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Evaluation of the impact of the pay gap on performance - A study of dual system banking

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Abstract: This study examines the effect of the pay gap on banks and compares the effectiveness of the tournament theory in Islamic banks (IB) and conventional banks (CB). This study expands the pay gap indicators used in previous studies by using three indicators: board of directors' pay gap, commissioners' pay gap and employees' pay gap. The sample is 23 banks, observed from 2009 to 2019, which results in 239 bank-years. The test results show that we have not found a relationship between a pay gap and bank performance. However, the subsample test, which involves separating Islamic banks and conventional banks, reports different findings. The tournament theory is effectively applied to the employee payroll system and shows a large employee pay gap will improve the performance of IBs and CBs. However, the effect of tournaments on IBs is greater than it is on CBs. The tournament theory is not effectively applied to the salary system for the boards of

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PUBLIC INTEREST STATEMENT

Scholar has widely explained the literature on tournament theory. However, their study emphasizes the salary gap between employees and directors. This study extends the previous study by explaining the effectiveness of tournament theory on the pay gap policy between employees, commissioners, and directors. In addition, we examine the impact of this tournament theory on Islamic banks and conventional banks. We distinguish the two banks because they have different principles and operations, and Islamic banks use Islamic law as the basis for their operations. The test results using this subsample show the effectiveness of different tournament theories. Islamic banks also emphasize Islamic law as an organizational culture so that it has an impact on employee behavior. The test results show that tournament theory is more effective for Islamic bank employees than for conventional banks.

commissioners. However, the large pay gap for board of directors of CBs causes communication, coordination and collaboration problems between the board of directors and further reduces bank performance. However, in IBs, the pay gap of board of directors has no effect on bank performance. We recommend that banks should provide different salaries for employees at the various different levels. However, we do not recommend that banks create a large pay gap for board of directors because this will lead to poorer performance.

Subjects: Corporate Finance; Banking; Financial Management; Corporate Governance

Keywords: Pay gap; communication; coordination; tournament theory; Islamic bank

1. Introduction

The salary policy for CEOs and employees has drawn the attention of researchers (Dai et al., 2017). This policy will have consequences on the fair distribution of wealth, and influence work motivation (Herpen et al., 2004); employee performance (Hameed et al., 2014), and organizational performance (Brown et al., 2003). The distribution of this wealth has been discussed by Plato, and today the condition is widening (Fair, 1971). Gómez-Bezares et al. (2019) note that in 1980 the CEOs' pay gap with the lowest employees was 42:1, this had risen to 347:1 by 2016 (Gómez-Bezares et al., 2019).

The main concern of researchers into the payroll system is the payroll policy, a bonus system that is given to employees and board of directors for improving company performance. Researchers have identified two different effects of this payroll policy. The first approach is the tournament theory approach, where a large gap will have a positive impact on performance. Gómez-Bezares et al. (2019) have proven this tournament theory. A large pay gap between the CEO and the employees will improve performance (Dai et al., 2017). Ehrenberg and Bognanno (1990) have also shown that a greater spread among awards given to employees leads to greater efforts and improved performance. In line with the tournament theory, employees will be more motivated to try their hardest to complete their assignments, to obtain greater compensation (Dai et al., 2017), so that employees will get additional bonuses through this tournament (Chi et al., 2019). Eriksson (1999) and Conyon et al. (2001) assess that in companies that have many employees, the relationship between pay gaps and performance has a lower effect than in companies with few employees. This condition has a low impact if an employee realizes that he/she does not have the ability to win the competition (Eriksson, 1999).

However, with the social comparison approach, the pay gap has a negative impact on performance. This is because, with a large difference in salaries, the employees make comparisons between their salaries and those of other people; they make comparisons between the salaries they earn and their contribution to the company and also make comparisons between the salaries in one company and another. If they feel that there is unfair treatment, they will reduce their contribution proportionately (Chi et al., 2019). A large pay gap causes the gap between employees and executives to widen, increasing employee liquidity and decreasing emotional bonding (Wang, 2015). Another reason is that this large pay gap can have a negative effect, i.e. making it difficult for the CEOs to coordinate between themselves (Henderson & Fredricksonckson, 2014). This condition has an impact, reducing the individuals' performance which in turn will have a negative impact on company performance.

The study of salary differences on performance, conducted by previous studies, has used company objectives that do not include religious teachings as the basis for their operations, such as sharia entities. We argue that the impact of the tournament theory on company performance is different for companies with different organizational cultures (see, Chowdhury & Shams, 2021; Connelly et al., 2014; Kang & Lee, 2021). Islamic banks use Islamic law as the basis for their operations, including in building their organizational culture (Byarwati, 2016). Conventional banks

do not use Islamic law. Hence Islamic banks and conventional banks have different organizational cultures. To improve the results of the analysis, we compare the implementation of the tournament theory in Islamic and conventional banks.

To the best of our knowledge, this is the first study that examines the tournament theory when applied to Islamic banks and conventional banks and compares the results. Liu et al. (2020), Chi et al. (2019), Banker et al. (2016), and Yang et al. (2015) have all conducted research on the effect of the pay gap on performance using the tournament theory approach. However, they did not focus on conventional banks or Islamic banks, nor did they compare the implementation of the tournament theory in both types of banks. So, this research contributes two things. First, this study fills the gap between the tournament theory studies in Islamic banks and conventional banks and the differences in the implementation of the tournament theory in the two types of banks. Second, we add to the study of the tournament theory and the payroll system in sharia entities, which have not been carried out by previous researchers.

We present this study in several sections, i.e. the introduction section which contains the background to the research and the differences between this study and its predecessors. The second part presents the theoretical background and hypotheses development. The third section is the method and research results section. Furthermore, we present a discussion of the research results and conclusions. We also present recommendations to users and future researchers in this section.

