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THE PREMIER GLOBAL SOCIETY OF FINANCIAL EXECUTIVES

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Message from the Chairman

Dear IAFEI members,

It is my pleasure to share with you the 55th issue of the IAFEI Quarterly.

2023 is an international year of sustainability disclosure Standards. The less than two years old International Sustainability Standards Board (ISSB)issued its inaugural IFRS Standards S1 & S2 on June 27th.

ISSB has made the remarkable achievement with wide support from various countries. Among IAFEI member institutes, China Association of Chief Financial Officers (CACFO) has received a letter of Thanks from the MOF Accounting Department for well organized assistance for preparing feedback on Draft IFRS S1 and S2. And with the help of my IAFEI colleagues, a feedback of IAFEI Chair focused on "enterprise value" in the Draft IFRS S1 has received a Letter of Thanks from Mr. Faber, the ISSB Chair.

On Nov. 24th, a Joint IAFEI Board and ExCom meeting will be held in Hu Chi Ming city with Vietnam CFO Club (VCFO) as the kind sponsor. I would like to express my IAFEI thanks to VCFO and make the day as IAFEI Day 2023. In time, it will be celebrated with a IAFEI meeting of professional success and international cooperation.

On November 25, there will be a VCFO Finance Summit for “shaping the future of finance: innovation, application and transformation”. We would like to encourage you to attend this great Summit..

We will continue to improve the services that IAFEI provides to member organizations by providing value proposition initiatives. I am excited to update you on the new programs soon. For any suggestions and comments, you may share it through the IAFEI Secretariat at mbvinluan.iafei@gmail.com and secretariat.iafei@gmail.com.

Thank you and all the best!

Sincerely,

XIAOJIANG PAN
Chairman

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China Association of Chief Financial Officers

New targets for fraudsters

By: **Neal Ysart**, Managing Director of Deloitte Forensic, Deloitte Philippines (Landicho Abela & Co.)

Originally published in The Manila Times under Deloitte Philippines' weekly column, "Deloitte on the dot"

At a press conference earlier this month about building a secure digital banking infrastructure, data security experts warned that the use of one-time passwords (OTP) – a staple authentication measure for online banking transactions here in the Philippines – is no longer a reliable safeguard. Sent via text messages, these OTPs can fall into the hands of fraudsters using malware to intercept the SMS. These bad actors can then quietly siphon off a depositor's funds with no one the wiser until that unfortunate depositor goes online again for their next transaction.

This is a problem your grandparents never had to worry about. Back then, banking transactions were penciled into schedules and done in person, not over a smartphone while walking from one appointment to another. While advances in technology have led to so many conveniences, they have also opened more doors for fraudsters to exploit.

Our colleagues in the Middle East looked at some emerging threats that are likely to keep forensic investigators such as myself busy in the next few years.

Cryptocurrencies

If you have been following the collapse late last year of one of the largest cryptocurrency exchanges, you would know that fraud charges against the CEO are still piling up well into 2023, including an accusation that he allegedly tapped customer accounts to make millions in illegal campaign contributions. The high-profile bankruptcy is enough to erode trust in a system that is still largely unregulated and, therefore, fertile ground for bad actors.

In the Philippines, an estimated 6.1 percent of the population owns cryptocurrency. It may seem like a small share, but the potential for growth is immense, especially considering the country's size as a remittance market.

Greenwashing

Environmental, Social, and Governance (ESG) issues have been top-of-mind for business leaders as regulators look to aggressively nudge corporations towards addressing critical challenges such as climate change and social inequality. Here in the Philippines, besides mandating listed companies to submit an annual sustainability report, the government recently passed the Extended Producer Responsibility Act of 2022 – a law requiring large enterprises to recover their plastic packaging waste.

As pressure mounts on organizations to account for their environmental impact, some may be tempted to cut corners by greenwashing – that is, fabricating or exaggerating green credentials to attract investments, reduce external funding costs, or improve public perception.

Metaverse

This three-dimensional, immersive, virtual iteration of the internet has the potential to create a massive new market worth an estimated $13 trillion in commercial opportunity. Certain luxury brands have already made their way to this virtual world, designing, for example, couture for avatars that gamers can purchase at a premium.

As with other cryptocurrencies, the virtual currencies and non-fungible tokens (NFTs) used for transactions in the metaverse are prone to manipulation. In the trading of goods and services, the usual issues surrounding consumer protection and intellectual property are also bound to crop up.

How do forensic investigators and risk managers respond?

These examples describe three different flavors of fraud that didn't exist until only recently and serve to illustrate the fact that criminals are exceptionally innovative and move quickly to exploit any new opportunities that present themselves. It's frequently been said that criminals tend to move far more quickly to exploit vulnerabilities than companies do to identify and mitigate new and emerging threats.

However, whilst the attack vectors for each of these frauds may be new, experienced investigators and corporate risk managers will recognize the underlying criminal behaviors used to execute these frauds – these never change, they just get deployed in different and often innovative ways. Understanding this, and being able to think like the criminal when investigating or when designing preventative or detective controls, would be the first of three measures that investigators or risk managers should consider when seeking to respond to an increasing number of emerging fraud threats.

Measures to consider

1. When investigating or designing controls to prevent or detect emerging fraud threats, being able to think in the same way as the criminal, unrestrained by international standards, best practice frameworks or corporate policies and procedures, can often surface vulnerabilities that were previously unidentified. After all, the criminals don't operate within these boundaries when perpetrating their frauds – we shouldn't either when considering how to mitigate and investigate them.

2. Technology and data play a massive role in perpetuating fraud, but they also have a critical part to play in prevention, detection, and investigation. Through the deployment of forensic data analytical solutions, and embedding techniques such as AI and machine learning, indicators that would previously have escaped investigators and risk managers can be quickly identified and acted upon. Technology and data driven solutions should be in every investigator's armory.

3. Providing clear, easy to understand explanations of what employees should be aware of when it comes to identifying potential frauds is a highly effective tool. In other words, highlighting "red flag indicators" and making that information readily available to staff can really help provide an early warning system when it comes to fraud. This is especially pertinent when you consider that in most frauds, the warning signs were usually present but were simply not recognized or acted upon.

New fraud types will continue to emerge as advances in technology change the way people work and play. It is up to forensic investigators, risk managers, and the organizations they work with not to let the fraudsters get too far ahead in taking advantage of tomorrow's opportunities.

Originally published in The Manila Times under Deloitte Philippines' weekly column, "Deloitte on the dot" dated 3 April 2023

Issues on the Valuation of Tender Offers in the Philippines

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The announcements of tender offers have almost always raised several concerns, such as issues on undervaluation, non-availability of fairness opinion reports, and insufficient action on the part of the regulators. This paper discusses a number of such issues related to the valuation methods used in determining tender offer prices, especially those leading to the delisting of the shares. These issues may include the reasonableness of the assumptions used in the valuations. Aside from evaluating the different theoretical valuation models, this study also examines other concerns related to these tender offers such as the independence of the valuation entities. As a result, this study presents suggestions towards addressing these aforementioned concerns that are being raised for regulators to consider.

Keywords: tender offer prices, stock prices, valuation methods, securities regulations

Mandatory tender offers are conducted when a person or group of persons acting in concert, intends to acquire 35% of a public company in one or more transactions within a period of 12 months. 2 Mandatory tender offer is also conducted when a company is voluntarily delisting from the Philippine Stoc Exchange (PSE). Complaints arise during the process which includes the following: undervaluation of tender offer prices, non-availability of fairness opinion reports, and the seemingly insufficient courses of action from the regulators to protect small investors.

Undervaluation of Tender Offer Prices

For the tender offerors or bidders, it is in their interest to bring down the tender offer prices because this will reduce the cost of the offer. Unfortunately, the bidders also represent the controlling stockholders who can exert control over the members of the board of directors and, more crucially, the voting shares. Given the ownership structure of these companies, only the regulators can potentially protect the interest of the small investors. Table 1 summarizes the complaints on the undervaluation of tender offer prices of some companies that which conducted tender offers in the last eight years.

Table 1. Summary of Complaints on the Undervaluation of Tender Offer Prices[3]

Company	Complaints
Liberty Telecoms (LIB)	Tender offer price set at PHP2.20 per share. The main argument for the undervaluation was the transfer of the 700 MHz frequency in March 2015 from TORI, LIB's wholly-owned subsidiary, to Bell Telecommunications Philippines, Incorporated, an affiliated company without proper disclosure (Lazo, 2016). The disclosure was only made a week before the conduct of the tender offer in 2016, more than a year after the transfer was made. A local brokerage firm valued LIB at PHP5.02 per share if the frequency was still with LIB.
Melco Resorts and Entertainment (Philippines) Corporation (MRP)	Tender offer price set at PHP7.25 per share. Disappointed investors believed that this tender offer price was unfair, especially when compared to its private placement price in 2013 at PHP14.00 per share (Francia, 2018, para. 4).

1 This article is a condensed version of the same article published in the 2023 edition of Philippine Management Review, Volume 30, No. 1.
2 Section 19.2 of the Implementing Rules and Regulations (IRR) of Securities Regulation Code (SRC), Securities and Exchange Commission (SEC), 2015, p. 45.
3 Except for MPI, the complaints stated in this table were based from the article Regulatory Issues on Tender Offers Leading to Delisting in the Philippine Stock Market (Cayanan, 2020).

Company	Complaints
	Stock market analysts thought that the offer price was below the comparable gaming companies in the Philippines and Macau (Loyola, 2018, para. 9). They also believed that the tender offer price was discounted when compared to the consensus fair value estimate of MRP given its expected turnaround both in revenues and profits (Loyola, 2018, para. 10). MRP reported a net income of PHP1.89 billion in the first six months of 2018, more than 430% higher over the same period in 2017 (Francia, 2018, para. 9). "They did their [FOO[4]] at PHP14.00, and now that they are earning, they would price it at almost 50 percent lower," Jervin De Celis, an equities trader from Timson Securities, said (Ballesteros, 2018).
Travellers International Hotel Group, Incorporated (RWM)	Tender offer price set at PHP5.50 per share. RWM had an IPO in 2013 at PHP11.28 per share. PSE director Vivian Yuchengco made the following statements during her interviews in ANC: There is no premium in the tender offer price in the delisting of Resorts World operator Travellers International. Tender offer price for the delisting is currently at P5.50 compared to its original initial public offering price (IPO) of P11.28 in 2013. That is prompting the stock exchange to review our delisting rules because you know the ones who suffer are the small investors like now there's about 10 percent left in the Resorts World. We weren't aware of the delisting until it was announced, and there were a lot of media saying they've lost 51%, they've lost so much money and then all of a sudden, they're delisting. So, I really don't know how to tighten the delisting rules on that but we're looking at other countries to see how do they handle this type of delisting. - ("PSE eyes review," 2019, paras. 2 - 5)
Lopez Holdings Corporation (LPZ)[5]	Tender offer price set at PHP3.85. When tender offer was conducted, LPZ had an effective 34.6-percent interest in First Gen Corp. which had a current market capitalization of PHP116 billion at that time. This implied that First Gen was worth around PHP40 billion to LPZ. With LPZ's 4.54 billion shares outstanding, this was equivalent to close to PHP9 per share, much higher than the delisting tender offer price of P3.85 per share (Dumlao-Abadilla, 2021a). The estimated PHP9 per share did not include the other investments of LPZ, e.g. ABS CBN and Rockwell Land Corporation.
Metro Pacific Investments Corporation (MPI)	Tender offer price set at PHP4.63 per share.[6] Some equity analysts find the price low. April Tan, COL Financial Head of Research, said: The tender offer price represents a steep 54 percent discount to our net asset value estimate for MPI and 47 percent discount to our fair value estimate for the stock. Furthermore, the tender offer price is at a 5.5 percent discount to the market value of MPI's 47.5 percent stake in Meralco of PHP4.90 per share. As such, from a valuation perspective, we deem the tender offer

4 Follow-on-offer.
5 LPZ initially planned to delist LPZ. However, after the announcement was made, the management decided to reduce the number of shares that would be subjected to tender offer and decided to keep the company listed.
6 The tender offer price was subsequently increased to PHP5.20 per share (Yraola, 2023, para. 1). "Aniceto K. Pangan, equity trader at Diversified Securities, Inc., said that even with the increase in the tender offer price, MPIC is still priced lower than its recorded book value of PHP7.08 per share after the first quarter." (Yraola, 2023, para. 15).

Company	Complaints
	price of PHP4.63 per share to be too low. - (Loyola, 2023, para. 11 - 12) According to Abacus Securities, “the tender offer price is about 34 percent to 35 percent lower than the estimated book value of MPIC at end of the first quarter of 2023” (Loyola, 2023, para. 9).

Non-availability of Fairness Opinions

It is obviously difficult to assess the fairness of a tender offer because data are not available. The valuation entities do not wish to make their studies made available to everyone, and they have so many disclaimers. In an initial public offering (IPO), prospectuses are made available to investors so that they can assess whether the IPO price provides upside potential. A tender offer, especially those leading to delisting, is like a death sentence to an investment because moving forward, it will be difficult to unload the shares if the tender offer is not availed. Yet, the bases of setting the prices as indicated in the fairness opinion reports are not readily available

Role of Regulators in Protecting Minority Interest

PSE has come up with measures to improve the tender offer rules. In 2020, PSE required that delisting must be approved by at least two-thirds of the entire membership of the board, but not less than two of all its independent directors. “Also, the number of votes cast against the delisting proposal should not be more than 10% of the total outstanding and listed shares of the listed company” (Dumlao-Abadilla, 2021a, para. 3).

In spite the recent rules instituted by PSE, a number of issues remain unresolved, such as the following:

1. Who should hire the valuation entity?

Whoever hires the valuation entity, assumptions on revenue and expense forecasts have to be made. The inputs of management on this step are critical and valuation analysts may, to some extent, initially rely on management’s representation. A more objective valuation analysts, however, should validate these representations. This situation will have higher probability of happening if the valuation analysts are more independent.

2. How can access to fairness opinion reports be improved?

Section 2.d of the voluntary delisting rules of PSE states that the listed company must submit a fairness opinion or valuation report stating the fair value or range of fair values of the listed security (PSE Memorandum CN- No. 2020 – 0104, 2020). So far, among the companies covered in this study that filed for voluntary delisting, only LPZ and EDC made their fairness opinion reports available as part of their disclosures through SEC Form 19-1. PSE is not clear as regards the intended audience of the fairness opinion report. It is one of the requirements of the voluntary delisting rules, but is it part of the required disclosures to the public?

