Unappreciated Depreciation: Connecting the Line of "What Counts" and "How to Count" Company's Sustainable Assets

Putu Yunartha Pradnyana Putra*, Made Pramana Putra, I Putu Sriartha
Universitas Pendidikan Ganesha, Singaraja, Bali, Indonesia
*putuyunartha.pradnyana.putra@undiksha.ac.id

Article History:
Date submitted:
November 16, 2022

Date accepted
August 27, 2023

Date published:
August 29, 2023

Citation:
Putra, P. Y. P., Putra, M. P., & Sriartha, I P. (2023). Unappreciated Depreciation: Connecting the Line of "What Counts" and "How to Count" Company's Sustainable Assets. *Jurnal Ilmiah Akuntansi dan Humanika*, 13 (2), 185-194.

***Keywords**: depreciation rate; economic value; accounting policy; manufacturing*

Abstract

Little is known about the phenomenon of depreciation charged from both economic and accounting point of view. This article addresses the lack of discussion related to depreciation charged, which is currently an important factor in determining the company's performance. Based on financial report data published by public manufacturing companies in Indonesia, we estimate that an aggressive and consistent depreciation charged will be appreciated by investors in the capital market. In addition to the important role in determining the company's performance, we observe that depreciation charged has an equal position with other operating costs. Finally, we identify that depreciation charged can be viewed as an early perceived loss for investors and others.

Introduction

Depreciation is one of the components of accounting and economics that users of financial statements are most familiar with, but it is also one of the most difficult to understand (Barth, 2000, 2014). This phenomenon is supported by the condition in which the depreciation charge involves managerial assumptions. It is very difficult for these users to "question" these assumptions, given the time and distance constraints between them and the company. However, the trend of depreciation rates in companies in various industries is increasingly conspicuous (Li & Hall, 2020; Nadiri & Prucha, 1996). Investors and creditors want to know how the physical assets owned by the company are able to work efficiently in order to provide economic benefits.

Research related to depreciation rate trends for specific industries has not been widely carried out, including in the manufacturing industry. This industry uses relatively high capital stock, yet there are still few studies that want to identify the efficiency of using physical assets. In addition, plenty of financial statement users consider depreciation only from the point of view of reducing the company's book value (Dichev, 2008; Schündeln, 2013; Welc, 2022). This condition is quite far from reality, where companies currently recognize both tangible and intangible assets in relatively large amounts. Focusing on decreasing capital stock can reduce these distortions in the understanding the concept and practice of depreciation.

The depreciation rate can be regarded as a top-line trigger for other economic indicators such as revenue growth and efficient use of resources. Interestingly, these indicators tend to be more popular to be explored by academics and practitioners (Schündeln, 2013). Depreciation is often used as an assumption in research that wants to identify and analyze some more popular indicators. This is probably due to the definition and operation of depreciation which involves a lot of judgments.

The use of the depreciation rate in the company's financial analysis is often invisible. Financial statement users tend to use popular financial ratios such as Return on Assets (ROA) and Return on Equity (ROE) without paying considerable attention to the depreciation rate (Alarussi & Alhaderi, 2018; Sultan & Adam, 2015; Welc, 2022). However, some users usually begin to question the depreciation policy of the company's management when the company is experiencing financial problems. Depreciation is an economic real cost, but somehow the existing accounting principles make the users tend to look at the opposite direction.

The depreciation rate gets little attention from practitioners and academics because it perceived to be less-material parameter of financial performance. One of the condition is when a company that already has complex physical capital, but does not have the ability to measure its value every now and then. However, the depreciation rate has a big role in determining the present value of physical capital (Nadiri & Prucha, 1996; Nerlove et al., 1993). This is generally used in the form of forecasts based on cross-firm or a time-series study that focuses on companies in a particular industry.