2. Theoretical framework and hypotheses development

2.1. Islamic banks

Islamic banks are banks that use Islamic law as the basis for their operations. Islamic law prohibits adherents from dealing with interest, *gharar* (uncertainty), and *maysir* (speculation or gambling). Islam provides guidelines and directions, teaches lawfulness, and lists prohibited human actions. Islam also teaches its adherents to be just, grateful, and caring toward others (Beekun, 2012; Salin et al., 2020). There are four values in Islam related to a Muslim's efforts at work, i.e. *ikhtiyar, tawakal,* sincerity, and patience. *Ikhtiyar* demands a Muslim must keep trying, using all his/her potential to complete the work. *Tawakal* means surrendering the result (outcome) to God. Muslims are obliged to always make an effort to complete their work, but they believe that God determines the outcome. *Ikhlas* is accepting, being pleased by, and willing to accept the results of *ikhtiyar*. If the results do not match the expectations, Muslims believe that these results are the best conditions that God has given them.

Islamic values are used as ethical guidelines that must be manifested in a Muslim manager such as being fair, trustworthy, acting well, being honest, patient, and humble. If implemented in business life, these values will have a positive impact on company performance. Islamic ethics prioritize intentions over results, emphasize fairness and generosity in the workplace and consider involvement in economic activities an obligation (Nasution & Rafiki, 2019). Islamic ethics increase employees' confidence, hard work, commitment, dedication, work creativity and cooperation (Yousef, 2001). Therefore, it can be concluded that the application of Islamic business ethics when doing business can improve company performance (Azmin, Bakar & Ghani, 2018; Basheer et al., 2019; Buldan et al., 2021).

We consider that these Islamic values can be related to the tournament theory. This theory is used to describe the behavior of the reward structure and is needed to find the "optimal prize"(Connelly et al., 2014), and religion can influence employee behavior (Regnerus & Smith, 2005). Although in Islam, the reason Muslims should work is so they can worship, Islam also emphasizes that its followers should seek sustenance by working to earn a salary to support their families. In addition, employees have the right to receive a salary for their work, and employers are obliged to provide a fair salary (according to the output of their work) to employees. Companies can provide different bonuses based on the salary levels that employees earn (Wang, 2015). The

higher the level (grade-level) they get, the bigger the bonus they get. The assumption of this tournament theory is that employees will increase their performance to increase their bonuses. Thus, the tournament theory is related to employee behavior regarding bonus policies (Lazear, 2018; Lee & (George), 2006; Ponta et al., 2020), and employee behavior is influenced by corporate culture (Roszkowska & Mele, 2021; Szczepańska-Woszczyna, 2015).

2.2. Hypothesis development

One theory that is widely used in explaining the impact of the pay gap on company performance is the tournament theory. According to this theory, differences in employee rankings lead to different pay levels, and this is what triggers a pay gap. Companies that classify employment positions into various levels cause a large pay gap. Employees can increase their salaries by being promoted to higher levels. This encourages them to compete to gain promotions which increase their salaries (Zhao & Wang, 2019). In the tournament theory approach, this competition will have an impact on increasing employee performance (Gómez-Bezares et al., 2019).

Tournament theory is used to find the optimal reward for employees where this happens if the company wants to increase tournament productivity (Connelly et al., 2014). In companies that have a high reward difference, workers will be motivated to get the higher rewards by increasing their productivity. Conversely, a small difference in reward will reduce performance, because they are not given any incentives to compete. Thus, the tournament theory involves choosing the optimal spread of reward in a strategic manner that maximizes the tournament's productive results.

Liu et al. (2020), using 1,189 Chinese companies, find that there is a positive relationship between the pay gap and a company's future performance. The results further show that management's power and excessive trust weaken the relationship between the pay gap and company performance. They identify two reasons for this positive relationship. First, China is experiencing rapid labor market development and competition among workers is gradually normalizing within companies. Second, differences in the compensation offered can satisfy the manager's "vanity" psychology and stimulate improvements in staff performance.

Banker et al. (2016) find the large pay gap due to the wage premium for expert board of directors can result in relatively better company performance. On the other hand, the wage gap may be lower because the wage premium for expert board of directors is lower. Giving low wages to experts causes them to be reluctant to use all of their expertise for the benefit of the company, which has a negative impact on company performance. Y. Xu et al. (2016) have performed a study of go-public companies in China and find that the pay gap is positively related to company performance. The relationship between the pay gap and performance is stronger in small firm than in large firm. However, they do not find a relationship between the two in state-owned enterprises, where the executive managerial and compensation markets are regulated by the government.

Chi et al. (2019) find that the pay gap relationship to performance is non-linear. The pay gap has an effect on employees' performance and increases with a decreasing rate. This non-linear effect is due to the interaction of tournament incentives and social comparison effects, which are both opposites. Based on the tournament theory, employees will compete by exerting their expertise and skills to achieve the set targets to get their bonuses. In addition, employees who excel are more likely to occupy more senior positions and earn higher salaries. This condition will improve company performance. Although Yang et al. (2015) find that it has a greater effect on performance than the provision of salaries based on achievement or position, bonuses and salaries that cause a bigger pay gap have consequences for improving company performance.

H1: A pay gap improves company performance.

The impact of giving bonuses, which cause a large pay gap, has a complex relationship. In a growing company, company growth can still be optimized by stimulating employees to improve their performance with game tournaments theory. However, in an established company where the company's growth is not as high as that of a small company, it may have a different effect as the company's growth cannot increase, with any certainty, in line with the increase in the number of bonuses given. Therefore, the game theory is more proven in growing companies.

Another tournament theory assumption is to equate individual employees, that is, they will be motivated by an increase in bonuses and view all employees as having the same ability to solve the complexities of their company's operations. This condition has prompted Chi et al. (2019) to recommend looking at individual employee factors for explaining the tournament theory. This may be why Chi et al. (2019) and Dai et al. (2017) find a non-linear relationship between the pay gap and nonlinear performance (u-shape). We argue that organizational culture also plays a role in explaining the pay gap's relationship with performance. This is due to the fact that employee behavior (to improve or not improve performance) can be influenced by their company's culture (Arrah et al., 2018; Cherian et al., 2021; Jelavić et al., 2021). Company culture will shape people's perceptions and subsequently will have a big influence on employees' performance, attitudes, and behavior (Arrah et al., 2018; Cherian et al., 2021).

