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Factors Affecting the Performance of Vietnamese Commercial Banks: Does Basel II Matter?

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Abstract

This paper examines the main factors affecting the bank performance under the Basel II implementation in Vietnam, a transitional economy in Asia. We pay special attention to the implementation duration of the Basel II convention and how it affects profitability. Thereby, we can evaluate the effectiveness of Basel II in the whole system according to the roadmap to 2020. We employ the panel data regression method to analyze a sample of 300 bank-year observations from 25 commercial banks during the 2008–2019 period. Our empirical findings show that the size of the bank, net interest margin, state ownership, and Basel II convention have positive effects on bank profitability. However, our empirical findings indicate that bank age and branch number negatively reduce bank performance. Finally, our results indicate that commercial banks earn extra profit from delaying the implementation of Basel II. However, commercial banks will encounter higher credit, and operational risks arising from delaying the implementation of Basel II standards. Therefore, our study contributes to the insights into the bank's management to enhance profitability, especially after implementing Basel II in a transitional economy. Finally, our study also provides policy implications for bank managers and banking supervisory to maintain the sustainable development of the banking system.

Keywords: Basel II, Commercial Banks, Vietnam, Bank Performance, State Ownership

JEL Classification Code: C33, G21, G28

1. Introduction

The heavy impacts of the financial crisis and global economic downturn disclose the weakness in the banking system. However, these topics are underexplored. The banking sector's strength is necessary to ensure financial stability because banking is the critical element of the financial system and plays an essential role in economic development. Every bank must understand the factors that affect its operating results to improve banking performance. Examining those affecting factors has attracted attention from shareholders, managers, and authorities. It helps policymakers and administrators formulate adequate strategies and policies to ensure sustainability and stability in the banking system, thereby avoiding financial crises. Assessing the performance of commercial banks is not easy because of their diversity. Many papers have identified that banking profitability may bring an overall picture of banking performance (Navas et al., 2020).

Vietnam has a financial market, which banks control. Vietnamese commercials banks play an important in the financial system of Vietnam (Luong & Nguyen, 2021). However, a few weak banks have negatively impacted the performance of the bank industry. Based on decision No. 254/QD-TTG dated March 1, 2013, the Prime Minister has considered implementing Basel II capital standards as the focus because it is a "change in quality" and strategic solution. They are creating a sustainable development foundation for the system of credit institutions in general and each credit institution by the guidelines approved by the Prime Minister. At the same time, the plan to restructure the credit institution system associated with lousy debt handling in the 2016–2020 period, issued together with Decision

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No.1058/QD-TTG dated July 19, 2017, continues to consider one of the solutions to improve the financial capacity of the credit institution system. Moreover, banks are motivated to fully meet the capital adequacy standards according to the international standards to ensure equity capital according to Basel II capital standards.

Shihadeh and Liu (2019) suggest that an increase in branch networks increases bank profitability. However, our empirical findings demonstrate that number of branches negatively influence the Vietnamese bank profitability. An increase in the number of branches will lead to cost inefficiency up to a certain point and, after that point, to cost efficiency (Harimaya & Kondo, 2016; Thach & Diep, 2018; Thach, Le, & Diep, 2019). Our finding also documents that the size of the bank, net interest margin (NIM), and state ownership create a positive impact on bank profitability. In this regard, our study has similar findings as of Albulescu (2015), Le (2017), and Nguyen (2012).

Moreover, we indicate that the longer a bank joins the Basel II convention, the more profit it can get. The capital adequacy ratio has a positive effect on the profitability measures of banks. It discloses that the higher the capital adequacy, the higher the profit (Datta & Al Mahmud, 2018). Finally, we show evidence that the bank age significantly affects Vietnamese banks' profitability. Our finding is consistent with the findings of Al-Homaidi et al. (2020) and Dietrich and Wanzenried (2011).