3. How can minority stockholders be protected from untimely disclosure of a material information that can adversely affect the value of their investments such as what happened to LIB minority stockholders?

For the non-disclosure of the 700 MHz frequency from LIB subsidiary to an affiliated company, LIB was only penalized PHP346,000 by SEC. LIB was able to subsequently undervalue its tender offer price at PHP2.20 as a result of this transfer of frequency. San Miguel Corporation (SMC), the parent company of LIB at that time, was able to subsequently dispose all its telecom companies to PLDT and Globe Telecom for almost PHP70 billion in 2016 with the 700 MHz as the main source of value (PLDT, 2016). This narrative seems to award non-compliance with the rules

As Ramon Monzon said, valuation is an art (Ballesteros, 2018). Valuation entities can actually come up with any number that they want and be able to justify them using all these valuation jargon. This is the reason why the regulatory environment has to be strengthened. Otherwise, there will be no strong and influential entity who will protect the minority stockholders.

Issues with the Valuation Methods Used

Based on these provided disclosures, the following valuation methods were used by the companies that conducted tender offers:

1. Discounted Cash Flows (DCF)
2. Volume weighted average price (VWAP)
3. Price -to-earnings ratio (PER)
4. Price-to-book ratio (P/B ratio)
5. Net asset value (NAV)

The next section dissects and evaluates these specific valuation methods as to their respective effects to the resulting tender offer prices.

Discounted Cash Flow (DCF)

There are two versions of this model: the discounted free cash flow to firm model (FCFF) and the discounted free cash flow to equity model (FCFE). Based on the FCFF model, the estimated free cash flows to firm7 are discounted by the weighted average cost of capital (WACC). From the computed present values of the free cash flows, net debt8 is deducted and the resulting value is divided by the outstanding number of shares to determine the value per share. For FCFE, free cash flows to equity9 are discounted by the cost of equity.

Based on the FCFF model, assumptions are made on the following:
1. Revenues
2. Operating expenses
3. Changes in working capital
4. Capital expenditures
5. Cost of equity
6. Cost of debt
7. Weighted average cost of capital (WACC)
8. Terminal growth rates

To determine the fair value of a stock using this model, reasonable assumptions must be used. It should be noted, however, that the valuation entity can come up with any number it wishes by simply tweaking the variables in the model. If a valuator wants to bring down the value of a stock, he can come up with more pessimistic assumptions on the revenues and terminal growth rates, which in turn can bring down the projected income and operating cash flows. The valuation entity may also rely on the assumptions provided by tender offerors in projecting revenues and terminal growth rates.

Another critical variable with this valuation technique is the discount rate. Different models can be used in estimating the cost of equity, most of which are theoretical in nature such as the capital asset pricing model (CAPM), or based on the dividend discount model (DDM). It is more difficult to overstate the cost of debt because the existing interest rates on a company's loans as disclosed in the notes to financial statements can be used as indicators. Or if a company has bonds, then their effective yields in the exchanges can serve as good estimators. Valuators who want to bring down tender offer prices can be inclined to overstate the costs of equity and other sources of financing, and eventually, the WACC.10

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7 Free cash flow to firm is the operating cash flows less capital expenditures.
8 Net debt is the cash and cash equivalents less the market value of debt.
9 Free cash flows to equity is the operating cash flows less capital expenditures plus net debt issued (repaid).

However, based on SEC Rule 19, the Securities and Exchange Commission (SEC) does not encourage the use of this model, unless there are sufficient bases to do so, as shown in the provision below:

> 19.2.6.2.5. The firm shall not include prospective financial information (including forecasts and projections) unless it has made sufficient inquiries to satisfy itself that the information on which it relied was prepared on a reasonable basis. It shall also disclose how and why it finds such inquiries sufficient and utilize several of the methodologies in 19.2.6.2.3 above. Discounted cash flow methodology which invariably uses forward looking information may only be used if the firm has reasonable grounds for doing so. If the firm considered the use of prospective information, the reasons shall be indicated in the report - (SEC, 2015)

Based on these disclosures, the cost of equity and the weighted average cost of capital (WACC) used in the valuation of MRP and LPZ using the discounted cash flow models were made available. In its tender offer in 2018, MRP used 17.56% for its cost of equity and 15.56 for its WACC for its valuation using FCFF (MRP SEC Form 17-C, 2018). Data from the Bureau of Treasury show that the yield on 10-year Republic of the Philippine (ROP) bond in 2018 was only 6.61%, giving the MRP's cost of equity almost 11% premium. According to Aswath Damodaran's estimate, the equity or market risk premium for the Philippines in 2018 was 7.27% (Damodaran, 2018). Considering that despite the high discount rate used, the valuation still ended up with PHP7.25, it would be interesting to find out what would have been the value had the WACC used was lower by even just 2%.

On the other hand, LPZ used a more reasonable rate of 7.55% for its cost of equity when compared to the yield of 10-year ROP bond of 3.08% in 2020 and a market risk premium of 6.56% (Damodaran, 2021) as of January 2021. LPZ used the FCFE approach as one of its valuation models (LPZ, 2021). There were no data related to these variables that were gathered on the valuation of the other companies that conducted tender offers during the period covered in the study.

Terminal values account for most of the value of a stock using this model. Therefore, the assumptions behind the terminal growth rates are very important in using these valuation methods. Unfortunately, not much can be said about this in this paper because of the limited data available for analysis.

Volume Weighted Average Price (VWAP)

VWAP provides the average price of a stock during a given trading day based on the volume and prices. This may be useful in valuing a stock if it is actively traded.

In its response to the complaints against its tender offer price, MRP claimed that its tender offer price of PHP7.25 per share was 11.2% premium over its six-month VWAP and 14.2% premium over its three-month VWAP (MRP SEC Form 17-C, 2018, Annex A #2).

In the case of RWM, its tender offer price of PHP5.50 was slightly higher than its six-month VWAP of PHP5.46 and three-month VWAP of PHP5.49 (Francia, 2019c). Note, however, that disclosures provided by management affect prices. The reported net income of RWM for the six-month period ending June 30, 2019 was much lower as compared to the same period in 2018. On August 14, 2019, Businessworld, reporting on RWM's second quarter earnings, mentioned that, "The owner and operator of Resorts World Manila (RWM) posted a 52% drop in attributable profit for the second quarter of 2019, weighed down by higher borrowing costs" (Francia, 2019b, p. 1). An analysis of the 2019 second quarter operating performance of RWM would show that the reported operating profit before taxes was actually up by 195% if the other income of PHP1.48 billion in the second quarter of 2018 is taken out (RWM, Q2 2019). It was also true that the financing cost significantly increased to PHP518.6 million in the second quarter of 2019 from PHP20.6 million in the same period in 2018 due to increased borrowing.

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10 Higher WACC means lower present values for the free operating cash flows.

In the case of LPZ, its tender offer price of PHP3.85 was higher than the 30-day, 60-day, 90-day, and one-year VWAPs of PHP2.34, PHP2.48, PHP2.49, and PHP3.03, respectively (LPZ, 2021). It must be noted, however, that the prices covered in computing LPZ's VWAPs were during the pandemic period where stock prices were generally down.

Price-to-Earnings Ratio (PER)

The PER is a common valuation method where the market price of a stock is divided by its earnings per share (EPS). A high PER indicates a potential high growth in the future earnings. Technology companies can trade at high PER because of expected better earnings in the future. Some managers of listed companies guide their investors regarding the prospects of their companies through stock market briefings. Some do it at the start of the year, and quarterly updates are provided, especially before or immediately after the announcement of quarterly reports. To a certain degree, managers can influence the expectations of investors and the PERs of their companies.

MRP had estimated PERs of -13.50x to 123.83x from 2015 to 2018. RWM had estimated PERs ranging from 15.09x to 221.11x from 2015 to 2019 while LPZ had estimated PERs of -0.41x to 6.15 from 2015 to 2020. As shown in these data, the PERs of companies can vary significantly even within the same company. This wide range of PERs can be used to justify any tender offer price using this method that the bidders want to offer to smaller investors. Therefore, this provides so much significant leeway on the part of the companies, much to their own benefit, but can also be much to the detriment of smaller investors.

Price-to-Book Ratio (P/B Ratio)

The P/B ratio is another method used in valuing a stock. It is computed by dividing the stock price by the book value per share. A high P/B ratio indicates that a stock may be expensive while a low P/B ratio may indicate undervaluation. However, some investors may interpret these ratios differently. A low P/B ratio may indicate low growth for a company and possible overstatement of its assets, while a high P/B ratio may signify potential high growth for a company.

Like PER, the P/B ratios vary significantly even for the same company. From 2015 to 2018, MRP's estimated P/B ratios ranged from 1.96x to 7.77x while RWM had estimated P/B ratios ranging from 1.17x to 1.88x from 2015 to 2019. LPZ had estimated P/B ratios ranging from 0.23 to 0.60 during the 2015-2020 period.

It is interesting to know why valuation entities do not generally put emphasis on the book value per share in determining tender offer prices. Of all the valuation techniques, the book value per share is supposed to provide the most objective basis because it is not subject to several assumptions that are made in other approaches, such as the DCF methods. Also, if the assets are impaired, Philippine Accounting Standards (PAS) 36 require that impairment losses be recognized in the financial statements, and would expectedly affect valuation as well.

In 2016, Francis Ed Lim, then-president of SharePHIL,11 suggested that the book value per share be considered among the valuation options for tender offers. In a statement, he said that: "The tender offer price for cases not covered by Sec. 19 should be the highest of three prices, for example, the highest of the price in the range of valuation, book value or general weighted average of the shares within a given period of time (Mariano, 2016, para. 8).

Net Asset Value (NAV)

NAV is fair value of assets less the fair value of its liabilities. This valuation is important in determining what it would cost to recreate a business. While judgment is needed in determining which of the company's assets and liabilities to include in the valuation, this method is relatively easier to apply than the traditional incomebased and market approaches ("Reading between the lines," 2017, p. 38).

11 SharePHIL is Shareholders Association of the Philippines.

Based on publicly available information, only LPZ is known to have applied this NAV technique in determining its tender offer price among the companies covered in this paper. Its valuator considered the fair market value of its in investments in the Philippine depositary receipts and First Philippine Holdings (FPH) which are considered the main drivers of its NAV. It also applied a holding company discount to consider the historical perspective that holding companies trade at a discount (Dumlao-Abadilla, 2020, para. 9). The prices used in determining the fair values were during the pandemic and may not reflect the intrinsic values of the shares. Many of the shares traded at PSE were discounted during the pandemic because of negative sentiment among investors. While listed at PSE, the Philippine depository receipts and FPH are not as actively traded as the other stocks. This situation may not represent the real values of LPZ's investments.

A more actively traded stock that is indirectly owned by LPZ is First Gen Corporation (FGEN). As of September 30, 2020, FGEN is 67.74% owned by FPH, that in turn, is 50.78% owned by LPZ. This gives LPZ a 34.4% indirect interest in FGEN. Based on FGEN's stock price of PHP23.35 on the last trading day of September 2020, this investment is worth PHP28.93 billion. Dividing this value by LPZ's outstanding shares as of that date translate to a value of PHP6.37 per LPZ share. It must be noted that FGEN's last trading price in 2020 was PHP28.15. This implies that LPZ should be valued atPHP7.68 per share. This valuation ignores the other investments of FPH such as Rockwell Land Corporation, another listed company, and ABS CBN, which despite its loss of franchise was still trading above PHP7.00 per share at that time.

In the case of RWM, using NAV as among the alternative valuation methods would have been interesting as well. In its response to queries regarding its tender offer price, MRP management acknowledged RWM's significant and valuable landbank for its future expansion (MRP SEC Form 17-C, 2018) and they should not be directly compared. Unfortunately, the fairness opinion report of RWM was not made available to the public and therefore, it is not known whether RWM's valuator considered this landbank in the valuation.

Recommendations

To improve the tender offer process, the following recommendations are offered:

1. PSE should follow the suggestion of SharePHIL in 2016 to have the PSE hire the valuation entities. To make the valuators more objective and more careful in their assessment, more than one valuation entity should be hired. PSE should then decide which valuation to adopt to standardize across different cases of estimating tender offer prices. The cost of the valuation entities should be for the account of the tender offeror.

2. PSE should make the fairness opinion reports accessible to the public. If a prospectus is made available to potential investors during IPO offering, all the more that a fairness valuation report related to a tender offer, especially the one leading to delisting, be made available to the public. The investors have the right to scrutinize the bases of the valuation, and the report should not be limited to the board and controlling stockholders. By making these reports available to the public, the valuation entities may be more careful and unbiased in the conduct of valuation because their reputation may also be at stake.
These fairness valuation reports should be disclosed to the public the moment a tender offer leading to delisting is announced. This is to give equity analysts and investors enough time to assess the reasonableness of the tender offer price.

3. SEC and PSE should come up with rules and guidelines regarding the valuation of intangible assets, such as the license to radio frequencies that was a major concern in the valuation of LIB tender offer.
Technical experts may be hired by PSE when issues of this nature come up. The costs should be for the account of tender offerors.

4. SEC and PSE should impose higher penalties on non-disclosure of a material information. Both SEC and PSE should review these penalties because a company may simply opt to pay the penalty if the amounts are negligible, such as the fine of PHP346,000 to LIB for a late disclosure. Compliance with disclosure requirements can probably improve if SEC and PSE will make the top management share in the cost of the penalty, instead of the company shouldering the entire cost. Charging the company with the entire cost will further aggravate the situation of minority stockholders considering that they have nothing to do with the negligence or improper decisions of management.

5. Make the relisting of companies, or any other company related with the group conducting a voluntary delisting longer (e.g. five years). This is to impress upon the listed companies that being listed is a privilege because it provides them better access to capital. This privilege should not be abused by letting them delist anytime they want, and allow them to relist anytime they want. The regulators should think of the welfare of the minority stockholders. If the tender offer prices are undervalued, what options do they have? Once a stock is delisted, it will be difficult to unload their shares if they do not tender their shares. By making the relisting rules more stringent, companies planning to delist will have second thoughts. For minority stockholders, having their shares listed will always be an advantage as compared to having them delisted.