Estimating the depreciation rate is both complicated and challenging. The management of a company already had a difficult task in identifying and measuring company's assets. Based on this condition, the depreciation rate is often become an "assumed" parameter for other economic measures (Nadiri & Prucha, 1996). However, there is no guarantee that the role of the depreciation rate as a constant parameter can be consistent with the expected results.

Depreciation is an unappreciated concept that actually has the purpose of "appreciating" the value of an asset. Common people can imagine that the value of an asset tends to fall, inversely proportional to the cost of maintaining it. The concept of depreciation is problematic when we look only from an accounting point of view. Not to mention when these users of financial statements try to compare the depreciation of physical assets between those with high and low durability of useful life. The phenomenon makes research related to the depreciation rate still likely to be essential.

Previous studies empirically identify the depreciation rate based on information on the selling price of products/services as a result of the use of cumulative assets (Brignall et al., 1991; Castanheira et al., 2014; Nechaev et al., 2022; Phusavat et al., 2011). However, this concept only describes depreciation as part of the cost of the products sold. In contrast, companies often charge disproportional depreciation expenses to certain products/services. This is motivated by the assumption that assets are perceived to deliver unlimited economic value to the company.

We try to identify and explain the trend of depreciation rate based on the company's annual cash-flow for asset acquisition (capital expenditure). This approach is relevant considering the common corporate practices of comparing the acquisition of new assets and the usage value of acquired assets. The comparison between these rationality of charging depreciation expenses and the level of capital expenditure also shows the management's point of view in seeing the opportunity costs related to capital asset management.

We analyze the depreciation rate per capital expenditure for the period 2012 – 2021 in manufacturing companies listed on the Indonesia Stock Exchange. Specifically, we compare the trend of depreciation rate per capital expenditure of manufacturing companies in the sub-sectors of the cement, porcelain & glass, metal, and chemical industries. We estimate that the depreciation rate per capital expenditure in the last three years tend to rise sharply compared to previous years. This was mainly driven by the COVID-19 pandemic which forced most companies to be more "aggressive" in charging costs for each realized capital expenditure. Furthermore, we hope the discussions can pave the way for further study of physical asset depreciation. In addition, the results from this study can be used as the basis for rejecting the assumption of constant depreciation rates across the company's industries, size, and even the macroeconomic perspectives.

Below, we first discuss the relevant literature on past decades. We then introduce the methodology used for the study and present the results. The last section concludes.

The Endless Debates

Depreciation issues that appear in the accounting literature has been always related to measurement and allocation (Feltham & Ohlson, 1996; Rogerson, 2008). In general, depreciation is seen as a measure of the decline in the value of fixed assets over the time of their use. This is sometimes also adjusted to the latest technological developments and changes in market behavior. The rationalization of accounting standard setters is also quite in line with these views. Up to the level of the concept, there is no significant debate on depreciation. However, problems began to arise when the depreciation measurement framework came into question. A large number of companies are continuously looking for "experts" to determine depreciation policies that they feel are in line with their strategy.

Depreciation is basically seen as a representative allocation process for physical assets and inputs needed by the company in generating economic value. This perspective often triggers debate within the company's internal and external environment. Few academics have argued that depreciation is inaccurate if viewed only as a “formality” annual cost allocation (Nadiri & Prucha, 1996; Schündeln, 2013). Some of them argue that depreciation is the cost of the asset itself. The company should even charge depreciation since the asset was first acquired, given that real cash outflows occurred.

However, the perspective that depreciation is a real cost that companies should charge as early as possible does not get sufficient support from most professions and academics. The counter argument is that the strategy of charging depreciation costs is highly dependent on the conditions of each organization (Brignall et al., 1991; Özbayrak et al., 2004). "Condition" in this case possibly refer to the phenomenon that a company's depreciation strategy can be better than others. In other words, the company has its own motive in charging depreciation. Another debate for the recognition of depreciation expense is the accuracy of the accounting measurements (Baker, 2011; Lane & Willett, 1997). The existing models are used in various ways and depend on the capital allocation strategy of each entity. This condition can encourage inconsistencies that have an impact on comparability between financial reporting entities.