Islamic banks are banks that use Islamic teachings as the main basis for their operations. Islamic teachings contain prohibitions, obligations, and appeals that are implemented by Islamic banks in their banking operations. The Islamic teachings that the Islamic banks adopt are reasonable and can help to implement Islamic ethics (*akhlaqul karimah*) in all their employees (Nasution & Rafiki, 2019). Studies by Buldan et al. (2021) and Nasution and Rafiki (2019) prove that Islamic ethics which emphasize fairness, honesty, generosity, and trust are proven to increase the motivation and appreciation received by employees, because the ethics can increase the employees' commitment to the organization. Islamic ethics emphasize that people should always work hard (Quran 17:19), not give up easily (Quran 39: 53–54) and be serious when working (Quran 29:69). Buldan et al. (2021) and Nasution and Rafiki (2019) prove that Islamic ethics which emphasize fairness, honesty, generosity, and trust are proven to increase the motivation and rewards received by employees because Islamic ethics can increase the employees' commitment to their organization. So, the concept of *ikhtiyar* (free-will) is emphasized for Muslims in their work.

Yousef (2001) finds that the Islamic values applied by employees will increase their confidence, hard work, commitment, dedication, work creativity and foster cooperation between the employees. Islamic values, as implemented by employees collectively, have an impact on increasing company performance (Azmin et al., 2018; Basheer et al., 2019; Buldan et al., 2021). On this basis, we argue that Islamic values strengthen the tournament theory, in which all Muslims are required to strive to work as a form of worship to God. Based on this argument, we develop the following proposition:

H2: A pay gap can increase the performance of Islamic banks to a greater extent than that of conventional banks.

3. Method

This research was conducted to examine the effect of a pay gap on bank performance, and to compare the findings from Islamic banks with conventional banks. We used banks in Indonesia because Indonesia has a dual banking system where Islamic banks and conventional banks compete with each other to improve their performance. The number of banks used as a sample was 23 banks (12 conventional banks and 11 Islamic banks). The observation period covered

11 years (2009 to 2019). We collected data manually through annual reports and Corporate Governance (CG) reports which were downloaded through the websites of each bank. Banks in Indonesia are required by regulators to provide both reports.

M. Xu et al. (2017), Banker et al. (2016), and Faleye et al. (2013) all measured the pay gap by comparing the average salary of employees with the average salary of board of directors. The average employee's salary was measured by comparing the cost of employee salaries divided by the number of employees. With this method, they compared the gap between the salaries of employees and the salaries of board of directors; it did not describe the gap between the salaries of the lowest employees and those of the highest employees. We considered that large companies had a tiered career structure, so there could be a large pay gap between employees. We complemented the method used by M. Xu et al. (2017), Banker et al. (2016), and Faleye et al. (2013) by developing three pay gap indicators: employees' pay gap, board of directors' pay gap, and c board of commissioners' pay gap. The employees' pay gap (EMP_GAP) was measured by the comparison between the highest employee's salary and the lowest employee's salary. The board of directors' pay gap (DIR_GAP) was measured by the ratio of the highest board of director's salary to the lowest board of director's salary. The board of commissioners' pay gap (COM_GAP) was measured by the ratio of the salary of the highest board of commissioners to the salary of the lowest board of commissioners. Following Hu et al. (2013), salary was calculated based on the amount received by the employee, including bonuses and allowances.

Each bank's financial performance was measured by the ratio of net income to assets (ROA) and the ratio of net income to capital (ROE). ROA was measured by the ratio of net income to total assets (Mukhibad & Setiawan, 2020). ROE was measured by the ratio of net income to total assets (Mukhibad & Setiawan, 2020). We could not use market-based performance measures such as Tobin-Q, because Indonesia only had three Islamic banks listed on the stock exchange.

In addition to the pay gap and financial performance variables, we used corporate governance and financial factors as control variables. Indonesia uses a two-tier system and separates the supervisory and implementing functions. The supervisory function is held by the board of commissioners and the executive function is held by the board of director. We used the characteristics of the boards of commissioners and board of directors as indicators of corporate governance. The characteristics of the board of directors had an influence on bank performance (Musallam, 2020; Pathan & Faff, 2013; Zhou et al., 2018). The boards of commissioners' indicators were measured by the ratio of independent board of commissioners (IND_COM) to all the members who were board of commissioners (Mukhibad & Setiawan, 2020). The number of board of commissioners members (COM_SIZE) was measured by the number of commissioners (Hu et al., 2013; Rachman, 2014). The expertise of the boards of board of commissioners (COM_EXP) was measured by the ratio of the members of the boards of commissioners who had a banking/finance/accounting educational background to all the members of the boards of commissioners. The board of directors' expertise indicator (DIR_EXP) was measured by the ratio of board of directors with banking/finance/accounting educational backgrounds to all the board of directors (Johl et al., 2015).

Following Hu et al. (2013) and Lin and Lu (2009), we used financial factors as the control variables. These financial factors included: (1) Loans (LOAN) measured by the ratio of total financing to assets (Majid et al., 2014; Suzuki & Uddin, 2016), (2) salary expense ratio (SALARY) measured by cost ratio of salaries, bonuses and allowances to bank operating incomes (Nyberg et al., 2016), (3) equity ratio (EQUITY) was measured by the ratio of total equity to assets (Léon & Weill, 2018), and bank size (LNSIZE) was measured with the natural logarithm of total assets. In addition, we added a bank type control variable (BANK_KIND) because our sample used these two bank types. The differences in systems, principles, and operations between Islamic banks and conventional banks (Mukhibad et al., 2022) served as our basis for testing the model on a sample of Islamic banks and conventional banks.

The data were analyzed using panel data regression with a random effect (RE) model or a fixed effect (FE) model. The selection of the FE or RE model was determined based on the results of the Hausman test where, if the results of this test produced a probability of less than 0.05, then the model used was the FE one, and vice versa. Before the data were tested, we tested for multi-collinearity, autocorrelation, and heteroscedasticity. The multicollinearity test used a pair-wise correlation, where if the test results produced a correlation between the independent variables of >0.8, a serious correlation problem existed (Gujarati & Porter, 2009, p. 338). In addition, we used the variance inflation factor (VIF). A VIF score of less than 0.10 indicated the absence of multi-collinearity (Law, 2011). The autocorrelation test used the Wooldridge test where, if the probability was less than 0.05, this indicated an autocorrelation problem (Chai & Mirza, 2019). The hetero-scedasticity test used a Wald test, where a probability of <0.05 indicated a heteroscedasticity problem (Hidayat et al., 2021).