This paper is unique because of the following reasons. Following Nguyen (2020), we explore the impact of bank capital adequacy on profitability proxied by profit after tax, return on assets (ROA) and return on equity (ROE) in the context of Vietnamese banks under Basel II. In this paper's research model, the variable name "Basel" is a dummy variable illustrating the Basel II Accord compliance of bank i at time t, taking the value of 1 if the bank complies with Basel II Accord and 0 if otherwise. However, following Resolution No.24/2016/QH14 dated November 8, 2016, of the National Assembly on the economic restructuring plan in the 2016-2020 period, identified: step by step applying Basel II standards at the credit organization. By 2020, commercial banks have their capital structure according to Basel II standards, in which at least 12–15 commercial banks have successfully applied for Basel II norms. Therefore, our study is the first to examine the impact of the Basel II implementation duration on the profitability of the commercial banks in Vietnam.

This paper is novel because it seeks to contribute to the current debate about how various factors affect bank profits under the Basel II convention evident in Vietnam. Moreover, our sample data cover 25 Vietnamese commercial banks from 2008 to 2019. A more extended sampling period helps us to comprehensively examine the impact of capital structure on the efficiency of banks. For further research, the results of this study can be a reference to analyze the determinants of commercial bank profitability. Future researches may also implement and explore other events that could be used for a research subject.

The remainder of the paper is organized as follows. Section 2 provides a review of the related literature and the development of hypotheses. Section 3 contains data and methodology. Section 4 analyzes empirical results. Finally, section 5 is the conclusion.

2. Literature Review and Hypothesis Development

2.1. Capital Structure Theories

Modigliani and Miller (1958) argue that the capital structure does not affect the value of a firm. The implication of capital structure has become controversial due to Pecking Order Theory's introduction (Myers & Majluf, 1984). This theory suggests that managers prefer to finance investment opportunities by utilizing retained earnings, debt, and equity financing. In other words, firms that generate high profits tend to use retained earnings to finance investments. Moreover, there is an inverse relationship between financial leverage and a firm's performance due to interest expenses. Furthermore, higher leverage also increases the solvency risks and has unfavorable impacts on the performance of the firms.

Static Trade-off Theory examines the optimal capital structure for a business. This capital structure is determined by a trade-off between the marginal benefit of the tax shield and interest expenses. When a firm increases its debt-to-equity ratio, the benefit of the tax shield increases. However, high leverage increases the cost of financial exhaustion, thereby increasing the probability of business bankruptcy (Myers, 1977). Therefore, the Trade-Off Theory argues that firms can maximize their value by determining the optimal capital structure.

Jensen and Meckling (1976) suggest that the Agency Theory positively affects a firm's value. Jensen and Meckling (1976) indicate that debt financing can increase firms' performance by resolving conflicts of interest between managers and shareholders. Jensen and Meckling (1976) argue that a higher leverage ratio acts as a disciplinary mechanism to reduce the cost of raising external equity and increase firm value by limiting institutionalize or encouraging managers to maximize shareholder's wealth. However, in the case of the banking sector, most of the debt is held by small depositors, who do not have the tools to oversee banking regulators, which will restrict the role of discipline on debt, especially in countries with low levels of regulatory restrictions (El-Chaarani & El-Abiad, 2019). Doku et al. (2019) suggest that higher leverage increases agency costs and reduces banks' performance.

2.2. Capital Structure and Bank Performance

Hoffmann (2011) indicated that an efficient financial system continuously improves profitability, such as increasing the amount of money from saver to borrower or enhancing the quality of services for the customer. A sound and profitable bank can face adverse shocks, and the banking system will contribute to the stability of the financial system and accelerate the country's economic growth (ElBannan, 2017). Lee and Hsieh (2013) also showed that performance is essential in predicting financial exhaustion and the banking crisis.

Siddik et al. (2017) indicate the impact of capital structure on the performance of 30 listed banks in Bangladesh over the period 2005-2014. Specifically, they figure out that the capital structure negatively affects ROE, ROA, and earnings per share (EPS). Moreover, the total debt ratio inversely affects ROA and ROE while the total debt ratio positively increases EPS. Yahya et al. (2017), Sivalingam and Kengatharan (2018), and Jadah et al. (2020) also figure out the relationship negative relationship between capital structure and bank efficiency. Sivalingam and Kengatharan (2018) and Siddik et al. (2017) suggest that bank managers utilize their internal funding sources instead of relying heavily on external financing to maximize performance.