6. PSE can consider including among the options for tender offer price rules and policies from the Indonesian Stock Exchange (IDX) that include the following: The highest price reached in the regular market during the two-year period before the announcement of the independent shareholders' meeting (adjusted for any changes in nominal value of the shares in the last two years), plus a premium in the form of a return on investment over the last two years, calculated as the shares' initial public offering price multiplied by the average of the three-month Indonesian Central Bank certificate (SBI) rate, or the interest rate of other equal government bonds that prevails when the approval from independent shareholders is obtained. ("A global guide," 2020, p. 60). PSE can modify the reference rate for the interest used in estimating returns from the IPO price.

Concluding Remarks

If the valuation entities have all the information and are unbiased, the different valuation methods for determining tender offer prices should converge into, more or less, similar values. However, a study about the Philippine stock market has shown that the Philippine stock market is not efficient (Cayanan, 1994). This means that there is an information asymmetry. The controlling stockholders have upper hand as regards the intrinsic values of their companies. Since they hire the valuation entities, they can also control what information to share with them that can affect the valuations.

The discounted cash flow valuation models are theoretically sound, especially for going concern operations. However, they are also prone to possible manipulation. The valuation entity can come up with any number he wants by playing around with the assumptions. This is the reason why making the fairness opinion reports available is very crucial in determining the reasonableness of the assumptions used. Note that the SEC has reservations on the use of this approach, unless the valuation entities have very strong reasons to use it.

Relative valuation models like the PER are also useful for going concern operations. The problem with these models is the availability of comparable companies that can be used as benchmarks. As revealed in this paper, even within the same company, there can be a wide range of earning multiples from one year to another. This can open window for valuation entities to choose a number that will please their clients.

As Mr. Monzon puts it, valuation is an art. Analysts valuing the same company can come up with different results depending on the valuation methods and the assumptions used. Given the wide range of possible valuations that can be created, policy makers can start with values that have more objective foundations, the book values. Independent appraisers can then be hired to adjust book values to their fair market values. Applying these asset-based approaches does not mean ignoring the other valuation methods. For high-growth companies, the DCF valuation methods can be appropriate.

To make the tender offerors fairer and more objective in setting tender offer prices, PSE should require the availability of the fairness opinion reports to the public the moment a tender offer is announced. This will provide equity analysts and investors, both retail and institutional, to evaluate whether the tender offer price is reasonable or not. Making these fairness opinion reports available at the early stage of the tender offer will also motivate valuation entities to do a more objective assessment because their outputs are subject to public scrutiny.

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Time is running out for cities

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The clock is ticking — and time is not on our side

There may be cause for cautious optimism that we can complete the Sustainable Development Goals (SDG) journey. But time is not on our side, unfortunately. Local leaders, businesses and communities simply cannot claim 'If only we had known!' in the face of today's disasters and the undeniable need to alter our course into the future.

According to the UN, more than half the world's population lives in cities and the number is projected to rise to 60 percent — about five billion people — by 2030. By 2050, an estimated 70 percent of the world's population will reside in urban settlings. And while urban centers are the powerhouses of economic growth — accounting for two-thirds of the planet's economic activity — they also account for about 75 percent of global carbon emissions, despite occupying about three percent of the planet's landmass.

One hundred cities alone account for about 20 percent of global emissions. The average carbon footprint per capita globally is about four tons but the number is significantly higher in wealthy nations such as the US, where the per capita average is 16 tons, one of the highest rates in the world.

Amid a prevailing public perception that 'there is time' to enact solutions, and that technology will save the day, the troubling reality is that pivotal systemic changes are needed now. And make no mistake — there are no quick fixes to this historic global challenge.

In KPMG professionals' view, the historical focus has been on sustaining financial gains at the expense of local community needs and well-being, and governments have played a role in allowing this to happen. Cities must act now.

While acknowledging the urgency of the ticking clock, there remains room for optimism. A united and determined endeavor is the path ahead, wherein major cities worldwide, along with their leaders, embrace innovative and daring strategies. These approaches will be instrumental in driving and maintaining progress on the journey towards achieving net-zero goals. There are already remarkable improvements among some global cities that are setting the pace and providing instructive examples of what can be accomplished, particularly in collaboration with the private sector.

As the Zero Energy Project notes: "The worldwide zero net energy carbon neutral vision is being driven locally." The world's pace-setting cities, the US-based organization adds, are demonstrating that "local governments can meet the commitments they have made to reduce greenhouse gas emissions while strengthening local economies.

"As the UN tells us, cities are 'fundamental' to meeting the SDGs and local governments currently have a historic opportunity to solve the challenges that have clearly proven problematic and divisive for national governments.

City leaders — what are you doing to build collaborative relationships with organizations in your community to generate progress? Business leaders — what are the obligations of your companies as responsible members of the communities in which they operate? Private sector — what is your responsibility to support a bold new path into the future? These are pivotal questions that demand concise and immediate answers.

KPMG in the Philippines Deal Advisory Head and Infrastructure Sector Head Michael Arcatomy Guarin shares that, "as urbanization continues to accelerate in the Philippines, it's crucial for local leaders, businesses and communities to recognize the urgency of the situation. The call to prioritize the SDGs, both for the benefit of the planet and the well-being of citizens, aligns well with the Philippines' commitment to sustainability. Given the country's vulnerability to climate change and its geographic location in a region prone to natural disasters, addressing carbon emissions and enhancing urban resilience are essential."

Local governments play a pivotal role in establishing partnerships that champion sustainable practices, inventive solutions and active engagement with the private sector. The Philippines, being susceptible to abrupt and gradual climate effects, faces a heightened need to adopt methodologies that bolster resilience and curtail carbon emissions. By uniting public and private entities, substantial investment can be directed towards sustainable projects, notably in renewable energy, transportation and waste management.

Zeroing in on key risks and their explosive connections

The leading risks affecting the ability of cities meeting the SDGs based on the research and findings are:
• competing city priorities
• inadequate private-sector contribution
• future financial cost of inaction
• lack of public-private collaboration across the SDG ecosystem
• lack of embedded innovation within cities

Cities must get their priorities in order now

To overcome competing local priorities and accelerate progress on the SDGs, city leaders can begin by adopting a portfolio-management approach that today's large organizations rely on to establish and meet clearly defined objectives.

Portfolio management can go far in unlocking strategic change and progress on the SDGs — prioritizing the deployment of resources and funding toward smart initiatives that are designed to meet their goals.

A more-strategic approach can also address the need for various levels of government to find common ground and overcome political differences and competing agendas.

Cities have the conditions to address many of the risks that were identified. It is under their control. They have no excuses. City leaders must wake up to the reality that a strategic, proactive approach is indispensable today to replace reactive, politically safe stances that continue to impair progress.

This includes embedding innovation into public policy and tapping into the power of modern digital technology, ultimately overcoming traditional approaches in which cities fail to adequately invest in their own capacity to innovate for the future. This will likely also require a new mindset that replaces the mistaken prevailing perception that a carbon free world is a more expensive world. While 'sunk' or 'retrospective' costs that have been invested to date battling climate change cannot be recovered, these costs should be viewed as a precursor to tangible future approaches.

Incentivize private-sector participation in SDG initiatives

Cities desperately need new investment to drive local change. How can we bring public and private-sector stakeholders together in new ways to generate progress?

KPMG professionals believe the future demands creative efforts at 'matchmaking' to help unite both sides on a bold and optimistic new path. This includes heightened dialogue in pursuit of realistic policies and goals, plus adequately funded initiatives that private investment supports amid competing opportunities. Cities need to incentivize investors with a balanced risk-reward scorecard that maps out the spectrum of required results for all players — striving to ensure confidence, trust, ROI and ultimate success.

Linking investment to the UN SDGs while effectively managing risk to inspire investor confidence can serve as a

In the process, they are considering whether to reduce the major risk categories assigned to the audit committee beyond its core oversight responsibilities (financial reporting and related internal controls and oversight of internal and external auditors)—by transferring certain risks to other committees or potentially creating a new committee.

• Keep ESG, including climate risk and DEI, embedded in risk and strategy discussions and monitor U.S. and global regulatory developments.

How companies address climate change, DEI, and other ESG issues is viewed by investors, research and ratings firms, activists, employees, customers, and regulators as fundamental to the business and critical to long-term value creation. At a time of low trust in government and institutions, corporations are being asked to do more to solve societal problems—or run the risk of losing the social license to operate.

• Clarify when the CEO should speak out on social issues.

Consider what role the board should play in establishing parameters for the CEO as the voice of the company. Some boards have written policies; others have an informal understanding that the CEO will confer with board leadership before speaking on a controversial issue. Some companies have crossfunctional management committees to vet issues on a case-by-case basis to determine when speech is appropriate.

• Approach cybersecurity, data privacy, and artificial intelligence (AI) holistically as data governance.

Cybersecurity threats are dynamic and related impacts continue to intensify. The acceleration of AI and digital strategies, the increasing sophistication of hacking and ransomware attacks, and the lack of definition for lines of responsibility—among users, companies, vendors, and government agencies—have elevated cybersecurity risk and its place on board and committee agendas.

• Make talent, human capital management (HCM), and CEO succession a priority.

Most companies have long said that their employees are their most valuable asset. COVID-19; the difficulty of finding, developing, and retaining talent in the current environment; and an increasingly knowledge-based economy have highlighted the importance of talent and HCM—and changed the employer/ employee dynamic. This phenomenon of employee empowerment has prompted many companies and boards to rethink the employee value proposition.

Pivotal to all of these is having the right CEO in place to drive culture and strategy, navigate risk, and create long-term value for the enterprise. The board should help ensure that the company is prepared for a CEO change—whether planned or unplanned, on an emergency interim basis or permanent. CEO succession planning is a dynamic, ongoing process, and the board should always be focused on developing a pipeline of C-suite and potential CEO candidates. Succession planning should start the day a new CEO is named.

• Engage proactively with shareholders, activists, and other stakeholders.

The board should request periodic updates from management about the company's engagement activities:

- Does the company know, engage with, and understand the priorities of its largest shareholders and key stakeholders?
- Are the right people engaging with these shareholders and stakeholders—and how is the investor relations (IR) role changing?
- What is the board's position on meeting with investors and stakeholders? Which independent directors should be involved?

• Think strategically about talent, expertise, and diversity in the boardroom.

The increased level of investor engagement on this issue points to the central challenge with board composition: Having directors with experience in key functional areas critical to the powerful incentive to business.

Initiatives and deals need to be strategically structured in ways that present a risk-managed win-win scenario for both investors and communities.

Local leaders need to speak the financial language of investors to make powerful new connections. Today's businesses are already ahead of governments through their ESG commitments, and it is up to city leaders to foster trust that encourages participation in local SDG initiatives.

Eliminate political instability — take the long road on innovation

Today's typically risk-averse local leaders need to revisit their priorities, directing their energy and resources to what is best for their communities — versus what's best for their political future. In a world of political change and instability, private-sector confidence that initiatives will be sustained, completed and pay off with results that truly meet objectives is indispensable. Simply put, an innovative long-term approach to innovation itself is vital.

Taking politics out of the SDG journey and adopting a long-term view for sustained progress should also go far in addressing the need to embed innovation within cities. The arcane mindset that it may be too risky politically to rock the boat with innovative and potentially game-changing local initiatives should be adjusted. Boldly ambitious strategies delivered within a progressive and creative culture of innovation is the way forward.

Adopting a modern approach that puts progress before politics — and the influence of social media — can drive innovation in a positive atmosphere that has the buy-in of all players, including the public and the communities that innovation is meant to serve. Bold strategies and sustained long-term programs are pivotal to progress and our future well-being.

Good citizenship includes businesses and private equity

Businesses are preoccupied with profitability. Investors are focused on returns versus risks. Local leaders continue to embrace safe political agendas that may include SDGs, but which typically fail to generate real progress.

These stakeholders need to stop working at odds and unite in new ways that fully recognize, amid competing agendas, the obligations they have to their communities. Business leaders and investors need to act as 'responsible citizens' of the communities in which they operate and employ people. Social license has shifted, and it is no longer ok to inflict damage on the environment or create obstacles for any of the 17 SDGs.

Communities supported by good corporate citizenship can help minimize the future financial cost of inaction and the threat of unpredictable fiscal challenges for future city leaders and their communities. If investments aren't made now towards the SDGs, cities risk greater future financial costs for disaster relief, climate crises mitigation and emerging social issues. The cost to restore the damage done will likely far outweigh the investment that should have been made from the start to mitigate issues related to the SDGs.

Turn up the volume to raise SDG awareness and collaboration

As was previously noted, the urgent message on our uncertain future and the importance of meeting the SDGs is not resonating nearly as powerfully as it should today. A significant lack of effective communication to consistently articulate the SDG message and mobilize action is undermining progress. There is an underlying assumption that in today's connected digital world of informed consumers and social media, there is widespread agreement on how the SDG journey needs to unfold and its presumed 'success' to date.

It is crucial that the SDG ecosystem and environmental movement share their messages universally in ways that truly spark new levels of awareness and public activism. This includes new efforts to reach those cities, regions and nations that have yet to experience the full impact of today's proliferating climate disasters and thus continue to delay on the SDGs.

Inspiring new levels of public activism that move beyond today's typical band-aid solutions can as has been seen in some localities, undoubtedly mobilize greater participation in the cause and can influence key risks such as competing city priorities, the need for collaboration and funding, and political instability.

Future communications initiatives must share the message more often and more widely, embedding the SDGs across an array of public-awareness efforts and campaigns. Some UK communities have created effective grassroots organizations with a mission to enhance public dialogue and unite cities, businesses and the public to drive change.

The Project Management Institute (PMI) is working in nearly every country, territory or jurisdiction around the world today to provide project professionals and change-makers with new skills and approaches that can enhance their impact in delivering projects for a better future.

What now?

The race for positive outcomes as 2030 draws closer

Today's risks have major implications for city-centric issues and as we have stressed in this report, there is no time to lose. While we see cause for cautious optimism and indeed hope for a better future, it is abundantly clear that now is the time for decisive strategic action.