The form of this equation was as follows.

$$ROA_{i,t} = \alpha + \beta_1 DIR\_GAP_{i,t} + \beta_2 CONTROL_{i,t} + \varepsilon$$

$$ROA_{i,t} = \alpha + \beta_1 COM\_GAP_{i,t} + \beta_2 CONTROL_{i,t} + \varepsilon$$

$$ROA_{i,t} = \alpha + \beta_1 EMP\_GAP_{i,t} + \beta_2 CONTROL_{i,t} + \varepsilon$$

$$ROE_{i,t} = \alpha + \beta_1 DIR\_GAP_{i,t} + \beta_2 CONTROL_{i,t} + \varepsilon$$

$$ROE_{i,t} = \alpha + \beta_1 COM\_GAP_{i,t} + \beta_2 CONTROL_{i,t} + \varepsilon$$

$$ROE_{i,t} = \alpha + \beta_1 EMP\_GAP_{i,t} + \beta_2 CONTROL_{i,t} + \varepsilon$$

4. Results

4.1. Statistic descriptive

Table 1 shows that banks in Indonesia had a pay gap between the employees of 36.374. This gap is larger than the average board of directors' pay gap of 1.830. The pay gap for board of commissioners had a lower average than that for the board of directors, at 1.550. Islamic banks had a lower pay gap (pay gap for employees, board of directors, board of commissioners) than conventional banks. The lower gap indicated that Islamic banks had simpler payroll structures than conventional banks. This policy was probably taken because the Islamic banks held less assets than the conventional banks, as large quantities of assets can cause greater complexities in banking operations.

Bank financial performance, as measured by ROA and ROE, showed that Islamic banks had better financial performance than conventional banks. Conventional banks had an average ROA of 0.026% and an average ROE of 0.207%. Two banks also reported losses of −0.1208% (BCA Syariah) and −0.0009% (Bank Victoria).

The results of the multicollinearity test (Table 2) showed that there was no correlation between the independent variables above 0.8 (Gujarati & Porter, 2009, p. 338). This showed that there was no multicollinearity in the model. The results of the VIF test (Table 3) on all the models had scores lower than 10. These results confirmed that there was no multicollinearity in all the models (Law, 2011). A Breusch and Pagan Lagrangian multiplier test on all the models had a score below 0.05, indicating that there was heterogeneity of the data between banks and recommended using the FE or RE model. The FE and RE models were chosen based on the results of the Hausman test where the probability of <0.05 recommended FE for the data analysis method and vice versa. The results of the Hausman test (Table 3) on models 2A, 2C, 3B, 3C, 4A, 4C, 6A, and 6C resulted in some

Table 1. Descriptive statistics					
	N	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Panel A (All banks)					
ROA	239	0.020	0.026	−0.121	0.187
ROE	239	0.143	0.189	−0.940	0.965
COM_GAP	234	1.550	0.681	0.120	4.000
DIR_GAP	234	1.830	0.793	1.000	5.560
EMP_GAP	235	36.374	24.497	0.000	165.900
IND_COM	239	0.600	0.138	0.250	1.000
COM_SIZE	239	4.720	1.627	2.000	9.000
COM_EXP	239	0.731	0.217	0.200	1.000
DIR_EXP	239	0.717	0.271	0.125	2.500
LOAN	233	59.804	34.663	0.000	100.000
SALARY	239	0.199	0.149	0.024	2.089
EQUITY	239	0.168	0.228	0.000	2.618
LNSIZE	239	31.165	2.105	25.933	36.447
KIND_BANK	239	0.478	0.501	0.000	1.000
Panel B (Islamic Banks)					
ROA	107	0.013	0.031	−0.121	0.136
ROE	107	0.065	0.190	−0.940	0.648
COM_GAP	105	1.470	0.577	1.000	3.510
DIR_GAP	105	1.703	0.646	1.000	4.460
EMP_GAP	105	27.378	17.889	7.030	88.600
IND_COM	107	0.655	0.157	0.250	1.000
COM_SIZE	107	3.533	0.769	2.000	5.000
COM_EXP	107	0.726	0.262	0.200	1.000
DIR_EXP	107	0.697	0.335	0.200	2.500
LOAN	103	33.863	31.679	0.000	100.000
SALARY	107	0.233	0.197	0.024	2.089
EQUITY	107	0.234	0.328	0.000	2.618
LNSIZE	107	29.393	1.481	25.933	36.447
Panel C (Conventional Banks)					
ROA	132	0.026	0.019	−0.001	0.187
ROE	132	0.207	0.162	−0.008	0.965
COM_GAP	129	1.616	0.750	0.120	4.000
DIR_GAP	129	1.934	0.884	1.100	5.560
EMP_GAP	130	43.640	26.675	0.000	165.900
IND_COM	132	0.556	0.100	0.333	1.000
COM_SIZE	132	5.682	1.500	3.000	9.000
COM_EXP	132	0.735	0.173	0.333	1.000
DIR_EXP	132	0.734	0.205	0.125	1.000
LOAN	130	80.358	20.108	10.651	93.910
SALARY	132	0.171	0.083	0.041	0.556
EQUITY	132	0.115	0.037	0.001	0.210
LNSIZE	129	32.601	1.278	29.627	36.447

Table 2. Matrix correlation

	COM_GAP	DIR_GAP	EMP_GAP	IND_COM	COM_SIZE	COM_EXP	DIR_EXP	LOAN	SALARY	EQUITY	LNSIZE	KIND_BANK
COM_GAP	1											
DIR_GAP	0.232	1										
EMP_GAP	0.086	0.404	1									
IND_COM	−0.019	0.015	−0.007	1								
COM_SIZE	−0.278	−0.242	0.244	−0.430	1							
COM_EXP	0.216	0.078	0.077	−0.070	−0.112	1						
DIR_EXP	−0.136	−0.260	−0.125	−0.095	0.202	−0.012	1					
LOAN	0.209	0.072	0.293	−0.204	0.462	−0.051	−0.072	1				
SALARY	−0.119	−0.002	−0.051	0.046	−0.102	0.115	0.006	−0.200	1			
EQUITY	−0.048	−0.014	−0.119	−0.145	−0.177	0.064	−0.149	−0.248	0.192	1		
LNSIZE	−0.059	−0.077	0.285	−0.313	0.771	−0.093	0.238	0.510	−0.145	−0.263	1	
KIND_BANK	−0.099	−0.115	−0.343	0.365	−0.681	0.007	−0.061	−0.679	0.198	0.270	−0.779	1