Almaqtari et al. (2019) reveal that a higher leverage capital structure adversely affects ROA, while this study finds an insignificant leverage impact on the ROE in Indian banks. El-Chaarani and El-Abiad (2019) examined the relationship between banks' capital structure and performance in Middle East countries for 2011-2016. They also use ROA and ROE to measure the performance of banks. El-Chaarani and El-Abiad (2019) indicate that the ratio of total debt and the short-term debt ratio reduces the ROA while the long-term debt ratio positively affects ROA. The study reports the positive effect of the total debt ratio and the short-term debt ratio on ROE, but no evidence was found of the long-term debt ratio's impact on the ROE.

2.3. Hypothesis Development

2.3.1. Basel II convention in Vietnam

Vietnamese banks partially implement Basel II instead of a whole system in some banks. According to the State Bank of Vietnam's roadmap, from 2015 to 2018, 10 banks started to pilot capital and risk management according to Basel II standards. After this time, all the Vietnamese banks started joining this conventional standard. Until 2019, 7 of 10 pilot banks[1] have been recognized for achieving the Basel II's pillar one requirement (capital adequacy ratio). We propose the following hypothesis:

H1: *Longer time on Basel, more positive effect on bank profitability.*

2.3.2. Bank Size

Prior literature reports the controversial impacts of bank size on the performance of commercial banks. Kasman et al. (2010) found an inversed relationship between bank sizes and bank performance in European Union countries before 2006. Kasman et al. (2010) argue that larger banks suffer higher agency costs, which reduce their performance. However, Menicucci and Paolucci (2016) and Siddik et al. (2017) report a positive impact of size on bank performance. These findings demonstrate that large banks perform more effectively than the smaller banks, so larger banks have ROA, ROE, and NIM. Menicucci and Paolucci (2016) suggest that the larger banks have a higher market power to boost profitability through cost allocation. Therefore, we propose the following hypothesis:

H2: *The bank size has a positive correlation with bank profitability.*

2.3.3. Net Interest Margin and Bank Geographical Expansion

Cai et al. (2016) show that, while geographical expansion improves the banks' market share, net interest margin, and non-interest income, it also increases operating costs, which will affect the bank's profit. Shihadeh and Liu (2019) suggest that an increase in the number of branches lead to a rise in the number of clients, boosting deposits and loan portfolios and diversifying risk. Bernini and Brighi (2018) indicated that branch networks play an essential role in increasing bank revenue. Le (2017) and Nguyen (2012) argued that bank branches are crucial for impoverished segments of society and that shutting branches decreases the amount of money available to small businesses. We propose two hypotheses:

H3: *The net interest margin has a positive impact on bank profitability.*

H4: *Bank geographical expansion reduces bank profitability.*

2.3.4. Bank Age

Dietrich and Wanzenried (2011) reveal that the age of the bank does not have a significant impact on bank profitability. Musah (2018) argue that there is a positive relationship between bank age and profitability of commercial banks. However, Al-Homaidi et al. (2020) documented a negative and significant relationship between bank age and the bank's profitability. We propose a hypothesis:

H5: *The bank age has an effect on bank profitability.*

[1] 10 piloting bank: Vietcombank, BIDV, Vietinbank, Sacombank, MB bank, Techcombank, ACB, VIB, Maritime bank, VP bank.

2.3.5. State Ownership

Political connection or state ownership is a variable used to examine the relationship and impact of political factors on the bank's performance. Prior studies report the controversial relationship between political connections and bank performance. Micco et al. (2007) report that the state-owned banks in developing nations have poorer profitability and higher costs than private and foreign-owned banks. Furthermore, Berger et al. (2009) argue that the Big Four Chinese banks with government ownership generate the worst performance. They explain that the Big Four Chinese banks are constantly under pressure to grant loans for political purposes instead of maximizing profits for the banks. Hung et al. (2017) analyzed 70 Chinese banks from 2007 to 2014, and they report that banks with political connections generate higher ROA and lower credit risk. Meanwhile, Altunbas et al. (2001) and La Porta et al. (2002) suggest an indifferent efficiency between state-owned and private banks. These studies indicate that developed countries have better techniques to reduce costs and "distortions" with state-owned banks.

H6: *The bank that the government has owned will positively affect bank profitability.*

3. Data and Methodology

3.1. Data

The data used in this research is taken from the audited consolidated financial statements and annual reports of the banks from 2008 to 2019 (Table 1).