The debate regarding the consistency of the depreciation method does not come from how companies view depreciation itself. Instead, this issue arises because the use of assets is expected to provide unlimited economic benefits in the form of revenues from the sale of goods and services (Barth, 2000; Nechaev et al., 2022; Rogerson, 2008). As we know, the company's ability to generate revenues also depends on several factors. In many cases, these factors come from the environment outside the company (ex. supply & demand, government regulation, interest rate). These external factors are very difficult to control by the company. Therefore, companies will prefer to focus on things that can be controlled. Depreciation is one of those “things”. In other words, it is natural that the debate is still going on. Each entity wants to use internal policies that it feels are the most appropriate and relevant. The question is, are investors and share-owners share the same point of view?

Depreciation contains both economic and accounting characteristics (Feltham & Ohlson, 1996). The economic characteristics of depreciation require it to be recognized at the closest point to when the asset is acquired. In contrast, accounting characteristics tend to allocate these expenses over a longer time horizon. In this case, the company has a fairly difficult task because the number of assets managed today is much more complex than what happened in previous decades. This complexity can encourage management to apply creative accounting in order to fulfill the financial reporting requirement.

Another important component of depreciation is the expected life of the asset itself. Although it is the main indicator in measuring the depreciation value, this factor is very difficult to measure until it is close to the actual economic value. So far, the context of asset's life expectancy has always been associated with the accounting period based on management assumptions (Baker, 2011; Barth, 2014; Dichev, 2008). In this case, management's attitude and approach can affect how the asset is used in order to obtain maximum benefit.

Instrument of Income Smoothing

Due to the nature of its recognition as a cost to performance in each of the financial year, depreciation is often used as an instrument in performing income smoothing (Atik, 2009; Grant et al., 2009; Herrmann & Inoue, 1996). Depreciation measures ultimately determine earnings which have been the primary indicator for company performance. It is very difficult to find other factors that encourage smoothing practices other than economic motivation (Grant et al., 2009). In this case, the relationship between the smoothing object (earnings) and the instrument used (depreciation) becomes unsurprisingly clear.

Most of the studies conducted related to income smoothing focus on the financial reporting aspect. On the other hand, management attitudes and approaches seem to be more relevant in approaching cost allocation issues that occur in the corporate world. Smoothing objects (earnings) tend to get more attention compared to allocation indicators that significantly affect them.

Academia will find the satisfactory condition if they can link the concept of income smoothing and the assumption of efficient capital markets (EMH) (Gassen et al., 2006; Shubita, 2015). Ironically, the phenomenon that occurs is that each company has different cost-allocation practices. This actually weakens the assumption, where the practice of "actually" depreciation allocation is likely to be within the reach of internal management. Furthermore, this phenomenon can trigger the issue of selective disclosure that can be carried out by management, even though the motive is inconclusive.

The inability of EMH in find the link between depreciation and the practice of income smoothing is caused by various research questions that are less relevant in that context. They have not even been able to confirm the actual occurrence of the income smoothing. Therefore, it can be argued that there is an absence of a causal relationship between the object of income smoothing and the instruments allegedly used in practice. A combination of economic and managerial approaches is needed to identify how a company's management views earnings and the relevant costs (Lane & Willett, 1997; Rogerson, 2008).

Finally, depreciation remains a management's allocation decision. Either it will be used as an earning projection instrument or only as a single indicator, it is back to management perspective. However, the nature of depreciation of historical cost makes it very difficult to use as a basis for forecasting activities. In addition, the practice of allocation that is full of uncertainty is often transformed into the form of strict certainty assumptions (Feltham & Ohlson, 1996; Lane & Willett, 1997; Schündeln, 2013). This makes management tend to use depreciation as a “soft landing” when panicking occurs due to economic shocks. In the end, users of financial statements are only able to accept all conditions and information that is formally available. Interpretation of asset effectiveness will be enormously difficult thing to do, especially when it is used in making capital allocation decisions.