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Table 3. FEM and REM test results

	ALL Banks						IB						CB					
	ROA			ROE			ROA			ROE			ROA			ROE		
	1A	1B	1C	2A	2B	2C	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	6C
COM_GAP	0.006	-	-	-0.048	-	-	0.006	-	-	0.058	-	-	0.007	-	-	-0.060	-	-
	0.006	-	-	0.036	-	-	0.013	-	-	0.036	-	-	0.006	-	-	0.036	-	-
EMP_GAP	-	0.010	-	-	0.011	-	-	0.001*	-	-	0.003***	-	-	0.012**	-	-	0.001	-
	-	0.001	-	-	0.001	-	-	0.000	-	-	0.001	-	-	0.001	-	-	0.011	-
DIR_GAP	-	-	-0.002	-	-	-0.007	-	-	0.002	-	-	0.058	-	-	-0.007**	-	-	-0.008
	-	-	0.002	-	-	0.021	-	-	0.004	-	-	0.036	-	-	0.003	-	-	0.014
IND_COM	-0.005	-0.007	-0.005	-0.348***	-0.356***	-0.347***	0.005	-0.018	-0.021	-0.127	0.133	-0.127	0.017	0.031	0.022	-0.545***	-0.613***	-0.571***
	0.016	0.018	0.017	0.103	0.115	0.106	0.024	0.018	0.017	0.106	0.083	0.106	0.031	0.029	0.025	0.123	0.255	0.150
COM_SIZE	0.001	0.001	0.000	0.011	0.012	0.010	0.003	0.002	0.004	0.042	0.046	0.042	0.002	0.000	-0.002	0.030	0.000	0.029
	0.002	0.002	0.002	0.029	0.030	0.030	0.005	0.004	0.005	0.023	0.037	0.023	0.003	0.001	0.002	0.039	0.016	0.037
COM_EXP	0.001	0.001	0.003	0.021	0.018	0.014	-0.002	0.002	0.009	0.018	-0.025	0.018	-0.020*	-0.012*	-0.018**	-0.230	-0.124	-0.235
	0.010	0.011	0.010	0.097	0.094	0.096	0.015	0.018	0.016	0.123	0.108	0.123	0.012	0.009	0.008	0.149	0.105	0.153
DIR_EXP	-0.008	-0.010	-0.009	-0.006	0.003	0.006	-0.008	-0.013	-0.013	-0.085	-0.021	-0.085	-0.008	-0.022	-0.024**	0.225	0.118	0.266
	0.009	0.009	0.009	0.054	0.059	0.059	0.009	0.014	0.015	0.062	0.056	0.062	0.009	0.012	0.011	0.171	0.145	0.212
LOAN	0.000	0.000	0.000	-0.001	-0.001	-0.001	0.000	0.000	0.000	-0.001	-0.001	-0.001	0.001*	0.001**	0.001**	0.001	0.003**	0.001
	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.006	0.001	0.006
SALARY	-0.004	-0.002	-0.005	0.030	0.039	0.034	-0.020*	-0.016*	-0.015*	0.011	0.005	0.011	0.101	0.108*	0.100**	0.280**	0.215	0.274**
	0.011	0.013	0.011	0.043	0.041	0.041	0.012	0.008	0.008	0.059	0.032	0.059	0.065	0.051	0.050	0.105	0.160	0.108
EQUITY	0.002	0.001	0.001	0.007	0.008	0.009	0.006	-0.002	0.000	0.050	0.039	0.050	-0.057	-0.012	0.015	-2.096**	-0.854	-1.937**
	0.004	0.003	0.004	0.042	0.040	0.039	0.007	0.004	0.004	0.046	0.032	0.046	0.079	0.054	0.052	0.693	0.663	0.855
LNSIZE	0.000	0.001	0.000	-0.029*	-0.029*	-0.029*	0.002	-0.001	0.000	-0.021	-0.003	-0.021	-0.001	0.002	0.003	-0.002	0.001	-0.007
	0.002	0.002	0.002	0.016	0.015	0.015	0.003	0.003	0.003	0.020	0.017	0.020	0.004	0.003	0.003	0.033	0.024	0.035

(Continued)

Table 3. (Continued)

	ALL Banks						IB						CB					
	ROA			ROE			ROA			ROE			ROA			ROE		
	1A	1B	1C	2A	2B	2C	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	6C
_cons	0.022	0.014	0.037	1.276**	1.191**	1.218**	-0.041	0.053	0.032	0.547	-0.145	0.547	0.014	-0.071	-0.050	0.651	0.363	0.702
	0.070	0.059	0.067	0.576	0.515	0.523	0.063	0.087	0.092	0.632	0.457	0.632	0.103	0.067	0.072	1.325	0.704	1.436
Control Bank Kind	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Breusch and Pagan Lagrangian multiplier test	0	0	0	0.01122	0.04451	0.01122	0	0	0	0.01122	0.04451	0.01122	0	0.01214	0	0	0.0083	0.0474
VIF Means	2.09	1.96	2.05	1.38	1.33	1.38	1.32	1.33	1.38	1.38	1.33	1.38	2.14	1.92	2.01	2.14	1.92	2.1
Wooldridge test	0.0451	0.073	0.0392	0.324	0.2338	0.324	0.3584	0.3998	0.3013	0.324	0.2338	0.324	0.001	0.0038	0.0045	0.0666	0.0992	0.0517
Modified Wald test	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hausman	0.9673	0.92765	0.98	0.0272	0.4452	0.0272	0.4107	0	0	0.0272	0.4452	0.0272	0.9063	0.9737	0.2375	0.01284	0.34426	0.0001
R-Square	0.0388	0.0305	0.0691	0.0818	0.0348	0.0818	0.0459	0.1076	0.0677	0.0818	0.0348	0.0818	0.171	0.1351	0.0953	0.2994	0.2431	0.2793
N	228	229	228	101	101	101	101	101	101	101	101	101	127	128	127	127	128	127

Table 3 presents the coefficient and standard error values. The standard error score is based on the robust standard error value. This method is used to solve the problems of autocorrelation and heteroscedasticity (Hoechle, 2007).*** sig. 1%; ** Sig. 5%; * Sig.10%

models having a probability of less than 0.05 and this recommended the use of the FE model. Another model produced a probability score of more than 0.05 and recommended the RE model for the data's analysis.