Amid soaring climate catastrophes and the increasingly urgent need for promising solutions, local leaders simply cannot allow SDG initiatives to languish as a 'nice to have' versus a time-sensitive 'must have.' With dramatic global consequences at stake, we need modern, highly focused policies and programs that can stimulate investment in, and commitment to, this historic journey.

Today's imposing risks demand transformational change — there is no simple fix to eliminate any of the risk factors in play and their potentially devastating economic results.

KPMG professionals believe potential approaches for a promising new tomorrow include the following actions:

- Cities must get their priorities in order now.
- Incentivize private-sector participation in SDG initiatives.
- Eliminate political instability — take the long road on innovation.
- Good citizenship by businesses and private equity.
- Turn up the volume to raise SDG awareness and collaboration.

The excerpt was taken from the KPMG Thought Leadership publication: https://kpmg.com/xx/en/home/insights/2023/06/time-is-running-out-for-cities.html

Determinants of Profitability of Listed Major Philippine Banks

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Abstract

The aim of this study is to know the internal and external determinants of profitability of listed major Philippine banks. This study applies a random effects panel regression model to firm-level quarterly data of listed Philippine banks in the PSE Financials Index from 2009 to 2021. Return on Asset (ROA) and Return on Equity (ROE) are used as dependent variables in two different models. Results show that for both ROA and ROE, internal factors size (-), capital adequacy (+ for ROA, - for ROE), credit risk (-), expense management (-), income diversification (+), and external factors inflation (+), interest rate (-), and market growth (-) are significant determinants of profitability. This study also employs a linear time series regression model per bank. Most of the determinants of profitability per bank are consistent with the results of the random effects panel regression. These results serve as a useful reference for determining policies to achieve profitability for listed Philippine banks.

Keywords: Determinants, Profitability, Listed, Philippine, Banks

1 Introduction

The banking sector is the backbone of the Philippine economy and plays an important financial intermediary role therefore, its health is very critical to the health of the general economy at large (Sufian & Chong, 2008). Given the relation between the well-being of the banking sector and the growth of the economy (Rajan & Zingales, 1998; Levine, 1998), knowledge of the underlying factors that influence the financial sector's profitability is therefore essential not only for the managers of the banks, but also for numerous stakeholders such as the central banks, bankers' associations, governments, and other financial authorities (Sufian & Chong, 2008). Understanding these factors will be useful for both bank managers and regulators in determining policies to ensure the profitability of listed Philippine banks. A sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system (Athanasoglou et al., 2008). Golin (2001) points out adequate earnings are required for banks to maintain solvency, to survive, grow, and prosper in a competitive environment.

The 2008 global financial crisis resulted in significant changes in the global banking environment, warranting new research on bank performance (Pamatmat, 2021). The crisis alerted the United States (US) regulators to enact the Dodd-Frank Wall Street Reform and Consumer Protection Act, which resulted in fundamental changes in US financial regulation, particularly on risk management (Guynn et al., 2010). Globally, banks adopted additional practices to increase resiliency to shocks, primarily through building up capital and liquidity buffers (Bank for International Settlements, 2018). Studies on determinants of bank profitability in the Philippines are limited and mostly conclude on the whole banking sector only. This study tests internal and external drivers of profitability on both aggregate and individual bank levels and will use more recent data covering years after the 2008 global financial crisis (2009 to 2021).

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2 Listed Philippine Banks in the PSE Financials Index

The sector classification system used by the Philippine Stock Exchange (PSE) can be traced from the old system used by the Manila and the Makati Stock Exchanges ("Guide to PSE Sector Classification," n.d.). In 1996, the Banks & Financial Services Sector was created to represent companies engaged in banking and financial activities ("Guide to PSE Sector Classification," n.d.). On 02 January 2006, a new sector classification system was implemented by the PSE in line with global standards where a company was classified according to the business that generates the bulk of its revenue instead of its primary purpose as stated in its Articles of Incorporation ("Guide to PSE Sector Classification," n.d.). The current sector classification system groups listed companies into six main sectors: Financials, Industrial, Holding Firms, Property, Services, and Mining & Oil ("Guide to PSE Sector Classification," n.d.). Companies in the PSE Financials Index, which are the listed banks covered in this study, are shown in Table 1, together with their respective market capitalizations.

Table 1.
PSE Financials Index

Bank	Symbol	Market Capitalization (as of October 14, 2022)
BDO Unibank, Inc.	BDO	526,400,971,440
Bank of the Philippine Islands	BPI	412,951,235,333
Metropolitan Bank & Trust Company	MBT	225,095,648,528
Union Bank of the Philippines	UBP	167,084,327,592
China Banking Corporation	CHIB	69,031,542,638
Security Bank Corporation	SECB	62,543,727,621
Rizal Commercial Banking Corporation	RCB	44,417,039,933
Philippine National Bank	PNB	26,792,430,766
East West Banking Corporation	EW	13,117,356,646

Source: "PSE Indices Composition – Financials" (n.d.)

3 Review of Literature and Hypotheses Development

The literature on determinants of bank profitability is extensive, covering different data sets, time periods, and geographic regions. However, a common theme across these studies is the use of internal factors and external factors as determinants of profitability. Internal factors are those that management and directors can control such as size, capital adequacy, credit risk, expense management, and income diversification. External factors are those outside the control of management and are generally related to the economic environment such as inflation, interest rate, GDP growth, and industry growth. The literature on these determinants is discussed in this section together with the hypothesized relationships to bank profitability.

3.1 Internal Factors: Size

Pasiouras and Kosmidou (2007) find a positive and significant relationship between the size and the profitability of a bank because larger banks are likely to have a higher degree of product and loan diversification than smaller banks, and because they should benefit from economies of scale. This positive relationship is the general effect according to the literature. However, Eichengreen and Gibson (2001) suggest that the effect of a growing bank's size on its profitability may be positive up to a certain limit only. Beyond this point, the impact of its size could be negative due to bureaucratic and other factors (Athanasoglou et al., 2008). Berger et al. (1987) provide evidence that costs are reduced only slightly by increasing the size of a bank and that very large banks often encounter scale inefficiencies. Boyd and Runkle (1993) also find a negative significant relation between size and profitability. Bank size is generally used to capture potential economies or diseconomies of scale in the banking sector (Sufian & Chong, 2008). This variable controls for two factors: cost differences, and product and risk diversification according to the size of the financial institution (Sufian & Chong, 2008). The first factor, cost differences could lead to a positive relationship between size and bank profitability if there are significant economies of scale (Akhavein et al., 1997;

Bourke, 1989; Molyneux & Thornton, 1992; Bikker & Hu, 2002; Goddard, Molyneux & Wilson, 2004). Other researchers conclude that marginal cost savings can be achieved by increasing the size of the banking firm, especially as markets develop (Berger et al., 1987; Boyd & Runkle, 1993; Miller & Noulas, 1997; Athanasoglou et al., 2008). But the second factor, product and risk diversification may lead to a negative one if increased diversification leads to lower credit risk and thus lower returns (Sufian & Chong, 2008). The negative effect of size is shown by Batten and Vinh Vo (2019) in a study of banks in Vietnam, and Kohlscheen et al. (2018) in a study of banks in emerging markets, and these studies use firm-level data, like this paper. Considering the inefficient bureaucratic system and excessive red tape in the Philippines ("Philippines Country Report 2022," n.d.), it is hypothesized that there is a negative relationship between size and bank profitability.

H1: There is a negative relationship between size and bank profitability.

3.2 Internal Factors: Capital Adequacy

Studies have found a positive relationship between capitalization and bank profitability (Bourke, 1989; Koster & Zimmerman, 2017; Ozili, 2015). Bourke (1989) posits that the relationship between capitalization and profitability can be explained by the lower cost of funds for better capitalized banks. It could be the case that higher levels of equity would decrease the cost of capital, leading to a positive impact on bank profitability (Molyneux, 1993). Moreover, an increase in capital may raise expected earnings by reducing the expected costs of financial distress, including bankruptcy (Berger, 1995). Koster and Zimmerman (2017) note the relationship as they find that higher capitalization leads to lower accounting-based bank risk measures and higher accounting-based profitability measures. Berger (1995) finds that the capital and bank profitability tend to be positively related for a sample of US banks. Also, Angbazo (1997) finds that well-capitalized banks in USA are more profitable than other less-capitalized banks. A positive relation between capital adequacy and profitability was suggested by Kosmidou and Pasiouras (2007).

A contrarian view is that in the presence of asymmetric information and bankruptcy costs, the way the assets are funded could affect the banks' value (Ramadan et al., 2011). In a way or another a well-capitalized bank may send a good signal to the market regarding its performance (Athanasoglou et al., 2006; Berger, 1995). In this regard, well-capitalized banks perceived to be safer, with lower profits commensurate with the risks, for this reason a negative relation between capital and profits is expected (Ramadan et al., 2011). On the other hand, if the profits earned are reinvested, a positive relation between capital and profits, should be valid (Ramadan et al., 2011). Except for the contrarian view discussed, the literature is generally positive between the relationship of capital adequacy and bank profitability.

H2: There is a positive relationship between capital adequacy and bank profitability.

3.3 Internal Factors: Credit Risk

Studies have shown that bank credit risk is negatively related to profitability (Athanasoglou et al., 2008; Menicucci & Paolucci, 2016; Petria et al., 2015; Staikouras & Wood, 2004; Sufian & Chong, 2008; Tan & Floros, 2012). Credit risk can be defined as the potential loss of all, or part of the interest owed, the origin loan, or both (Ramadan et al., 2011). The environment in which the bank works affects the bank's credit risk, poor legal environment leads to weak enforcement of bank rights, which leads to higher credit risk (Ramadan et al., 2011). In addition, lack of accurate information about borrowers, and weak economic growth, may expose the bank to higher credit risk (Ramadan et al., 2011). Theoretically, the greater the exposure to credit risk, the lower is the banks' profits; a negative effect of the credit risk on the banks' profitability is expected (Ramadan et al., 2011). Changes in credit risk may reflect changes in the health of a bank's loan portfolio which may affect the performance of the institution (Cooper et al., 2003). Duca and McLaughlin (1990), among others, conclude that variations in bank profitability are largely attributable to variations in credit risk since increased exposure to credit risk is normally associated with decreased firm profitability. This claim triggers discussions concerning not the volume, but the quality of loans made (Sufian & Chong, 2008).

In this direction, Miller and Noulas (1997) suggest that the more financial institutions being more exposed to high-risk loans increases the accumulation of unpaid loans and decreases the profitability.

The loan loss provisions relative to total loans ratio, which is a measure of credit quality, did not have a statistically significant effect on bank profitability before the crisis (Dietrich & Wanzenried, 2011). However, the loan loss provisions have significantly increased during the crisis, and this is reflected in its negative impact on profitability during the crisis years (Dietrich & Wanzenried, 2011).

The need for risk management in the banking sector is inherent in the nature of the banking business (Athanasoglou et al., 2008). Poor asset quality is a major causes of bank failure (Athanasoglou et al., 2008). During periods of increased uncertainty, financial institutions may decide to diversify their portfolios and/or raise their liquid holdings to reduce their risk (Athanasoglou et al., 2008). Bourke (1989) reports that the effect of credit risk on profitability appears clearly negative. This result may be explained as follows: the more financial institutions are exposed to high-risk loans, the higher is the accumulation of unpaid loans, implying that these loan losses have produced lower returns to many commercial banks (Athanasoglou et al., 2008).

On the other hand, and based on the CAPM arguments, credit risk may positively affect profitability (Ramadan et al., 2011). While Athanasoglou et al. (2008) and Miller and Noulas (1997) find that the effect of credit risk on bank profitability is negative in the USA, Al-Haschimi (2007) finds a positive effect of credit risk on Sub-Saharan African profitability. Nevertheless, the literature generally claims a negative relationship between credit risk and bank profitability.

H3: There is a negative relationship between credit risk and bank profitability.

3.4 Internal Factors: Expense Management

Bank expenses level are also a very important determinant of profitability, closely related to the notion of efficient management (Athansoglou et al., 2008). There has been an extensive literature based on the idea that an expenses-related variable should be included in a profit function (Athansoglou et al., 2008). For example, Bourke (1989) and Molyneux and Thornton (1992) find a positive relationship between better-quality management and profitability. This implies a negative relationship between an expensesrelated variable and profitability. Studies show that poor management efficiency is significantly and negatively linked to profitability (Athansoglou et al., 2006; Batten & Vinh Vo, 2019; Mamatzakis & Remoundos, 2003; Ozili, 2015; Sufian & Chong, 2008). Furthermore, there is also empirical evidence that the level of operational efficiency, measured by the cost-income ratio (Goddard et al., 2009) or overhead costs over total assets (Athanasoglou et al., 2008) positively affects bank profitability (Athanasoglou et al., 2008; Goddard et al., 2009). Cost management, closely related to operating expenses efficient management can be one of the most important determinants of profitability, and unless banks manage to transfer their costs to the lenders, operating expenses are expected to have a negative effect on the profitability (Ramadan et al., 2011). Bourke (1989), Molyneux and Thornton (1992), and Athanasoglou et al. (2008) find a positive relationship between better quality management and profitability. Brock and Rojas (2000), and Al-Haschimi (2007) found that inefficient management appears to be the prime determinant of the high spreads in Latin American countries and in Sub-Saharan Africa economies respectively.

However, the notion of higher expenses leading to lower incomes is not absolutely seen in literature (Pamatmat, 2021). First, some financial institutions may directly pass on their operating costs to customers with a significant margin, leading to improved profitability with higher operating costs (Ben Naceur & Goaied, 2008). Second, expense preference behavior – a phenomenon where managers make decisions that are contrary to the profit maximization objectives of shareholders – may also be present (Pamatmat, 2021). When expense preference behavior is prevalent in a bank, high profits earned are appropriated in the form of higher payroll expenditures to more productive human capital (Molyneux & Thornton, 1992).

For the most part, the literature argues that reduced expenses improve the efficiency and hence raise the profitability of a financial institution, implying a negative relationship between the operating expenses ratio and profitability (Bourke, 1989), thus the fourth hypothesis.

H4: There is a negative relationship between expense management and bank profitability.

