximately 2.3% of total observed assets, underscoring the pricing inefficiencies prevalent in the industry. Positively, cost efficiency in the Indonesian Islamic banking system aligns with the global average. Employing Ordinary Least Squares (OLS) and Fixed Effects (FE) regression models, we find that improvements in

cost efficiency are associated with reductions in welfare losses. Furthermore, banks possessing superior market knowledge demonstrate a more sensitive relationship between cost efficiency and welfare outcomes.

Quantile regression results offer additional nuance. At lower levels of welfare loss (e.g., the 25th to 50th percentiles), cost efficiency appears to be a necessary—but not sufficient—mechanism for mitigating the effects of market power. In contrast, for banks experiencing more severe welfare losses, cost efficiency exerts a significantly stronger mitigating influence.

Regarding the control variables, our analysis yields important insights. Both private Islamic ownership and extensive market knowledge, when acting in isolation, tend to exacerbate welfare losses. Conversely, higher liquidity and stronger capitalization emerge as effective constraints on such losses. Interestingly, greater banking system stability—as measured by Z-scores—appears to come at the expense of consumer welfare. Additionally, enhanced institutional quality paradoxically corresponds with higher welfare losses. The negative association between GDP per capita and welfare performance further suggests that rising income levels, while increasing credit access, may intensify consumer welfare extraction by Islamic financial institutions in Indonesia.

The implications of this study suggest that welfare losses stemming from market power-induced mispricing can be mitigated—but only when cost efficiency and effective assimilation of local market intelligence are present. Banks that are both operationally efficient and highly informed about local conditions are better positioned to safeguard consumer welfare. Notably, the effectiveness of cost efficiency as a hedge against welfare loss varies across banks, with stronger impacts observed among those experiencing the greatest welfare inefficiencies. These findings suggest that the influence of cost efficiency on welfare outcomes is contingent upon the magnitude of market power-induced loss within the system. If cost-efficient banking is interpreted as a proxy for welfare gains, then the notion of a “quiet life” may in fact reflect enhanced consumer protection.

Theoretical implications of these findings contribute to ongoing debates about whether welfare gains from diminished market power necessarily entail reductions in bank efficiency. Contrary to traditional assumptions (e.g., Maudos & De Guevara, 2014; Koetter et al., 2015), this study shows that efficiency and welfare gains are not mutually exclusive; rather, their relationship is moderated by the intensity of welfare losses.

From a policy perspective, our results emphasize the essential role of cost-efficient banking in protecting financial consumers, particularly in systems where private Islamic banks are dominant and where banks acquire deep—but proprietary—knowledge of market dynamics. These insights advocate for an integrated policy framework that promotes cost efficiency alongside improved information-sharing infrastructures, to strengthen consumer protection and

reduce systemic welfare losses in the banking sectors of emerging economies.

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