Following Guermazi (2020), we used the Wooldridge test to test for autocorrelation. A Wooldridge test score below 0.05 would indicate that there was autocorrelation in the model and vice versa. The results of the Wooldridge test are presented in Table 3. All the models, except models 1B, 2A, 2B, 2C, 3A, 3B, 3C, 6A, 6B, and 6C, had a Wooldridge score of more than 0.05 and hence indicated no autocorrelation. We also performed a modified Wald test to test for heteroscedasticity. The results of the modified Wald test on all the models yielded a p-value of 0.000 and indicated that all the models had heteroscedasticity problems. To overcome these two problems, we used a robust standard deviation in our data analysis (Hoechle, 2007). Following Hoechle (2007), we added the command "vce (robust)" for models experiencing heteroscedasticity and added a command "cluster ()" for models experiencing heteroscedasticity and autocorrelation. This method was also carried out by Chamberlain et al. (2020) and Almutairi and Quttainah (2017).

The test results of all the models are presented in Table 3.

4.2. Discussion

Table 3 shows, for all banks, that the employees' pay gap (EMP_GAP) has no effect on ROA and ROE. The same table also shows the board of directors' pay gap (DIR_GAP) and board of commissioners' pay gap (COM_GAP) are not proven to influence ROA and ROE. This finding shows that the tournament theory has not been effectively applied to the employees, board of directors, and board of commissioners of banks in Indonesia. The ineffectiveness of the tournament theory on board of directors' and board of commissioners' remuneration policies shows that banks in Indonesia have a policy to provide salaries that tend to be evenly distributed. This is to support the effectiveness of communication, cooperation, and collaboration among employees, board of directors, and board of commissioners, so that their effect on competition is not overwhelming. Such a policy aims to reduce the pay gap. The pay gap can lead to the employees having negative attitudes, as they may feel exploited and thus indifferent to the bank's performance. This result is different from the one which Liu et al. (2020), Y. Xu et al. (2016), Banker et al. (2016), and Yang et al. (2015), and Hu et al. (2013) find. We argue that this difference in results is due to differences in the payroll system controlled by the government. In Indonesia, the remuneration policy is monitored by the government, who set a minimum wage. This policy reduces the ability of banks to carry out the tournament theory.

The results of our study using conventional banks as the research samples show that the employees' pay gap (EMP_GAP) has a positive effect at the 5% level on ROA. However, the employees' pay gap has no effect on ROE. The different results are shown by the board of commissioners' pay gap (COM_GAP) which is not proven to influence ROA and ROE. Different results are also shown by the board of directors' pay gap (DIR_GAP). The board of directors' pay gap has a negative effect on ROA but does not affect ROE. The test results using conventional banks show that the tournament theory is effectively implemented for conventional bank employees, where the pay gap encourages the employees to be competent and subsequently has a positive impact on improving bank performance (Y. Xu et al., 2016). However, the pay gap for board of directors strengthens the behavioral theory, where the pay gap will reduce bank performance. In this approach, the pay gap will create communication and coordination problems, and does not promote effective collaboration among board of directors (Henderson & Fredricksonckson, 2014; Wang, 2015; Yang et al., 2015). This disparity in the salary of board of directors will reduce the emotional bond of the board of directors and can lead to an indifferent attitude toward bank performance (Wang, 2015).

The results of the study using a sample of Islamic banks have produced different findings. Table 3 provides evidence that the employees' pay gap (EMP_GAP) in Islamic banks has a positive effect on ROA and ROE. The board of directors' pay gap (DIR_GAP) has no effect on ROA and ROE. The same finding also applies to the board of commissioners' pay gap (COM_GAP) which has no effect on ROA or ROE. These results indicate that the tournament theory is effectively implemented for Islamic bank employees. This theory creates salary differences by giving different bonuses to the employees. Employees who show good performance will be given a larger bonus and vice versa for employees who do not perform as well, they will be given a smaller bonus. This range of bonuses is what causes the pay gap between employees. Giving bonuses based on performance will encourage employees to be motivated and use all their resources to complete their tasks, so they will get bigger bonuses (Chi et al., 2019; Dai et al., 2017).

The difference in results from the tournament theory in Islamic banks and conventional banks may be due to the differences in the assets they hold, and the difference in the number of employees between Islamic banks and conventional banks. Islamic banks in Indonesia have an asset percentage of 5.3% of all the bank assets in Indonesia (Mukhibad et al., 2020). This lack of assets encourages employees to compete when performing their respective duties, so that this has a positive impact on bank performance. In addition, the lower number of Islamic bank employees will have a more effective impact on the implementation of the tournament theory than the employees of conventional banks will, as they have larger numbers of employees (Conyon et al., 2001; Eriksson, 1999).

In addition, the more effective implementation of the tournament theory by Islamic banks than conventional banks may be seen because of the cultural differences between the two banks. Islamic bank employees use Islamic law to guide them to maintain free-will (*ikhtiyar*) when performing their duties. Completing a mandated task is something that must be done by a Muslim. Buldan et al. (2021), Basheer et al. (2019), and Azmin et al., (2018) provide evidence that the Islamic business ethics implemented by employees will have a positive impact on company performance. Thus, Islamic culture can increase the effectiveness of the tournament theory, so that the employee competition system will be more effective in improving bank performance.

The effectiveness of applying the tournament theory to Islamic banks also applies to the bonus system for the board of directors. This result shows the effectiveness of the directors' labor market at the Islamic banks, which demands the board of directors compete by showing their best performance. An effective labor market will encourage individual board of directors to fight for the highest positions and earn bigger bonuses (Hu et al., 2013; Liu et al., 2020). The very low number of Islamic banks in Indonesia, which does not compare with the Muslim population in Indonesia, means there is great potential for Islamic banks in Indonesia to grow beyond conventional banks. This growth potential causes board of directors to always devote their skills, innovate, and take better strategic policies to improve their banks' performance. The results of this study on Islamic banks confirm the findings of previous studies by Lin and Lu (2009), Hu et al. (2013), and Ismail et al. (2014) and Y. Xu et al. (2016) that the board of directors' pay gap will improve company performance.