3.5 Internal Factors: Income Diversification

Meslier et al. (2014) show that income diversification is positively correlated with bank profitability. Improvements in profitability from income diversification can be explained by the higher margins from income sources outside a bank's regular lending activities (Pamatmat, 2021). Other income sources seldom have returns lower than those of loans because management can shift their investment to loans if other income streams do not offer sufficient returns for a given level of risk (Pamatmat, 2021). Banks that are heavily dependent on interest income are less profitable than banks whose income is more diversified (Dietrich & Wanzenried, 2011). In a study of United States banks, Angbazo (1997) found evidence that bank profitability is positively related to non-interest income. These lead to the fifth hypothesis.

H5: There is a positive relationship between income diversification and bank profitability.

3.6 External Factors: Inflation

Previous studies of the inflation-profitability relation reported a positive association (Ramadan et al., 2011). A bank's ability to predict inflation accurately can positively affect the profitability of the bank as bank can adjust interest rates in the desired direction to increase profit, while failure to accurately predict inflation could raise costs due to imperfect adjustment of interest rates and thus adversely affect bank's profit (Ramadan et al., 2011). Guru et al. (2002), Jiang et al. (2003), Vong and Chan (2006), and Athanasoglou et al. (2008), on their studies, stressed on the positive relation between inflation and bank profitability. It is reiterated by Perry (1992) that the effect of inflation on bank's profitability depends on the accuracy of anticipating the inflation. Perry (1992) argued that if inflation was anticipated, it would positively affect profitability, because banks could take advantage of adjusting interest rates on loans. The upward adjustment of interest rates resulted in bank revenues that increased faster than costs (Pamatmat, 2021). An inflation rate fully anticipated by the bank's management implies that banks can appropriately adjust interest rates to increase their revenues faster than their costs and thus acquire higher economic profits (Athanasoglou et al., 2008). Tan and Floros (2012) found that inflation was positively related with bank profitability in China, explaining that this phenomenon was because the country had a transparent monetary policy regime where inflation could be anticipated, and banks could adjust interest rates on loans accordingly.

In addition, Revell (1979) notes that the effect of inflation on bank profitability depends on whether banks' wages and other operating expenses increase at a faster rate than inflation. The question is how mature an economy is so that future inflation can be accurately forecasted and thus banks can accordingly manage their operating costs (Athanasoglou et al., 2008). Bourke (1989) posited that the effect of inflation depended on the assumptions on the growth of wages and other non-interest costs relative to the inflation rate. Higher growth of wages and other non-interest costs relative to inflation produced a negative relationship between inflation and profitability (Pamatmat, 2021). Most studies (Bourke, 1989; Molyneux & Thornton, 1992) have shown a positive relationship between inflation rate and profitability. If inflation was unanticipated, banks would be unable to adjust interest rates, accordingly, resulting in a faster increase of costs versus revenues resulting in reduced profitability (Pamatmat, 2021).

In contrast, Demirgue-Kunt and Huizinga (1999) find that in developing countries, inflation and profitability tend to have negative relation especially when capital ratio is high, because costs tend to increase faster than revenue in inflationary environments. Except for this finding, the literature generally points to a positive relationship between inflation and bank profitability.

H6: There is a positive relationship between inflation and bank profitability.

3.7 External Factors: Interest Rate

According to Seabury (2020), lower interest rates are commonly associated with higher economic activity, saying that central banks modify target interest rates in response to economic activity – increasing rates when the economy is overly strong and decreasing rates when the economy is weak. When interest rates are high, lending activity stalls, resulting in lower bank profits (Seabury, 2020). A mechanism in which the interest rate affects bank profitability is through its influence on bank risk-taking behavior (Pamatmat, 2021). First, interest rates affect asset valuations because low interest rates boost asset prices (Pamatmat, 2021). The lower interest rate affects banks' provisions for default and releases the risk budget of banks, encouraging them to take on more positions (Pamatmat, 2021). Second, interest rates affect the incentives of asset managers because they are inclined to invest in higher return and higher risk instruments if yields on government become less attractive (Altunbas et al., 2010). Third, interest rates affect the investor habit formation wherein low interest rates result in economic expansion (Pamatmat, 2021). In an environment of expansion, market participants become less riskaverse, and they consume at higher-than-normal levels (Pamatmat, 2021). An easing monetary policy, which is associated with increased economic activity, decreases investors' risk aversion, and increases their risk-taking behavior (Campbell & Cochrane, 1999).

A contrarian view is that lower interest rates can result in lower bank profitability because of increased risk-taking behavior by banks (Pamatmat, 2021). Borio et al. (2017) posit that lower interest rates reduce net interest margins through the "retail deposits endowment effect" and the "quantity effect." The "retail deposits endowment effect" is a result of banks pricing deposits as a markdown on market rates (which is influenced by policy rates); and because deposit rates cannot fall significantly below zero, low levels of market rates result in lower interest margins (Pamatmat, 2021). The "quantity effect" happens when the volume of bank loans and deposits is affected by the level of market rates; and at low levels of interest rates, where demand for loans is relatively inelastic, increasing market rates lead to increased interest margins (Pamatmat, 2021). Despite this opposite view, this study prefers to hypothesize on the negative relationship between interest rate and bank profitability due to the increase in economic activity which can lead to more profits for banks.

H7: There is a negative relationship between interest rate and bank profitability.

3.8 External Factors: GDP Growth

Generally, higher economic growth encourages banks to lend more and permits them to charge higher margins while improving the quality of their assets (Sufian & Chong, 2008). Neely and Wheelock (1997) use per capita income and suggest that this variable exerts a strong positive effect on bank earnings. Dermiguc-Kunt and Huizinga (2001) and Bikker and Hu (2002) identifies possible cyclical movements in bank profitability, i.e., the extent to which bank profits are correlated with the business cycle. As numerous sectors of the economy experience greater activity, demand for credit and deposit facilities increases, which benefits the banking sector, and may translate to higher profitability (Pamatmat, 2021). Petria et al. (2015) and Meslier et al. (2014) show a positive relationship between GDP growth and bank profitability. Because of these reasons, this study hypothesizes a positive relationship between GDP growth and bank profitability.

H8: There is a positive relationship between GDP growth and bank profitability.

3.9 External Factors: Market Growth

It is suggested that growth in total market may be considered as a potential variable in the sense that an expanding market, particularly if associated with entry barriers, should produce the capability of earning increased profits (Bourke, 1989). Accordingly, annual growth in money supply in each country is suggested as an independent variable (Bourke, 1989). Banks with relatively higher lending growth rates were more profitable than slowly growing banks in all considered time periods (Dietrich & Wanzenried, 2011). The effect of a faster growing loan volume seems to over-compensate the risk that a too fast growth in loans may lead to a decrease in credit quality (Dietrich & Wanzenried, 2011). Consequently, it is hypothesized that market growth can lead to improved bank profitability.

H9: There is a positive relationship between market growth and bank profitability.

4 Data and Methodology

This study uses quarterly data of nine listed banks in the PSE Financials Index from 2009 to 2021, except for EW which only got listed in 2012. Data for profitability and the five internal factors size, capital adequacy, credit risk, expense management, and income diversification are taken from Refinitiv Eikon's database. On the external factors, inflation and market growth are gathered from the Bangko Sentral ng Pilipinas (BSP), interest rate is collected from the Bureau of the Treasury (BoT), while gross domestic product (GDP) growth is compiled from the Philippine Statistics Authority (PSA). A total of 452 observations are included in this study. Profitability is measured using Return on Assets (ROA) and Return on Equity (ROE). In principle, ROA reflects the ability of a bank's management to generate profits from the bank's assets (Athanasoglou et al., 2008). ROA is considered a better measure of profitability because it is not distorted by high equity multipliers and represents a better measure of the ability of the firm to generate returns on its portfolio of assets (Rivard & Thomas, 1997). On the other hand, ROE indicates the return to shareholders on their equity and equals ROA times the assets to equity ratio, which measures financial leverage (Athanasoglou et al., 2008). Firms with different capital structures can have the same ROA but different ROE, ceteris paribus (Pamatmat, 2021). Since an analysis of ROE disregards the risks associated with high leverage and financial leverage is often determined by regulation, ROA emerges as the key ratio for the evaluation of bank profitability (Athanasoglou et al., 2008). Nevertheless, ROE is also tested in this study.

Table 2 gives a summary of the variables used in this study together with the hypothesized relationships of the independent variables on profitability.

Table 2.
Summary of Variables

Variable Name	Variable	Description	Hypothesized Relationship with Profitability
Dependent			
Profitability	ROA_{it}	Calculated as *net income/assets*. It is the return on assets of bank *i* for quarter *t*.	N/A
	ROE_{it}	Calculated as *net income/equity*. It is the return on equity of bank *i* for quarter *t*.	N/A
Independent Internal Factors			
Size	LNA_{it}	Natural logarithm (LN) of the assets of bank *i* at the end of quarter *t*.	–
Capital adequacy	EQA_{it}	Calculated as *equity/assets*. It is the portion of assets of bank *i* funded by equity at the end of quarter *t*.	+
Credit risk	$LLGL_{it}$	Calculated as *loan loss provision/gross loans*. It shows the level of provisioning of bank *i* at the end of quarter *t*.	–
Expense management	$NIEA_{it}$	Calculated as *non-interest expenses/assets*. It shows the level of operating efficiency of bank *i* at the end of quarter *t*.	–
Income diversification	$NIIA_{it}$	Calculated as *non-interest income/assets*. It shows the level of non-interest income of bank *i* at the end of quarter *t*.	+
Independent External Factors			
Inflation	INF_t	Inflation for quarter *t* is the average inflation of three months composing quarter *t*.	+

Variable Name	Variable	Description	Hypothesized Relationship with Profitability
Interest rate	INT_t	Interest rate for quarter *t* is the average 364-day T-bill rate of the three months composing quarter *t*.	–
GDP growth	$GDPG_t$	GDP growth for quarter *t* is the percentage change of real GDP from quarter *t* a year ago to quarter *t*.	+
Market growth	$MKTG_t$	Market growth for quarter *t* is percentage change of deposit liabilities of the Philippine banking system from quarter *t* a year ago to quarter *t*.	+

Table 3 shows the descriptive statistics of the variables covered.

Table 3.
Descriptive Statistics of Variables Used

Variable	Mean	S.D.	Min	Max
$\boldsymbol{ROA_{it}}$	1.43%	0.64%	0.20%	4.61%
$\boldsymbol{ROE_{it}}$	11.61%	4.62%	1.58%	33.79%
$\boldsymbol{LNA_{it}}$	13.43	0.79	11.68	15.10
$\boldsymbol{EQA_{it}}$	12.21%	1.99%	7.33%	20.45%
$\boldsymbol{LLGL_{it}}$	0.27%	0.31%	0.003%	2.67%
$\boldsymbol{NIEA_{it}}$	0.76%	0.26%	0.13%	3.80%
$\boldsymbol{NIIA_{it}}$	0.48%	0.33%	0.09%	3.68%
$\boldsymbol{INF_t}$	3.03%	1.04%	0.50%	5.30%
$\boldsymbol{INT_t}$	2.66%	1.35%	0.28%	6.04%
$\boldsymbol{GDPG_t}$	4.76%	5.03%	-16.91%	12.13%
$\boldsymbol{MKTG_t}$	11.52%	6.37%	3.21%	35.12%

Based on the econometric model used by Athanasoglou et al. (2008), a linear regression model is employed to assess the effects of the internal and external factors on bank profitability. The general model has the following form:

$$\pi_{it} = c + \sum_{j=1}^{J} \beta_j X_{it}^{j} + \sum_{l=1}^{L} \beta_l X_{it}^{l} + \varepsilon_{it} \quad (1)$$

Where π_{it} is the profitability of a bank *i* at time *t*, with *i* = 1, …, N, *t* = 1, …, T, *c* is a constant term, X_{it}'s are the explanatory variables and ε_{it} is the disturbance. The X_{it}'s are grouped into internal factors X_{it}^{j} and external factors X_{it}^{l}.

Incorporating the variables in this study, two regression models are developed – Model (2) and Model (3). These two models are specifications of Model (1).

$$ROA_{it} = c + LNA_{it} + EQA_{it} + LLGL_{it} + NIEA_{it} + NIIA_{it} + INF_t + INT_t + GDPG_t + MKTG_t + \varepsilon_{it} \qquad (2)$$

$$ROE_{it} = c + LNA_{it} + EQA_{it} + LLGL_{it} + NIEA_{it} + NIIA_{it} + INF_t + INT_t + GDPG_t + MKTG_t + \varepsilon_{it} \qquad (3)$$

5 Results

Table 4 shows the correlation between the independent variables. The correlations do not indicate any severe multicollinearity (Gujarati, 2000).

Table 4.
Correlation Matrix for Independent Variables

	LNA_{it}	EQA_{it}	$LLGL_{it}$	$NIEA_{it}$	$NIIA_{it}$	INF_t	INT_t	$GDPG_t$	$MKTG_t$
LNA_{it}	1.00								
EQA_{it}	-0.34	1.00							
$LLGL_{it}$	-0.14	0.15	1.00						
$NIEA_{it}$	-0.23	-0.02	0.39	1.00					
$NIIA_{it}$	-0.21	0.09	0.49	0.59	1.00				
INF_t	-0.12	-0.02	0.06	0.04	0.10	1.00			
INT_t	0.01	-0.14	-0.07	0.00	-0.12	0.40	1.00		
$GDPG_t$	-0.10	-0.07	-0.38	0.00	0.03	-0.17	-0.01	1.00	
$MKTG_t$	-0.08	-0.16	-0.04	0.02	-0.06	-0.16	-0.29	0.06	1.00

The least squares method to random effects (RE) model is used on the panel data. The Hausman test shows that the RE model is more appropriate to use than a fixed effects (FE) model. The results of the regression and the Hausman test are reported in Tables 5 and 6.

Table 5.
Multivariate Regression Results on ROA

Variables	Coefficient	S.E.	p-value		
Internal Factors					
LNA	-0.0037	0.0005	***0.000	R^2	0.4376
EQA	0.0282	0.0135	**0.037	Wald chi^2	333.66
LLGL	-0.4486	0.0905	***0.000	Prob > chi^2	0.0000
NIEA	-0.8495	0.1294	***0.000		
NIIA	0.8738	0.0969	***0.000		
External Factors					
INF	0.0672	0.0220	***0.002	Hausman test	
INT	-0.1124	0.0173	***0.000	chi^2	0.33
GDPG	0.0032	0.0046	0.481	Prob > chi^2	1.0000
MKTG	-0.0071	0.0034	**0.036		
Constant	0.0655	0.0067	0.000		

Notes: *** and ** denote two-tail significance at the 1% and 5% levels, respectively.