Table 1: The Full Names and Stock Codes of the Banks

No	Securities Code	Trading Name
1	ABBank	An Binh Commercial Joint Stock Bank
2	ACB	Asia Commercial Bank
3	Agribank	Vietnam Bank for Agriculture and Rural Development
4	BaoVietBank	Bao Viet Joint Stock Commercial Bank
5	BID	JSC Bank For Investment And Development Of Vietnam
6	BVB	Viet Capital Commercial Joint Stock Bank
7	CTG	Vietnam Joint Stock Commercial Bank for Industry and Trade
8	EIB	Vietnam Commercial Joint Stock Export-Import Bank
9	HDB	Ho Chi Minh City Development Joint Stock Commercial Bank
10	KLB	Kien Long Commercial Joint Stock Bank
11	LPB	Lien Viet Post Joint Stock Commercial Bank
12	MBB	Military Commercial Joint Stock Bank
13	MSB	Vietnam Maritime Commercial Joint Stock Bank
14	NAB	Nam A Commercial Joint Stock Bank
15	NVB	National Citizen Commercial Joint Stock Bank
16	OCB	Orient Commercial Joint Stock Bank
17	PGB	Petrolimex Group Commercial Joint Stock Bank
18	SeABank	Southeast Asia Commercial Joint Stock Bank
19	SGB	Saigon Bank Foreign Industry and Trade
20	SHB	Saigon Hanoi Commercial Joint Stock Bank
21	STB	Sai Gon Thuong Tin Commercial Joint Stock Bank
22	TCB	Vietnam Technological and Commercial Joint Stock Bank
23	VCB	Bank for Foreign Trade of Vietnam
24	VIB	Vietnam International Commercial Joint Stock Bank
25	VPB	Vietnam Prosperity Joint Stock Commercial Bank

3.2. Model Construction

To measure the impact of factors affecting the bank performance under the Basel II implementation on Vietnamese bank profitability, the following model is specified:

$$\begin{aligned} \text{Ln\_profit}_{it} = \beta_0 + \beta_1\text{Basel}_{it} + \beta_2\text{Ln\_size}_{it} \\ + \beta_3\text{NIM}_{it} + \beta_4\text{Branch}_{it} + \beta_5\text{Age}_{it} \\ + \beta_6\text{State\_ownership}_{it} + \mu \end{aligned} \quad (1)$$

Where: Ln_profit_{it}: Profit after tax of bank i at year t is calculated in VND. Then take natural logarithm ($\log_e$Profit). Basel_{it}: time duration that the bank i at year t join Basel II convention up to 2019. Ln_size_{it}: Bank total asset of bank i at year t is calculated in VND. Then take natural logarithm ($\log_e$Asset). NIM_{it}: stand for net interest margin of bank i at year t (net interest income/average total earning assets). Branch_{it} is the total number of branches and transaction offices of bank i in year t. Age_{it} is the business operation period of bank i in year t starting from the year of establishment. $\text{State\_ownership}_{xy}$ is a dummy variable. Represents % ownership of shares of the State bank. If it is 50% or more, take the value one and vice versa, and μ is the error term.

3.3. Methodology

Our study employs the standard estimation method of pooled ordinary least square (OLS), fixed effects model (FEM), and random effects model (REM). We also apply the Hausman test, Breusch-Pagan test, and Redundant test to select the most appropriate estimation with our data sample.

4. Empirical Results

4.1. Descriptive statistics

Our primary data sources are taken from financial statements and annual reports of 25 banks for the period 2008–2019 on their website and Vietstock. Table 2 presents summary statistics of principal variables. Ln_profit and Ln_size have 299 observations because Bao Viet Bank was established in 2008, so we cannot collect data on their financial statements and annual reports in 2008.

Table 2 indicates that all the banks in this study are profitable on average. This finding indicates a good signal about the development of the banking market. The mean of Ln_size is quite close to the max value, representing that many banks have significant total assets compared to the rest of the market. Table 2 also shows that over 90% of commercial banks in Vietnam have not joined the Basel convention, and the most extended presence in Basel of some banks is only two years.