4.3. Robustness and endogeneity test

We did test all the major models by adding the number of board of director members (DIR_SIZE) as a robustness test. We use this method because the board of director has direct duties in managing the bank's resources (Hillman & Dalziel, 2003), so the number of board of directors member will affect the bank's success in managing the bank's resources, innovation, and financial performance (Ali, 2018; Kalsie & Shrivastav, 2016; Sierra-Morán et al., 2022). Using the same steps as the main model's test, we present the results of this robustness test in Table 4. The test results in Table 4 show that using the entire sample, the pay gap for

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Table 4. Robustness test

	All Banks				Conventional Banks				Islamic Banks			
	ROA		ROE		ROA		ROE		ROA		ROE	
COM_GAP	-	-0.047	-	-	-	-	-	-	-	-	-	-
	-	0.038	-	-	-	-	-	-	-	-	-	-
	0.006		0.006		0.006	0.025			0.005		0.003	
	0.006		0.006		0.006	0.032			0.012		0.033	
EMP_GAP	0.011	-	0.001	-	0.001	-	0.001*	-	0.001**	0.001**	0.003***	-
	0.001	-	0.001	-	0.021	-	0.001	-	0.003	0.003	0.001	-
DIR_GAP	-0.001	-	-0.008	-	-0.007**	-	-0.014	-	-	-0.001	-	-
	0.002	-	0.021	-	0.003	-	0.015	-	-	0.004	-	-
IND_COM	-0.006	-0.352**	-0.360**	-0.354***	0.027	-0.475*	-0.556**	-0.590***	-0.019	-0.006	0.253*	0.133**
	0.017	0.106	0.116	0.109	0.028	0.277	0.188	0.152	0.015	0.031	0.133	0.075
COM_SIZE	0.000	0.012	0.013	0.011	0.001	-0.010	0.038	0.031	0.002	-0.006	0.026	0.009
	0.000	0.030	0.030	0.030	0.002	0.019	0.040	0.038	0.004	0.007	0.026	0.033
COM_EXP	0.000	0.021	0.019	0.015	-0.016*	-0.020**	-0.256	-0.263	0.002	-0.004	0.118	-0.039
	0.010	0.096	0.093	0.095	0.009	0.012	0.159	0.154	0.017	0.014	0.118	0.118
DIR_EXP	-0.008	-0.009	-0.001	0.000	-0.017	-0.022**	0.266	0.242	-0.014	0.004	0.038	0.056
	0.010	0.057	0.061	0.062	0.011	0.011	0.232	0.214	0.015	0.008	0.056	0.056
LOAN	0.000	-0.001	-0.001	-0.001	0.001*	0.002	0.003	0.004	0.001	0.002*	-0.001	-0.001
	0.000	0.001	0.001	0.001	0.001	0.002	0.008	0.008	0.001	0.002	0.001	0.001
SALARY	-0.003	0.031	0.040	0.035	0.106*	0.099**	0.328**	0.318**	-0.016*	-0.019*	-0.024	-0.024
	0.013	0.044	0.043	0.042	0.058	0.050	0.130	0.113	0.008	0.011	0.026	0.026
EQUITY	0.001	0.006	0.007	0.007	-0.032	0.007	-2.125**	-1.718*	-0.002	0.007	0.046*	0.046*
	0.003	0.042	0.040	0.039	0.056	0.058	0.964	0.886	0.003	0.009	0.025	0.025
DIR_SIZE	0.003	-0.004	-0.005	-0.007	0.002	0.001	-0.024	-0.023	0.000	0.010	0.032	0.032
	0.002	0.014	0.014	0.013	0.001	0.001	0.016	0.020	0.005	0.007	0.026	0.026
LNSIZE	0.000	-0.028*	-0.028*	-0.028*	0.000	0.001	0.019	0.011	-0.001	0.000	0.004	0.004
	0.002	0.016	0.015	0.015	0.001	0.005	0.037	0.039	0.003	0.002	0.018	0.018

(Continued)

Table 4. (Continued)

	All Banks						Conventional Banks						Islamic Banks					
	ROA			ROE			ROA			ROE			ROA			ROE		
_cons	0.025	0.024	0.037	1.292**	1.207**	1.249**	0.035	0.005	-0.004	0.392	-0.105	0.040	-0.022	0.055	0.001	-0.377	-0.345	-0.377
	0.071	0.060	0.066	0.571	0.514	0.523	0.114	0.104	0.115	0.829	1.637	1.674	0.062	0.075	0.050	0.571	0.443	0.571
Control Bank Kind	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Breusch and Pagan Lagrangian multiplier test	0.000	0.000	0.000	0.028	0.0150	0.044	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VIF Means	2.090	1.860	2.050	2.570	2.400	2.480	2.780	2.520	2.550	2.780	2.520	2.550	1.480	1.480	1.480	1.480	1.460	1.480
Wooldridge test	0.045	0.063	0.039	0.096	0.067	0.090	0.013	0.024	0.036	0.062	0.109	0.049	0.375	0.287	0.309	0.309	0.222	0.309
Modified Wald test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hausman	0.967	0.671	0.980	0.000	0.000	0.000	0.892	0.997	0.367	0.158	0.000	0.000	0.000	0.350	0.837	0.594	0.299	0.594
R-Square	0.040	0.038	0.030	0.078	0.069	0.069	0.173	0.159	0.103	0.130	0.302	0.293	0.108	0.016	0.019	0.070	0.020	0.071
N	228	229	228	228	229	228	127	128	127	127	128	127	101	101	101	101	101	101

Table 4 presents the coefficient and standard error values. The standard error score is based on the robust standard error value. This method is used to solve the problems of autocorrelation and heteroscedasticity (Hoechle, 2007). *** sig. 1%; ** Sig. 5%; * Sig.10%.