Table 6.
Multivariate Regression Results on ROE

Variables	Coefficient	S.E.	p-value		
Internal Factors					
LNA	-0.0284	0.0034	***0.000	R^2	0.3440
EQA	-0.4831	0.1016	***0.000	Wald chi^2	314.78
LLGL	-2.9865	0.6840	***0.000	Prob > chi^2	0.0000
NIEA	-6.1455	0.9756	***0.000		
NIIA	6.0690	0.7312	***0.000		
External Factors					
INF	0.3993	0.1661	**0.016	Hausman test	
INT	-0.8387	0.1308	***0.000	chi^2	6.02
GDPG	0.0211	0.0345	0.542	Prob > chi^2	0.7381
MKTG	-0.0871	0.0255	***0.001		
Constant	0.6021	0.0501	0.000		

Notes: *** and ** denote two-tail significance at the 1% and 5% levels, respectively.

The least squares method is also used on time series data per bank to assess determinants of profitability per bank. The results are summarized in Tables 7 and 8.

Table 7.
Multivariate Regression Results on ROA per Bank

Variable	LNA	EQA	LLGL	NIEA	NIIA	INF	INT	GDPG	MKTG
Hypothesis	-	+	-	-	+	+	-	+	+
BDO	+0.0022**				+0.5158*			+0.0231***	
BPI	-0.0038**		-0.8251**	-1.3224**	+1.0254***		-0.0720***		
MBT	-0.0076***	+0.2193***		-0.9608**	+0.9527**	-0.0891*			+0.0284*
UBP	-0.0022*	+0.1262***			+0.4769**		-0.1697***		+0.0210*
CHIB	-0.0030***	+0.0906***	+0.5728***			+0.0918***	-0.0438**		
SECB	-0.0084***			-0.9687***	+0.9196***	+0.2492**	-0.2898***		-0.0551***
RCB	-0.0044***				+0.8125***		-0.0943***	+0.0096**	
PNB				+0.6257***	+0.5241**	+0.1377*	-0.1266***	+0.0309**	-0.0206**
EW					+0.6362**	+0.1183*		-0.0197**	

Notes: ***, **, and * denote two-tail significance at the 1%, 5%, and 10% levels, respectively.

Table 8.
Multivariate Regression Results on ROE per Bank

Variable	LNA	EQA	LLGL	NIEA	NIIA	INF	INT	GDPG	MKTG
Hypothesis	-	+	-	-	+	+	-	+	+
BDO					+5.1234*	-0.6289**		+0.2480***	
BPI	-0.0333**	-0.6799*	-7.5896**	-11.6732**	+8.1312***		-0.7191***		
MBT	-0.0601***	+1.1916**		-6.7652**	+6.3796*	-0.7658**			
UBP	-0.0176*				+3.2212**		-1.1552***		

Variable	LNA	EQA	LLGL	NIEA	NIIA	INF	INT	GDPG	MKTG
Hypothesis	-	+	-	-	+	+	-	+	+
CHIB			+6.4611***			+0.6523***	-0.3625**		
SECB	-0.0744***	-0.9096**		-6.5500***	+5.9557***		-1.5416***		-0.3963***
RCB	-0.0260**	-0.5697**			+5.3661**		-0.7317***	+0.0732*	
PNB				+5.1090***	+4.0453**	+1.1287*	-1.1368***	+0.2166*	-0.1816**
EW					+4.1190**			-0.1752**	

Notes: ***, **, and * denote two-tail significance at the 1%, 5%, and 10% levels, respectively.

6.1 Conclusions – Effects of Internal Factors on Profitability

All internal factors size (-), capital adequacy (+ for ROA, - for ROE), credit risk (-), expense management (-), and income diversification (+) resulted as significant drivers of profitability for both ROA and ROE models.

On the aggregate, size has a negative relationship with both ROA and ROE. In line with the hypothesis, possible reasons include as follows. First, it looks like there are scale inefficiencies with the listed major Philippine banks considering that size (LNA) has a significant negative correlation with efficiency, as measured by total asset turnover (TATO) (correlation: -0.4774; p-value: 0.0000). Second, it can be due to the inefficient bureaucratic system and excessive red tape in the Philippines ("Philippines Country Report 2022," n.d.), as suggested by Athanasoglou et al. (2008). On individual banks, BDO's size has a significant positive relationship with profitability, but not because it has scale efficiencies (LNA has a significant negative correlation with TATO; correlation: -0.4731; p-value: 0.0004). The possible reason is income diversification considering that BDO's NIIA has a significant positive coefficient of +0.5158.

On the aggregate, capital adequacy has a positive relationship with ROA but a negative relationship with ROE. In line with the hypothesis for ROA, possible reasons include the position of Bourke (1989) that cost of funds are lower for better capitalized banks. Capital Adequacy (EQA) is tested to have a significant negative relationship with cost of capital (coefficient: -0.0268; p-value: 0.000). Moreover, an increase in capital may raise expected earnings by reducing the expected costs of financial distress, including bankruptcy as discussed by Berger (1995). Meanwhile for ROE, well-capitalized banks can be perceived to be safer, yielding lower returns commensurate with risks as claimed by Ramadan et al. (2011). Leverage (LEV), which by DuPont analysis, should have a positive relationship with ROE, indeed has a significant positive relationship with ROE (coefficient: +0.0039; p-value: 0.027). This implies that higher EQA, which is equivalent to lower LEV, leads to lower ROE. On individual banks, MBT's EQA has a significant positive relationship with ROE. This can be attributed to MBT's TATO, also a significant positive driver of its ROE (coefficient: +11.1535; p-value: 0.041), to be overpowering the EQA effect.

On the aggregate, credit risk has a negative relationship with both ROA and ROE. In line with the hypothesis, possible reasons include the explanation by Miller and Noulas (1997) that more exposure to high-risk loans increases the accumulation of unpaid loans and decreases profitability. Athanasoglou et al. (2008) adds that these loan losses have produced lower returns to many commercial banks. On individual banks, CHIB's credit risk has a significant positive relationship with profitability. Possible reason is how its interest income from more loans, more than offsets the increase in loan loss provisions by an average of PHP88 million.

On the aggregate, expense management has a negative relationship with both ROA and ROE. In line with the hypothesis, possible reasons include the discussion of Ramadan et al. (2011) that unless banks manage to transfer their costs to the lenders, operating expenses are expected to have a negative effect on the profitability. On individual banks, PNB's expense management has a significant positive relationship with profitability. This can be attributed to PNB's profitability being boosted by non-recurring major asset sales and revaluations in recent years.

On the aggregate, income diversification has a positive relationship with both ROA and ROE. In line with the hypothesis, possible reasons include Pamatmat (2021)'s discussion that improvements in profitability from income diversification can be explained by the higher margins from income sources outside a bank's regular lending activities. Computations show that there is a significant difference between the mean returns of interest income on loans (mean of 1.7%), interest income of non-loan investments (mean of 1.3%) and non-interest income on other assets (mean of 36.5%). The differences are significant at a p-value of 0.0000. On individual banks, all significant effects are consistent with the hypothesized relationship.

6.2 Conclusions – Effects of External Factors on Profitability

Externals factors inflation (+), interest rate (-), and market growth (-) resulted as significant drivers of profitability for both ROA and ROE models. Only external factor GDP growth tested as a not significant determinant of bank profitability.

On the aggregate, inflation has a positive relationship with both ROA and ROE. In line with the hypothesis, possible reasons include the ability of listed major Philippine banks to predict inflation accurately which allows them to adjust interest rates in the desired direction to increase profit. Ramadan et al. (2011) emphasizes that failure to accurately predict inflation could raise costs due to imperfect adjustment of interest rates and thus adversely affect bank's profit. On individual banks, inflation has a significant negative relationship with MBT's and BDO's profitability. Evidence for inflation anticipation will be included in areas for future research.

On the aggregate, interest rate has a negative relationship with both ROA and ROE. In line with the hypothesis, possible reasons include the claim of Seabury (2020) that when interest rates are high, lending activity stalls, resulting in lower bank profits. Campbell & Cochrane (1999) implies that tightening monetary policy, which is associated with reduced economic activity, increases investors' risk aversion, and decreases risk-taking behavior, thereby resulting to less lending activities for banks, which can eventually lead to less profits. Computations show that change in the LN of gross loans (CLNGL) has a significant negative correlation with change in interest rate (CINT) (correlation: -0.1846; p-value: 0.0001). On individual banks, all significant effects are consistent with the hypothesized relationship.

On the aggregate, market growth has a negative relationship with both ROA and ROE. Contrary to the hypothesis, possible reasons include the discussion by Dietrich & Wanzenried (2011) that faster growing loan volume risks that a too fast growth in loans may lead to a decrease in credit quality, leading to more loan loss provisions, and lower profitability. More competition may also come to play in a growing market which can result to more competitive rates thereby lowering bank margins. LN of gross loans (LNGL) is seen to have a significant positive correlation with LN of loan loss provision (LNLLP) (correlation: +0.5929; p-value: 0.0000). On individual banks, market growth has a significant positive relationship with MBT's and UBP's profitability. Market growth is seen to have a positive correlation with MBT's and UBP's loan growth, which could have led to the profitability improvement for MBT and UBP.

On the aggregate, GDP growth does not have a significant relationship with both ROA and ROE. Contrary to the hypothesis, possible reason is that in periods where GDP and prices are increasing, a central bank's main response is to increase interest rates (Pamatmat, 2021). Banks more quickly experience the depressive effects of the policy action than the positive effects of GDP growth and inflation (Pamatmat, 2021). On individual banks, GDP growth has a significant positive relationship with BDO's, PNB's, and RCB's profitability. On the other hand, GDP growth has a significant negative relationship with EW's profitability. This negative relationship is interestingly not backed by any previous literature. Considering this concern, this negative relationship of GDP growth and profitability of EW will be included in areas for future research. Meanwhile for BDO, PNB, and RCB, their GDP growth to loan growth correlation are as follows: BDO correlation +0.2404, p-value 0.0893; PNB correlation +0.2345, p-value 0.0976; RCB correlation +0.0068, p-value not significant. The positive relationships of GDP growth to loan growth could have led to better profitability numbers for BDO, PNB and RCB.

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DIOGENES C. DY

Reducing Carbon Emissions: Responsibilities and Actions of Chinese Enterprises

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DIALOGUE

China has since 1990 observed its National Energy-Saving Publicity Week, and the National Development and Reform Commission (NDRC) together with relevant governmental agencies make the overall arrangement for its theme and major activities every year. At an executive meeting in September 2012, the State Council designated the third day of the Week as the National Low-Carbon Day from 2013 onwards in a bid to uphold the concept of "people-oriented development" and strengthen the publicity and education on adapting to climate changes, preventing natural disasters and mitigating damages. For the whole society, the establishment of the "National Low-Carbon Day" helps to entrench the concept of low-carbon development, popularize knowledge of climate change, strengthen publicity and education on adaptation to climate changes and disaster prevention and mitigation, tackle climate change-related tasks, and achieve various targets of controlling greenhouse gas (GHG) emissions.

As the National Energy-Saving Publicity Week doesn't come in a fixed month each year, the National Low-Carbon Day also doesn't fall on a fixed date. In 2022, the National Energy-Saving Publicity Week lasted from June 13 to thus, the 10th National Low-Carbon Day was June 15 and its theme was "Achieve the Dual Carbon Goals for a Better Homestead".

It is in this context that this journal conducts an exclusive interview with China Shengmu Organic Milk Co., Ltd. (China Shengmu).

Wang Liyan: Hello, Mr. Zhang! China Management Accounting Review will run from Issue 3 in 2020 onwards a new column: Dialogue with Chairmen/CEOs/CFOs, focusing on one specific topic each issue, and the topic for Issue 2 this year is Management Accounting Review Contributing to the Dual Carbon Goals. Thanks for your presence here. As a rule of our interviews, have a brief self-introduction, please.

Zhang Jiawang: Thank you, Prof. Wang. I am honored to have an interview with you. First of all, I would like to brief you on my firm: China Shengmu, the Listing name on the HKEX, is an offshore entity legally. It is headquartered in Inner Mongolia, more known to the public as "Shengmu Hi-tech", and operates mainly on the Chinese mainland.

I graduated from Inner Mongolia Agricultural University in 2001 with a major in Horticulture, and cut my teeth in the feedstuff sector at Beijing Dabeinong Technology Group Co., Ltd. as director of PR Department, assistant to President, general manager of Development & Investment Department, vice president & general manager in Strategy & Development, and so on. As I felt my way among various management positions, I came to realize my shortcomings and gaps in my enterprise management knowledge system, and then decided to sign in for Renmin University of China's EDP, which landed me with an EMBA degree in 2010 and gave me, a "layman", a rudiment understanding of accounting. But such learning is simply limited to its pieces and bits, for example, financial accounting is mainly about preparing and releasing financial statements for outside investors, whereas management accounting instead focuses on serving internal management and providing support for the Board of Directors for decision-making.

A few years ago, I went back to my native province Inner Mongolia, working at China Shengmu, a Dabeinong Chairman's investee, as a non-executive director in September 2016 and then as general manager & legal representative of Shengmu Hi-tech and CEO & executive director of China Shengmu since April 2018.

Wang Liyan: As far as I know, China Shengmu was founded in 2009. Braving an inhospitable environment and harsh climate in the Ulanbuh Desert, it blazed a new trail in planting grass and raising herds in its early days and succeeded in forging the world's first-ever industry chain of integrated desert-related organic recycling. It cultivated forests of nearly 100 million anti-sand trees and planted organic pastures of 220,000 mu (1 mu equals to around 0.067 hectares), having turned an extensive sprawl of desert of hundreds of square kilometers into a sweeping oasis. It forged a strong raw milk brand, the only one in China having been certified by both Chinese and EU organic standards, and made remarkable achievements in environmental governance and protection. In 2014, it debuted on the main board of Hong Kong Exchanges and Clearing Limited (HKEX), becoming the first-ever issuer in the organic raw milk segment in the world. I have read the corporate profile: its stated goal is to forge the first-ever organic milk brand on the global market and turn the Ulanbuh Desert into a demonstration area in such five respects as national desertification control and development, international ecological conservation, modern planting and breeding plus intelligent recycling-enabled agricultural development, global top-quality organic milk production and national ecological civilization.