About the Age, independent variable, most of the 25 Vietnamese banks were established before 2000 and had an average bank age of 22.62 years, which can be considered to be on lower side if we compare this with the average age of the foreign banks. The oldest bank is BIDV, 62 years in the banking industry. On the other hand, the youngest is Bao Viet Bank, which has just established on December 11, 2008. Banks are developing and stretching the market from South to North. Besides, the overseas market cannot be ignored; expanding scale to capture a share of the international bank is the goal of some of the businesses.

Finally, the banks surveyed in this paper do not have the presence of foreign-invested banks, so they only receive two values (equal to 1 if the bank has 50% capital in state ownership or vice versa). Only four banks with more than 50% of state-owned capital are VCB, CTG, AGRIBANK, and BIDV.

4.2. Correlation Analysis

Table 3 shows the correlation relationship between the variables in this report. The larger the correlation coefficient, the more closely the variables have a relationship and vice versa.

Table 2: Summary of Data Statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
Ln_profit	27.039	27.197	30.550	21.500	1.683	299
Basel	0.067	0	2	0	0.287	300
Ln_size	32.099	32.205	34.912	25.324	1.371	299
NIM	0.032	0.031	0.095	0	0.013	300
Branch	321.377	160	2305	0	466.492	300
Age	22.620	21	62	0	10.952	300
State_ownership	0.160	0	1	0	0.367	300

Table 3: Correlation Matrix

Correlation	Ln_profit	Basel	Ln_size	NIM	Branch	Age	State_Ownership	VIF
Ln_profit	1							
Basel	0.250	1						1.10
Ln_size	0.767	0.185	1					2.25
NIM	0.242	0.100	-0.024	1				1.04
Branch	0.497	–0.004	0.643	0.017	1			3.55
Age	0.452	0.173	0.550	–0.132	0.339	1		2.61
State_ownership	0.531	0.025	0.615	–0.086	0.676	0.676	1	4.56

Table 3 demonstrate that the correlation coefficient between the dependent variable Ln_Profit and the independent variable Ln_size was 0.767, showing a close relationship between these two variables. This finding is entirely consistent with Aladwan (2015). Age, Branch, State_ownership have correlation fluctuating around 0.5, which equal 0.452, 0.497, 0.531 respectively. Basel and NIM have a low correlation of 0.250 and 0.242, respectively.

Ln_size strongly correlates with Age, Branch, State_ownership because their correlations are higher than 0.6. Therefore, we estimate the variance inflation factor (VIF) to determine if multicollinearities in our data sample. Also, Table 3 indicates that multicollinearity does not occur in our sample because the VIF test shows that the average VIF is only 2.52 (Salihu et al., 2019).

4.3. Regression Results

Table 4 provides remarkable findings. The coefficient of Basel II is 0.323, which means that if the bank expenditure in Basel increased for a year, the profitability can increase by 32.3%. Our findings indicate that timing on Basel II positively affects bank profitability, consistent with Datta and Al Mahmud (2018). The Basel II regulation directly destabilized banks because it allowed them to reduce their capital buffers. Basel II increase the high fixed costs of implementing an internal ranking-based approach while not all banks could reduce capital levels to the same extent, leading to competitive distortions in the banking sector (Hakenes & Schnabel, 2010). We accept hypothesis H1 at the significance level of 5%.

The coefficient of the Ln_size is 0.4845, which means that when the asset increases by 1%, the profitability can increase by 0.4845%. Larger banks tend to have more diverse services and products to meet client expectations, resulting in more substantial revenues than the smaller banks. This result is consistent with Aladwan (2015), Menicucci and Paolucci (2016), and Siddik et al. (2017). Therefore, we accept hypothesis H2 at the significance level of 5%.

Table 4: Regression Analysis from the FEM Method

Variables	Ln_profit	ROA	ROE
C	–1.680	–2.348	–2.604
	(0.190)	(0.220)	(0.320)
Basel	0.3230**	0.5122**	0.5682**
	(0.020)	(0.020)	(0.020)
Ln_size	0.4845**	0.8600**	0.9541**
	(0.030)	(0.030)	(0.040)
NIM	0.1424**	0.2614*	0.0899*
	(0.040)	(0.080)	(0.060)
Branch	–0.0005***	–0.0005***	–0.0006***
	(0.000)	(0.000)	(0.000)
Age	–0.0029**	–0.0047**	–0.0074**
	(0.010)	(0.010)	(0.010)
State_ ownership	0.0385**	0.0045*	0.0253*
	(0.030)	(0.050)	(0.070)
R square	0.6142	0.6723	0.6955
Observations	299	299	299

Note: *, **, ***Shows significance at 10%, 5%, 1% respectively, *P*-value is in parentheses.