Table 5. Endeogeneity test						
	ROA			**ROE**		
LAG1 ROA/ ROE	0.098	0.099	0.079	0.275**	0.272***	0.270***
	0.063	0.063	0.064	0.073	0.073	0.073
DIR_SAL_GAP	−0.004	-	-	0.000	-	-
	0.004	-	-	0.028	-	-
EMP_SAL_GAP	-	0.000	-	-	0.004	-
	-	0.000	-	-	0.001	-
COM_SAL_GAP	-	-	0.010**	-	-	−0.009
	-	-	0.005	-	-	0.039
IND_COM	−0.006	−0.014	−0.008	−0.114	−0.241	−0.107
	0.026	0.026	0.026	0.191	0.195	0.190
COM_SIZE	−0.003	−0.003	−0.002	0.061**	0.041	0.058**
	0.004	0.004	0.004	0.025	0.026	0.025
COM_EXP	0.014	0.016	0.011	0.019	−0.015	0.021
	0.012	0.012	0.012	0.088	0.090	0.089
DIR_EXP	−0.001	−0.004	−0.003	0.097	0.091	0.094
	0.011	0.011	0.011	0.088	0.086	0.087
LOAN	0.000	0.000	0.000	−0.001	−0.001	−0.001
	0.000	0.000	0.000	0.001	0.001	0.001
SALARY	−0.010	−0.010	−0.011	−0.072	−0.064	−0.075
	0.013	0.012	0.012	0.101	0.101	0.101
EQUITY	0.007	0.008	0.007	0.102	0.084	0.104
	0.013	0.012	0.012	0.100	0.100	0.100
LNSIZE	−0.001	−0.001	−0.002	−0.035	−0.047**	−0.035
	0.002	0.002	0.002	0.021	0.022	0.021
KIND_BANK	−0.037**	−0.040***	−0.041***	0.002	−0.065	−0.007
	0.016	0.015	0.016	0.142	0.140	0.138
_cons	0.093	0.099	0.089	0.919	1.388*	0.940
	0.083	0.083	0.083	0.707	0.726	0.707
Sargan	0.001	0.001	0.001	0.012	0.021	0.097
AR (1)	0.020	0.020	0.016	0.009	0.007	0.008
AR (2)	0.942	0.791	0.830	0.367	0.738	0.367

Table 5 presents the coefficient and standard error values. *** sig. 1%; ** Sig. 5%; * Sig.105.

board of directors, board of commissioners and employees does not affect bank performance. These test results corroborate our main test results.

Following Roberts and Whited (2013), endogeneity problems can occur in corporate financial research. The problem of endogeneity in the model causes inconsistent research results and the wrong conclusions can be drawn, resulting in incorrect theoretical conclusions and interpretations (Mukhibad et al., 2022). To overcome this, we use the suggestion from Ullah et al. (2018) and Wintoki et al. (2012) to use the generalized method of moments (GMM). We follow the steps taken by Mukhibad et al. (2022) for conducting the GMM test, and our test results are presented in Table 5.

The GMM system test shows that the probability score for all the models is 0.05 lower. The results of the AR test (1) show a probability score lower than 0.05. However, AR (2) produces a

probability greater than 0.05. The results of the Sargan and AR (2) tests indicate that the instrument and specification model are valid.

Table 5 shows that lag 1 ROA is not significant, because it produces a p-probability of more than 0.05. However, lag 1 ROE has a significant effect on ROE. These results indicate that there is endogeneity of ROE. The GMM test shows that the pay gap for board of directors, board of commissioners and employees has no effect on ROE. So, the GMM test results confirm the results of our main model test.

5. Conclusion

This study aims to prove the tournament theory using banks in Indonesia, and to compare the impact of this theory on Islamic and conventional banks. To prove it, we use the employees' pay gap, the board of directors' pay gap, and the board of commissioners' pay gap. We use these three pay gap indicators to expand the previous studies, which have their focus more on the pay gap between board of directors and employees. Bank performance is measured by ROA and ROE. In the sample of all the banks, we find that the tournament theory is not effectively implemented in banks because the board of directors' pay gap, the board of commissioners' pay gap and the employees' pay gap have no effect on bank performance. However, by dividing the sample into two (Islamic banks and conventional banks), we find that the tournament theory is effective on the employees' pay gap, but it is more effective for Islamic bank employees.

We find no evidence of the tournament theory on the boards of commissioners. This shows that giving bonuses in stages, as is normally done for the boards of commissioners, does not encourage them to improve their performance, so it does not have a significant effect on bank performance. However, the board directors' pay gap in conventional banks has a negative impact on performance. The gap in the bonuses, allowances, and salaries for conventional bank board of directors will cause communication, coordination, and collaboration problems between the board of directors, thus giving rise to an indifferent attitude toward bank performance. However, in Islamic banks, the directors' pay gap does not affect performance.

In Islamic banks, a large employee pay gap can encourage the employees to use all their energy and skills to carry out their duties as well as possible, so that they will get bigger bonuses. Their high enthusiasm to complete tasks can also be influenced by the large potential of Islamic banks in Indonesia, because Indonesia has the largest Muslim population in the world. In addition, the consequences of Islamic law, as carried out by Islamic banks, encourage employees to have the free-will (*ikhtiyar*) to use all their skills at work.

Based on the results of this study, we recommend that conventional banks should reduce the pay gap for directors because bank performance reflects the performance of the entire board; coordination, communication, and collaboration among the board of directors greatly supports the achievement of improved bank performance. For Islamic banks, determining the appropriate pay gap for their board of directors is needed, so that each of the board of directors can use his/her skills and knowledge more effectively to manage the bank's resources and further improve bank performance. Regulators can make policies that can increase the efficiency of the board of directors' labor market for banks, so that this will increase the competence between board of directors and board of commissioners.

This study uses a sample of Islamic and conventional commercial banks in Indonesia, most of which are not listed on the stock exchange. So, we could not use market-based performance. Further research can expand the object of this research by using listed banks, so that market-based performance measurements can be carried out. In addition, the effectiveness of the tournament theory also needs to be investigated by explaining the demographic characteristics of the board of directors, and the ownership structure, on the relationship between the pay gap and company performance.

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Author statement
All authors is a lecturers and researchers in the field of Islamic finance. One of his focuses is on the performance evaluation of Islamic banks (IB). This paper focuses on the theoretical tournament in Islamic banks by emphasizing the payroll system. Islamic banks and conventional banks have different principles, operations, and cultures, resulting in different performance outputs. This paper encourages banks to make appropriate payroll policies to improve their performance.

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