China Shengmu is a player in the dairy and herding sector and an HKEX-listed firm, and as such, its top priority in terms of corporate social responsibility (CSR) should be to present satisfactory environmental, social and governance reports (ESG reports) to its investors and a broader society. I have also read such reports it has unreleased over the years. As known to me, development and release of such reports is a compliance requirement on any firm listed on Hong Kong's capital markets. But yet, I simply want to know what is the point in its carbon emission reduction efforts? And then, why does it care so much about carbon emission reduction?

Zhang Jiawang: China Shengmu is among the early movers in preparing its ESG reports, having engaged Ernst & Young, one of the four biggest international accounting firms, in auditing its financial statements and annual reports. During audit work discussions in 2018, Ernst & Young made a detailed presentation on related regulations in Hong Kong and the HKEX's *How to Prepare an ESG Report*, assisting China Shengmu with earlier preparations, and offered its advice on its ESG action plan (as shown in Figure 1).

Wang Liyan: According to my personal understanding, development and publication of these ESG reports is to have enterprises better communicate and interact with the general public on their social responsibilities, or rather, such a requirement might as well be deemed as a pressure from society on enterprises. To have a good CSR image, it is necessary for enterprises to make some changes to their operation and management behaviors, and providing such ESG reports is exactly one of the means by which enterprises are forced to deliver on such changes.

Zhang Jiawang: Yes. You hit the nail on the head. Now that being an international entity, China Shengmu is, of course, benchmarked against international standards either in the corporate image or the operation management. In his speech at the General Debate of the 75th Session of the United Nations General Assembly in September 2020, Chinese President Xi Jinping declared: "China will scale up its Intended Nationally Determined Contributions by adopting vigorous policies and measures. We aim to have CO_2 emissions' peak before 2030 and achieve carbon neutrality before 2060."[①] China Shengmu is well aware that this is a major strategic decision by China out of its sense of responsibility of building a community with a shared future for mankind and its inherent requirement of achieving sustainable development. Achieving carbon peak and

① Xi Jinping's Speech at the General Debate of the 75th Session of the United Nations General Assembly, the website of the Chinese Central Government, http:www.gov.cn/ xinwen/2020-09/22/ content_5546169.htm.

Improvement paths	2019.9-2019.12	2020.1-2020.3	2020.4-2020.6	2020.7-2021.6
ESG regulation	· Examining the governance situation against compliance requirements · Analyzing the gaps with peers	· Enhancing the participation of the Board of Directors · Examining the disclosure boundaries · Determining major ESG risks	· Recommendations on improving ESG governance	· Continuously improve corporate governance · Releasing statements of the Board of Directors
ESG management	· Information collection standards · Examining the current state of ESG risk management · Identifying climate change impacts	· Establishing an ESG indicator system · Information collection for 2019 report · Information reliability analysis · Determining ESG risk indicators	· Training on information management · Setting environmental key performance indicators (KPIs) · Strengthening ESG risk monitoring	· Information management platform feasibility assessment · ESG risk management work plan
Information disclosure	· Examining the current state of information disclosure · Comparing with peer disclosure reports to find their merits	· Confirming the principles of report development · Outline of the 2019 report · Development of the 2019 report	· Recommendations on HKEX consultation papers	· Preparation of the 2020 report · Development of the 2020 report (Statements of the Board of Directors added)

Figure 1 ESG Action Plan

carbon neutrality ("Dual Carbon" Goals), a far-reaching systemic change, has profound implications for sectors, enterprises and even individuals, while promoting sustainable development and achieving carbon neutrality is the inherent requirement for fostering a new development pattern and promoting high-quality development. Only by thoroughly implementing the concept of sustainable development to have lower "carbon emissions" and higher "quality" can China gain long-term growth amid fierce market competition. In response to this call, China Shengmu has extended beyond ESG disclosure and compliance to ESG risk, laid out its sustainable development management framework, established and constantly improved its ESG regulation architecture and management mechanisms, and set up the Strategy & Sustainability Committee under the Board of Directors in the light of its ESG management practice and business development needs. As for specific actions, it has retained Boston Consulting Group (BCG) with its development planning and held the launch conference of Shengmu-BCG Carbon Neutrality-enabled Sustainable Development Strategy Program on July 5, 2021.

Wang Liyan: Before cutting to the chase on specific issues, would you please brief us on China Shengmu's achievements in carbon emission reduction and environmental protection?

Zhang Jiawang: Achievements? Isn't it a bit boastful, right? OK, play by your rules. Just a couple of days, *China Shengmu completed its 2021 ESG Report* (in Traditional Chinese). Now, let me walk you through its main points as follows:

• 11 storage reservoirs in the Ulanbuh Desert;

• 277.9 km power lines and 193.3 km roads (incl. 43 km asphalt pavement) in the desert;

• 33 pastures (19 organic pastures, 9 Class-S pastures and 5 GAP-certified pastures);

• Excellent desert-turned grassland of 230,000 mu, desert-turned oasis of over 200 sq. kilometers, and frosts of 97 million anti-sand trees;

• 9 organic manure fermentation facilities and 1 bio-organic fertilizer plant in the Ulanbuh Desert, totaling an RMB 7.5 billion investment;

• Full corporate membership of United Nations Global Compact (UNGC);

• Organic ecological desertification control system was listed in the Best Integrated Practices at Enterprises Category among the UNGC China Network's *Enterprises for Best Practices in Achieving Sustainable Development Goals (SDGs) (Sustainable Consumption & Production) in 2021;*

• First-ever representative entity in the herding industry and listed in UNGC's *Routes to Corporate Carbon Neutrality: Implementing Paris Agreement and Achieving UN SDGs (as shown in Figure 2 -left);*

• Listed in the World Economic Forum's *Series of Reports on New Nature Economy,* and retaining the Golden Key championship (New Nature Economy category) for its unique organic ecological sand control system (as shown in Figure 2-right).

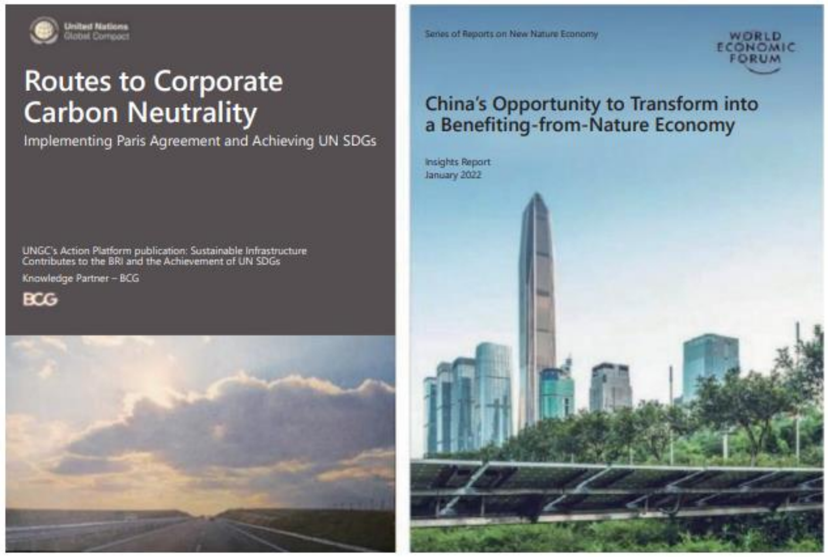

Figure 2 Internationalization

Wang Liyan: Emphasis at the board level alone can't ensure a carbon neutrality strategy to be put into action. How to have managers reach consensus on it and have it integrated into production and operation?

Zhang Jiawang: The top management, including myself, decided to address the issue of raising understanding. To this end, we turned to BCG for help in implementing the carbon neutrality strategy project. BCG is a partner in the UN Strategy for Sustainable Development, having proven ideas and advanced experience in various fields, such as sustainable development and corporate strategy. Being initiated by BCG into the carbon emission reduction domain, China Shengmu had a more promising chance to take the lead in these fields.

We had the whole operational staff participate in the project launch meeting, and reached consensus on the "30-60 carbon peak and carbon neutrality goals" proposed by the central government via workshops and discussions. We deepened our understanding, aligned our thinking with the goals, identified the objectives and tasks, front-loaded our actions, and forged ahead with the strategy of sustainable development and carbon neutrality with strong resolve and vigorous measures. Looking forward, carbon neutrality will be the most crucial threshold and benchmark for national governance and industrial regulation, mattering much to the survival and development of enterprises, financing environment and product value. Green finance will gain traction as a mainstream financial means, dictating the flow of funds and credit policies, and "green development, organic recycling, animal welfare, sustainability and carbon emission reduction" will become important standards for the iteration and upgrading of the herding sector. We must make forward-looking plans and put them into action earlier. Only by integrating the concept of low-carbon development into all aspects of our business can we manage to achieve the "carbon emission reduction" and "quality improvement". That is to say, we must ride the momentum and become a pacesetter. Only in this way can we emerge stronger amid fierce market competition and achieve long-term development.

Going forward, sustainable development and carbon emission reduction will be crucial to enterprises. And thus, they will be the top priorities for us. In essence, they are also a drastic change in management and operation patterns, which can lead to an enterprise creating value and enhancing its intrinsic value.

To undertake the strategy of sustainable development and carbon neutrality will promote China Shengmu to become the first herding entity in China in identifying carbon emission links in the herding sector and mapping out carbon peak and carbon emission reduction routes. And it will also encourage China Shengmu to set a positive example for the herding sector in achieving the "dual carbon" goals and tackling climate changes, thus contributing China Shengmu's wisdom to the realization of the "dual carbon" goals.

Wang Liyan: Indeed, it seems really to be a sacred mission as you said. However, it seems to me to be a tall order. A bit of the case of "easily said than done" on the ground.

Zhang Jiawang: Yes. To hit these goals, enterprises have to do the planning, and then have to take the actions. With its business running through the whole chain from grasslands, pastures, herding and dairy processing, China Shengmu believes in one concept: Whole Organic Industry Chain. The concept of being organic is a series of notions: organic settings, organic grasslands, organic pastures, organic planting, organic herding, organic management, organic... and culminating in organic products. That is, it is all organic throughout the whole process.

So, first of all, we have to figure out the challenges and their severity or difficulty.

The core asset in China Shengmu's whole industrial chain is cows, yet, cow breeding itself needs to be done following some patterns of lower carbon emissions. Laymen may be confused with this issue: how come does cow herding have anything to do with carbon emissions?

Yes. Indeed. Carbon emissions in the herding sector should not be ignored. The UNFAO's *Livestock's Long Shadow—Environmental Issues and Options* contends that the gas from over one billion cattle around the world is among the main "culprits" behind the global warming as these cows produce more than 150 million tons of methane a year, even more than the carbon dioxide emissions from vehicles, aircraft and other transport.

Though having a longer history, cow herding in China has still been stuck in the small scale and free-ranging pattern. Modern herding is young and technically underdeveloped. Therefore, the scale and concentration are essential for application of standardized management and advanced technologies. Thus, there is a huge potential in carbon emission reduction yet to be tapped in China's herding sector.

The carbon emissions in the herding sector are mainly methane from cattle's intestinal fermentation and feedstuff production, and sulfur oxides and nitrogen oxides from manure decomposition.

Wang Liyan: I looked at China Shengmu's documents and found that it attached great importance to "organic environments", for example, organic grasslands and organic pastures, and the dairy life cycle.

Zhang Jiawang: Yes. To have cows have organic meals, China Shengmu plants "three treasures" in improved desert fields: alfalfa, corn and oil sunflower. Neither chemical fertilizers and pesticides are used nor genetic modification techniques are employed. It operates an organic feedstuff processing plant — the first one across the country. Notably, it uses cow dung to fertilize the fields. Without the herding link in the agricultural chain, the lands would turn barren and infertile. For example, the well-known Chernozem soil in Northeast China has lost its organic matters and turns more infertile. We recycle cow dung to enrich the pastures: a piece of land of three mu can support one cow, which can in turn enrich a piece of land of three mu. So, we can each year add a one-cm-thick layer of "organic matters" onto pastures. Over time, our "Chernozem soil" layer is becoming thicker and thicker.

China Shengmu has constantly explored new modes of the organic dairy production in the Ulanbuh Desert, integrating the concept of sustainable development into its product life cycle: from planting organic grass, to raising cows, and finally recycling manure to enrich farming fields. Benchmarking against advanced international practices in herding and desertification control and based on its actual conditions, China Shengmu faithfully practices the preach of promoting sustainable development in its production and processing.

Wang Liyan: What actions has China Shengmu taken to reduce carbon emissions? How about the effects?

Zhang Jiawang: First of all, recreating the modes in its anti-desertification effort. Staying true to the idea of "Lucid Waters and Lush Mountains Are Invaluable Assets", China Shengmu has over years upheld the integrated approach in the Ulanbuh Desert: with the determination in industry development-based desertification control, it has made great efforts in preserving biodiversity, improving local settings, conserving the ecological systems and promoting high-quality development in Bayannur in the Yellow River basin, and achieved both economic and ecological benefits. Under the inspiration of the Low-coverage Desertification Control theory, it has invested more than RMB 7.5 billion in the Ulanbuh Desert since 2009 for the effort, and launched the program of industry development-based desertification control and regional microclimate improvement. It has planted 97 million trees of all kinds in the Ulanbuh Desert so far. Believing in the concept of "Balancing Planting & Herding and Promoting Organic Recycling" and adopting the desertification control approach of interplanting xerophytic trees, sandy shrubs and perennial grasses, it has built a layered ecological "tree-shrub-grass" shelter belts, turning "yellow desert" plots into "oasis banks" and fostering organic eco-systems in the desert.