The coefficient of NIM is 0.1424, which means that when NIM increases 1%, profitability can increase by 14.24%. Our findings show a strong correlation between NIM and bank profitability, aligning with Gul et al. (2011). This result is quite a large number compared to reality. There may be unobserved variables such as the State Bank's policy on lending and deposits, micro-macro factors, macro-factors that make the correlation coefficient of NIM at such a high level. NIM measures a bank's capacity to produce interest revenue by considering its ability to disburse loans. The operating income is heavily dependent on the difference

between interest and credit dispensed. Le (2017) and Nguyen (2012) indicate that the greater the NIM achieved by the bank, the higher the interest income on earning assets, thereby increasing the bank's profit. Therefore, we accept hypothesis H3 at the significance level of 10%.

The coefficient of bank geographical expansion is –0.0005, which means that opening a new transaction point can make profitability go down by 0.05%. This result is consistent with Berger et al. (2006), which suggest that diversified banks suffer from value decrease due to complex organizational structure. Increasing the number of branches lead to cost inefficiency up to a certain point and, after that point, to cost efficiency (Harimaya & Kondo, 2016). Our finding is inconsistent with other studies that suggested bank branches are essential for underprivileged sectors of society, and closing branches reduces the loans granted to small firms (Bernini & Brighi, 2018; Nguyen, 2012). Therefore, we accept hypothesis H4 at the significance level of 1%.

We accept hypothesis H5 because the bank age is statistically significant. Our finding is consistent with Al-Homaidi et al. (2020) but it is consistent with Dietrich and Wanzenried (2011), who argue that the age of the bank does not have a significant impact on bank profitability.

We accept hypothesis H6 at the significance level of 1%. The coefficient of State_ownership is 0.0385 implies that when the government owns the bank, the profitability can increase by 3.85%. Our findings indicate that state-owned banks positively impact profits, aligning with Hung et al. (2017). Most large commercial banks in Vietnam used to be state-owned. Thus, these banks play a prominent role in the banking sector and the financial system's stability. Hung et al. (2017) also show that State-owned banks get immediate access to new information and monetary policy. Furthermore, state-owned banks have easy access to refinancing loans from state banks at preferential interest rates. Therefore, politically connected banks have more government incentives and assurance, so they tend to have a competitive advantage against non-connected banks.

We also perform the robustness test by employing ROA and ROE as the dependent variables. Table 4 demonstrates that our exploratory variables' impacts remain robust and consistent with our primary findings.

5. Conclusion

Vietnamese commercial banks play an important in the financial system. Nevertheless, the performance of the banking industry has been affected by a few bad institutions. Based on decision No. 254/QD-TTG dated March 1, 2013, the Prime Minister has considered implementing Basel II capital standards as the focus because it is a "change in quality" and strategic solution. Banks are motivated to fully meet the capital adequacy standards according to international standards to ensure equity capital according to Basel II capital standards.

We employ the panel data regression method to analyze a sample of 25 Vietnamese commercial banks for 2008–2019. Our empirical findings show bank age and branches negatively influence Vietnamese bank profitability. In contrast, the size of the bank, net interest margin, and state ownership have positive effects on bank profitability. Second, our finding figures out the Basel II convention positively affects the profitability of Vietnamese banks. Finally, our results indicate that commercial banks earn extra profit from delaying the implementation of Basel II. Therefore, our study contributes insights into the bank's management to enhance profitability, especially after the implementation of Basel II.

In general, participation in prestigious international conventions such as Basel II brings many benefits to banks when facing future economic recessions. The application of Basel II for the first time may reduce the bank's profit in the short term. If a country where every bank participates in Basel II, its economy may be more resilient to crises than other countries that do not participate, or the proportion of banks participating is negligible. Jokivuolle et al. (2008) indicated that the Basel rules require banks to look at such an adverse scenario under a mild recession with the economy exhibiting zero growth over two consecutive quarters.

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