Second, improving the sustainable utilization ratio of resources and reducing carbon emissions. The guiding ideology of "Balancing Planting & Herding" enables it to utilize resources in an efficient, reasonable and sustainable manner, promoting herding following the pattern of circular economy and enhancing ecological civilization. It schedules the recycling operations according to actual conditions and conducts hazard-free treatment based on the bearing capabilities of the lands. When left in natural decomposition, manure gives out a large amount of GHGs (such as methane) into air. To resolve this problem, China Shengmu exacts these GHGs trapped in manure with fermentation techniques and reprocesses them into organic fertilizers for pastures and grasslands, improves its manure yards into looking-through, well-ventilated and rain-proof I-Steel facilities to significantly shorten the fermentation cycle of organic fertilizers, and fertilizes its lands in advanced techniques to greatly improve the utilization efficiency of organic fertilizers. Keeping to the general line of prioritizing ecological conservation and green development, China Shengmu has replaced fossil energy with green power and replaced all conventional boilers in all its pastures with air-source heat pumps, significantly reducing the emissions of GHGs, such as carbon dioxide, sulfur dioxide and nitrogen oxide.

Wang Liyan: According to related reports, remarkable progress has been made in desertification control in the Ulanbuh Desert. The statistical data of Desert Forestry Experiment Center of Chinese Academy of Forestry shows that in the Ulanbuh Desert, the solar radiation has dropped by 40%-45% from the levels in the 1980s, and the amount of flying dust dropped by 80%-90%. Furthermore, the local climate has significantly improved: the average wind speed has dropped by

21.41%, the precipitation has increased by 30.36%, and even there are snowfalls in winter. The Center also estimates that the sand flowing into the Yellow River from the Ulanbuh Desert has decreased by 300,000 tons each year.

However, profitability is also a concern for enterprises, especially for a listed firm, who has to seek capital gains for its shareholders. Implementing a strategy of sustainable development, carbon emission reduction and environmental protection seems to be a big drain on enterprises' financial resources. How does China Shengmu management manage the relationship between environmental benefits and economic benefits?

Zhang Jiawang: Indeed, economic benefits and environmental benefits constitute, sometimes, a contradiction. How can we have a dynamic of they reinforcing each other? The solution is to upgrade our green operation to achieve positive economic effects through energy-saving and carbon emission reduction.

To be specific, guided by the general idea of low-carbon and sustainable development, we have rolled out a series of measures, for example, upgrading our operation into a greener practice and strengthening energy conservation management. By implementing cleaning transformation of our equipment, shifting to alternative energy sources and advocating greener office habits, we have optimized our energy consumption structures, enhanced energy utilization rates and reduced the impacts of production and operation on the environment. Therefore, we have reaped economic and environmental benefits and fostered a favorable situation where the financial effect and environmental effect reinforce each other. In 2021, we completed the cleaning transformation on 95% equipment in our pastures, replaced the traditional coal-fired boilers with air-source heat pumps, and shifted to electricity-powered equipment. In addition, we harnessed the trapped heat energy in air for heating, and thus reaped significantly higher energy-saving and power-saving effects than the traditional heating sources. We vigorously promoted green power in operations and replaced fuel-powered vehicles with alternative energy vehicles so as to enhance our utilization rate of green power to 20%-40%. Meanwhile, we vigorously promoted the concept of green office, advocated low-carbon traveling and electricity saving and encouraged employees to contribute to the firm's overall goal of energy saving and carbon emission reduction. The shelter forests of China Shengmu are expected to sink 1.1 million tons of carbon in the next 30 years.

We also strengthened water-saving management in the whole industrial chain and reduced resource waste. As rational utilization of water resources is an important guarantee to realizing the sustainable development of organic dairy business, we have attached great importance to the sustainable utilization and protection of water resources, water-saving management in the whole industrial chain, scientific water use, and reduction and prevention of water resource waste. We implemented water-saving irrigation programs, increased investments in infrastructure, built storage reservoirs, and channeled the overflowed water from the Yellow River (which would otherwise be wasted in the desert) in rainy seasons into our organic planting bases for irritating trees and grasses and replenishing groundwater sources to save water resources. As of the end of 2021, we had built 11 reservoirs, drilled 503 wells and had built up a water storage capacity enough for 12,300 mu of organic grasslands.

Wang Liyan: As for the specific topic of carbon emission reduction, how can we ensure that we embark on a science-based path to "carbon emission reduction" in our enterprise management so as to hit our ultimate goal?

Zhang Jiawang: In the context of the state pushing ahead with its "Dual Carbon" strategy, China Shengmu has moved to respond to the demands of times, played a leading role in the industry, made scientific plans for its carbon emissions, and marched towards the carbon neutrality goal for the sector. Working together with BCG, it has established scientific "carbon baseline" auditing processes and mechanisms, including for intestinal fermentation, manure management and energy consumption in its cow herding operations, undertaken its 2020 "carbon baseline" audits following scientific and international methodologies, and charted out its *Roadmap of 2020-2022 Carbon Emission Reduction Targets* against its 2020 carbon footprints in a bid to achieve its goals in a scientific and orderly manner. In 2021, it made remarkable achievements in scientific carbon emission reduction: accomplishing an 87.16% target attainment rate by reducing actually its carbon emissions to about 660,000 tons and its emission intensity by 5.7%, compared to the figures of 654,000 tons and 6.54%, respectively, as planned in the *Roadmap*, especially an YOY drop in carbon emission to 570,000 tons, 77,000 tons and 13,000 tons, respectively, in all of such three major emission segments as cattle breeding, feedstuff planting and feedstuff processing. Moreover, in the ecological carbon sequestration, it also performed rather well, with its forests, grasslands and farmlands having as of then sunk 1.11 million tons of carbon in total.

Wang Liyan: Would you please brief us on its operation system of green carbon emission reduction?

Zhang Jiawang: The *Roadmap of 2020-2022 Carbon Emission Reduction Targets* covers all of its business segments, including cattle breeding, feedstuff planting and feedstuff processing, and breaks down its 2020-2022 planned carbon emissions and carbon emission reduction rate in the order of 10,000 tons of carbon dioxide equivalent.

The GHG emissions at China Shengmu mainly are indirect emissions from electricity consumption and direct emissions from coal/diesel consumption. Driven by the green development concept well entrenched in its routine operations, it has constantly promoted alternative energy sources, enhanced its green power utilization and improved its energy mix, thus slashing the GHG emissions and the emission density at the root source. It has long committed to green working styles, advocated for low-carbon lifestyles, guided employees to practice environment-friendly notions in their daily work, encouraged paper-free office and low-energy operations, in a bid to cut its office paper consumption in half and slash office

power consumption by 15%. In addition, it has also advocated for green travel, encouraging employees to go about by pooled car or public transportation and constantly enhancing their environment-friendly awareness, in a bid to achieve the scientific carbon emission reduction goal.

In the operation and management, China Shengmu vigorously advocates and implements the concept of the Four Greens: first, green breeding — adjust feedstuff ingredients and feedstuff compositions; manage and optimize the structures of herd populations and shorten calving intervals; applies in vitro fertilization (IVF) techniques to enhance the 21-day conception rate to increase the reproductive efficiency of cows; improve the manure storing and treating techniques and enhance the fecal waste recycling efficiency by switching to bed backfill mode; and use air-source heating pumps instead of coal-fired boilers and recycle waste heat from raw milk cooling-off in milk processing workshops to increase energy efficiency; second, green planting — increase the proportion of green power used in forage planting and improve the grass and pasture environment, expand the forest coverage, and improve the efficiency of ecological carbon sequestration; third, green transportation — promote the use of new energy vehicles and enhance the replacement rate of skip vehicles, mixing vehicles and other vehicles to 70%; and fourth, green processing — refit feedstuff processing equipment, optimize the energy use composition and use low-methane feedstuff additives, such as yucca extracts.

China Shengmu will continue to optimize its desert-related organic recycling industry chain integrating "planting, breeding and additive-processing" to constantly contribute to sustainable development. It will continue to advance social progress and all the Paris Agreement-oriented commitments by leveraging its business strengths, and pursue sustainable development practices, quantify its sustainable development standards, and actively explore the approaches of developing "zero-carbon" pastures and producing "zero-carbon" milk products.

Wang Liyan: Thank you, Mr. Zhang, for your detailed introduction. Last words, I recently noticed two pieces of news: You, as China Shengmu President, are honored as the 2022 SDG Pioneer in China, and China Shengmu is presented with the industry highest-profile Golden Key-Championship for its unique organic ecological desertification control system in the Golden Key – China Action for SDGs event, winning high recognition from review experts in the "New Nature Economy" category and being included in the *Series of Reports on New Nature Economy* as a sustainable development case and a model practice of new nature economy. Great congratulations on you, Mr. Zhang and China Shengmu!

Zhang Jiawang: Thank you, Prof. Wang, for your attention!

Wang Liyan: Indeed, outstanding achievements over the recent years. There is still a long way to go, though. And what is your view of the prospects of China Shengmu?

Zhang Jiawang: All countries in the world have realized that tackling climate changes is one of the most severe challenges, and achieving carbon neutrality earlier is the inevitable choice for mankind. China is the largest developing country in the world, and its central government has made its promise of accomplishing carbon peak and carbon neutrality, which is a huge challenge for the herding sector. Rising to this challenge and setting its sight on long-term development, China Shengmu will, as it has always done, reshape its tactics from passive reactions to proactive moves and turn adversity into opportunities, blaze new trails in developing carbon neutrality pastures following the concept of eco-friendly and green development, enhance the whole process effective use of the resources, respect the nature, reduce carbon emissions, and achieve harmonious coexistence between mankind and nature.

In the end, I want to say a little more about UN SDGs once again (as shown in Figure 3).

In pursuing its sustainable development strategy and management practice over years, China Shengmu has closely examined the UN's 17 goals, carefully identified the social responsibilities and major stakeholders in each link of the whole industry chain, and made specific responses against 10 of these goals (No. 1, 3, 5, 6, 8, 12, 13, 15, 16, 17), analyzing their contents and articulating relevant measures. China Shengmu strives to fulfill its due responsibilities to the whole society and deliver values to all its stakeholders with its actual actions.

Thanks to its positive practice and contribution to the UN SDGs, China Shengmu's unique organic ecological desertification control system was listed in the UNGC's *Enterprises for Best Practices in Achieving SDGs (Sustainable Consumption & Production) in 2021*. In this regard, China Shengmu will continue to work hard.

Wang Liyan: Thank you very much, Mr. Zhang, for sharing with us your firm's actions on sustainable development, carbon emission reduction and carbon neutrality, as well as your deep thinking and insights. We believe that these views are both a significant inspiration to enterprise managers and management accounting scholars and a robust boost to the joint effort from industries, universities and institutes in promoting management accounting to deepen its practical development and research of achieving the "dual carbon" goals.

Looking forward to more in-depth exchanges with you.

Thanks!

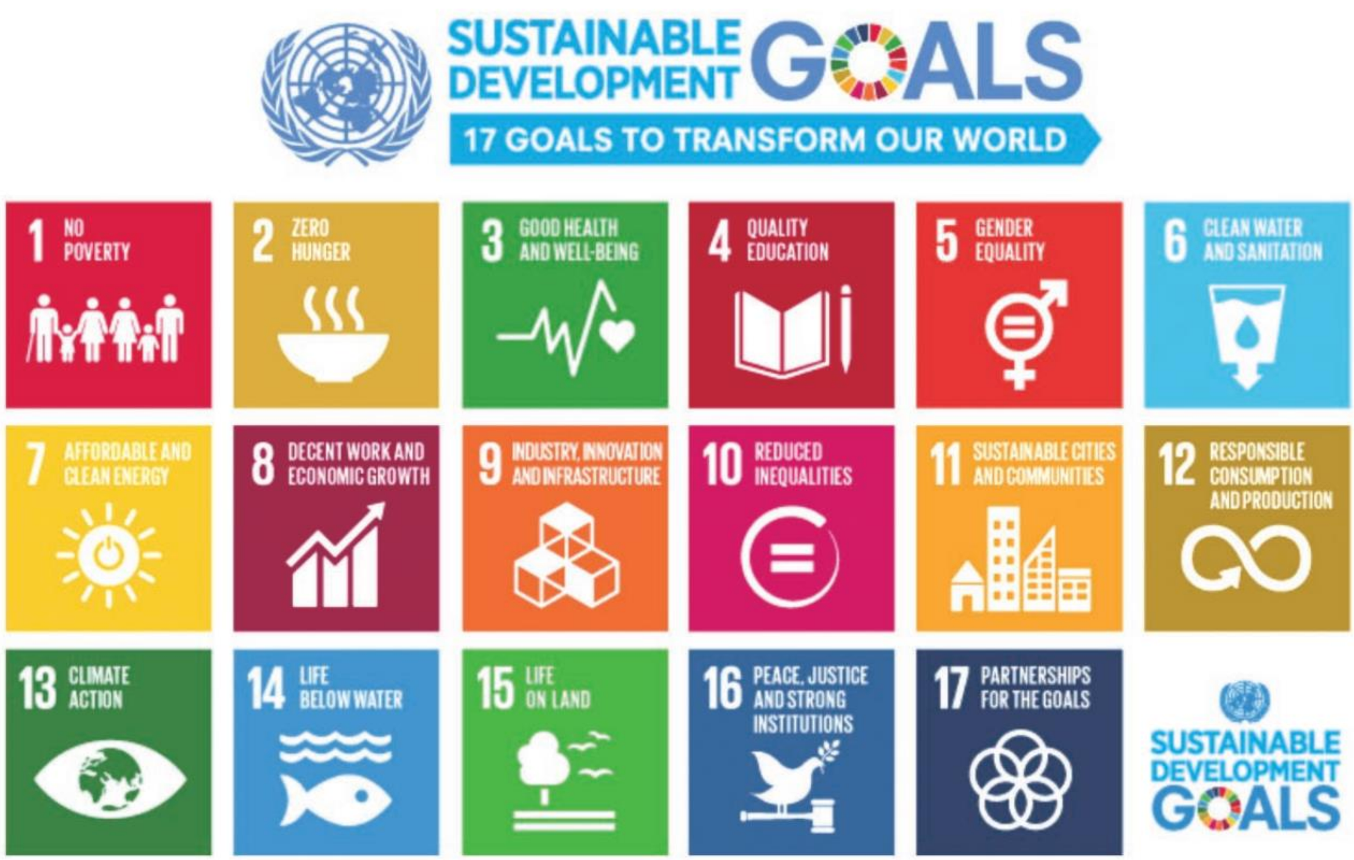

Figure 3 UN SDGs

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