Methods

We use the data available in the 2012-2021 financial statements of 41 manufacturing companies listed on the Indonesia Stock Exchange. We obtained these financial reports from the websites of each company. Specifically, we observe the company's depreciation expense and capital expenditure for each financial year. The results of this observation are used to measure the level of aggressiveness of the depreciation charged compared to the company's yearly expenditures to acquire assets.

We do not use the balance sheet approach because we want to identify the management point of view in developing budget for the acquisition of new assets. Therefore, we think that cash and expenditure approach is more relevant to use considering that there are real cash flows that come out of the company when acquiring assets. We also want to minimize accounting assumptions related to asset acquisition, which are mostly reflected in the balance sheet.

Kindly note that there are incomplete financial statements for the 2012-2021 period published on the respective company websites. Even though it is immaterial, it is enough to make the analysis process has several flaws that should be considered by the reader. To clean the data outliers, we assume the depreciation rate per capital expenditure is above

100% to be a maximum limit of 101%. All of the financial reports we obtain are self-reporting carried out by each company. However, this audited financial reporting is one of the provisions of the Indonesia Stock Exchange that must be fulfilled by public companies every year. As a result, this can prevent potential errors in the data we obtain.

We compare this observation of the depreciation rate per capital expenditure with the perceived value of investors, which is reflected in changes in stock prices during the same period (2012 – 2021). We assume that the aggressive depreciation charged is perceived by investors as a way for companies to appreciate asset efficiency. Subsequently, it is reflected in the movement of the company's stock price during the period. Although it looks like an event study, our analysis of stock price movement has a relatively long range period of analysis (5-10 years). We realized this situation in order to prevent the data from elements of temporary shock to certain events if carried out in a short-term basis.

Results and Discussions

One of the reasons for the unappreciative depreciation is the use of EBITDA as a measure of company performance. In some cases, the EBITDA figure is used as if there is only one indicator that can show a company's success in obtaining economic benefits from an asset. Excluding depreciation, tax, interest, and amortization costs in assessing company performance is a unique practice. In depreciation, for example, the company clearly has made asset purchase transactions in previous years. Not disclosing depreciation in the company's annual presentation is almost the same as inviting investors to "forget" the capital expenditure that the company has realized throughout the past financial year.

Accounting is the language of business that is easy to understand, but also the most difficult. The basic accounting equation for assets equal liabilities and proprietorship is equal, the difference between the two has been able to encourage various forms of bias. One of them is the emergence of the notion that depreciation is an imposition of formal costs that are not tangible cash outflows. This assumption reinforces the bias that encourages accounting users to think either that assets have a very long life (>50 years) or have no useful life at all (as evidenced by the rapid growth of the annual budget for capital expenditure). The results of the observation of the depreciation rate per capital expenditure on public companies in the cement sub-industry in Indonesia are shown in the following figure:

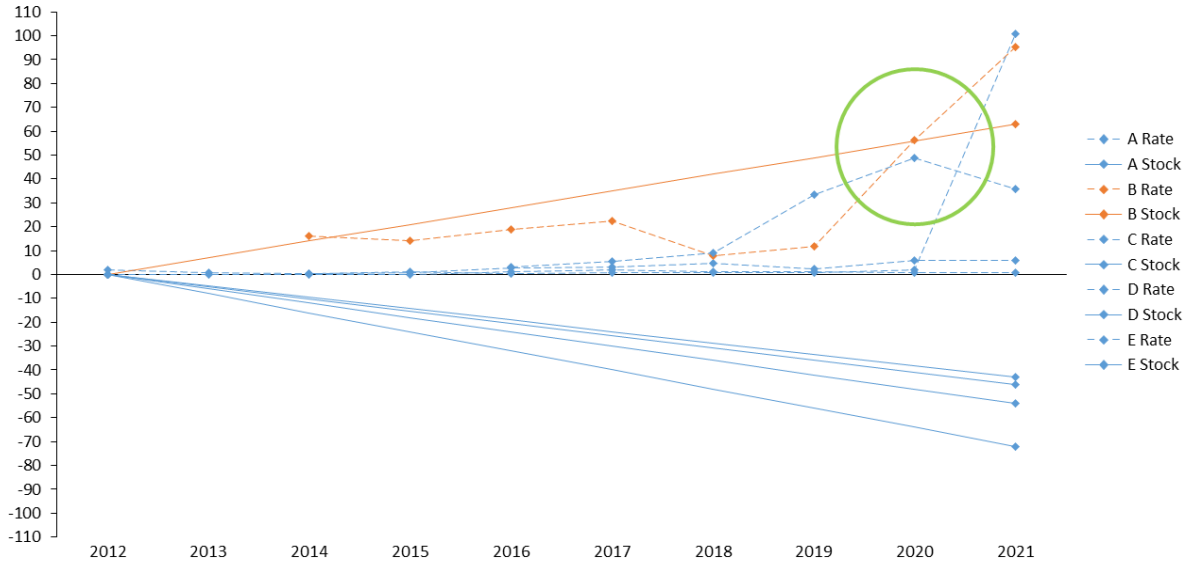

Figure 1. Depreciation rate per capital expenditure on public companies in the cement sub-industry in Indonesia (2012 -2021)

Of the five observed companies, there is one company that consistently charges depreciation in the range of 20% of capital expenditure during the 2012-2021 period (shown in the orange line). Investors are relatively appreciative of this condition, which can be seen from the increasingly attractive valuation of stock prices. On the other hand, there are some companies that charge depreciation very aggressively (> 30%) suddenly during the economic shock period due to the COVID-19 pandemic (shown in the blue line). This condition does not get a positive response from investors in the form of perceived stock prices. Either the company reduces capital expenditure to the lowest level in the period or indeed charges depreciation aggressively, investors view these things using the same perspective.

Depreciation is in fact referred to as an economic activity because it has economic value. In general, users of financial statements want to know how efficient the assets have been exploited by the company. At some years from the time of acquisition, these assets may not provide the same economic value. Furthermore, the current and future economic life of the asset will be much shorter compared to what it had several decades earlier. The aggressiveness of the depreciation charged must be "maintained" at rational level in accordance with economic facts, not based on accounting methods.

The results of this observation do not prove that accounting has no role in showing the effectiveness of asset utilization. Ironically, accounting is "needed only" when there is a going-concern issue behind an asset or even the company itself. It can be seen from the observation in figure 1 that most companies show concern about earnings figures during the economic shocks period (in this case due to the COVID-19 pandemic) by charging depreciation at a level that has never been done in previous years. This condition is unique considering that management tends to take the perspective of external conditions compared to the physical condition of the assets themselves.

However, depreciation is actually very well known to the corporate world. However, this admission only understands that the value of an asset must be reduced periodically. This form of allocation overrides the meaning of depreciation as a real cost whose risk exposure should be fully realized and disclosed since the asset acquisition occurred. The confusion between the concepts of depreciation based on economic real value and depreciation based on accounting cost allocations is unlikely to disappear unless a new term is discovered. The results of observations of the depreciation rate per capital expenditure in public companies of the porcelain & glass ceramic sub-industry in Indonesia are shown in the following figure:

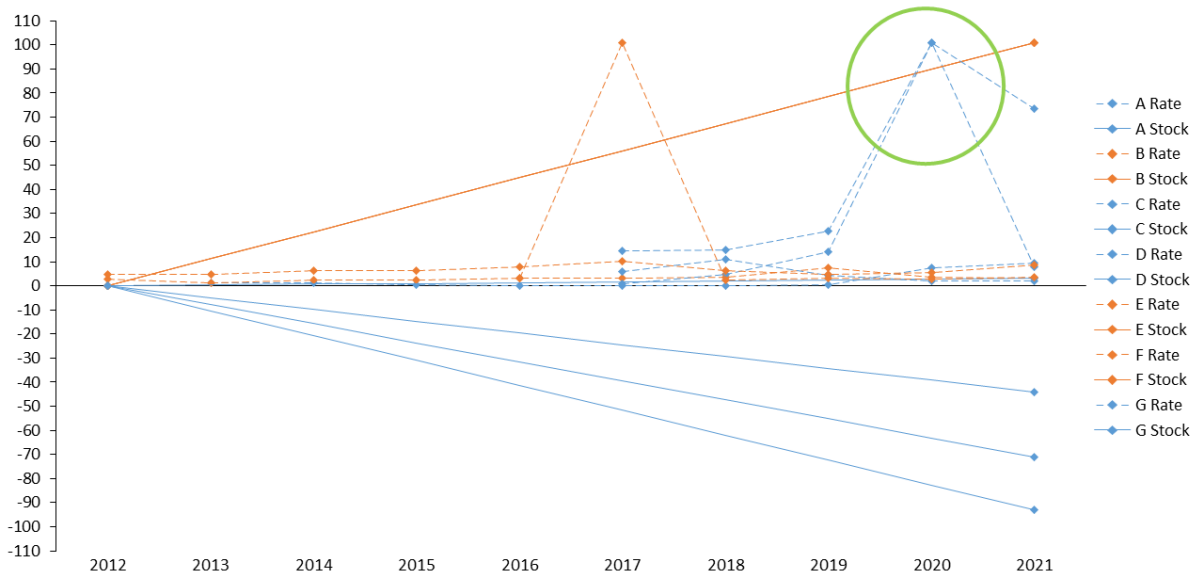

Figure 2. Depreciation rate per capital expenditure on public companies in the porcelain & glass ceramic sub-industry in Indonesia (2012 -2021)

The results of observations in figure 2 share similar result compared to previous industry in figure 1. It is not preferable for investors when the company charges depreciation very aggressively (>100%) suddenly during the economic shock period due to the COVID-19 pandemic (shown in the blue line). In this case, investors want to identify the process of decreasing the value of the asset that is close to the actual economic value. Investors have realized that the economic benefits obtained by the company have their own "costs", including depreciation costs. However, the unexplained logic of charging depreciation encourages the emergence of additional potential costs for investors: opportunity costs.

The decline in the economic value of an asset is basically never close to the accuracy of the booking entry. Timeliness is one of the “distances” that separate economic and accounting approaches to depreciation expense. In this case, the two approaches use time assumptions that have different levels of flexibility. Of course, the economic approach tends to have a more dynamic time approach than the time frame in the accounting point of view. Yet, the phenomenon that occurs is that companies use the same term for these clearly different conditions.

Another unique thing that becomes the weakness of accounting in describing the depreciation phenomenon is its ability to make depreciation as an explanatory variable of company earnings. There are still many debates regarding the possibility that a decrease in the real economic value of an asset has a direct influence on the company's ability to earn profits. Even with the matching revenue and cost principle, this causal relationship has not been consistently proven. However, the practice must carry on. Investors must be patient to get a representative understanding of depreciation with actual conditions. The results of observations of the depreciation rate per capital expenditure on public companies in the metal sub-industry in Indonesia are shown in the next page.

The results of observations in figure 3 show that most companies charge depreciation consistently and this is appreciated by the market (shown in the orange line). Observations on the metal industry provide little hope to clarify the position of depreciation. If management assumes that depreciation is an important factor in influencing the company's financial performance, it is as important as its role as a cash deduction when the asset is acquired. In this case, depreciation is no longer relevant if it is only seen as a “booked expense” whose measurement policy can be flexible at any time following the company's optimism.

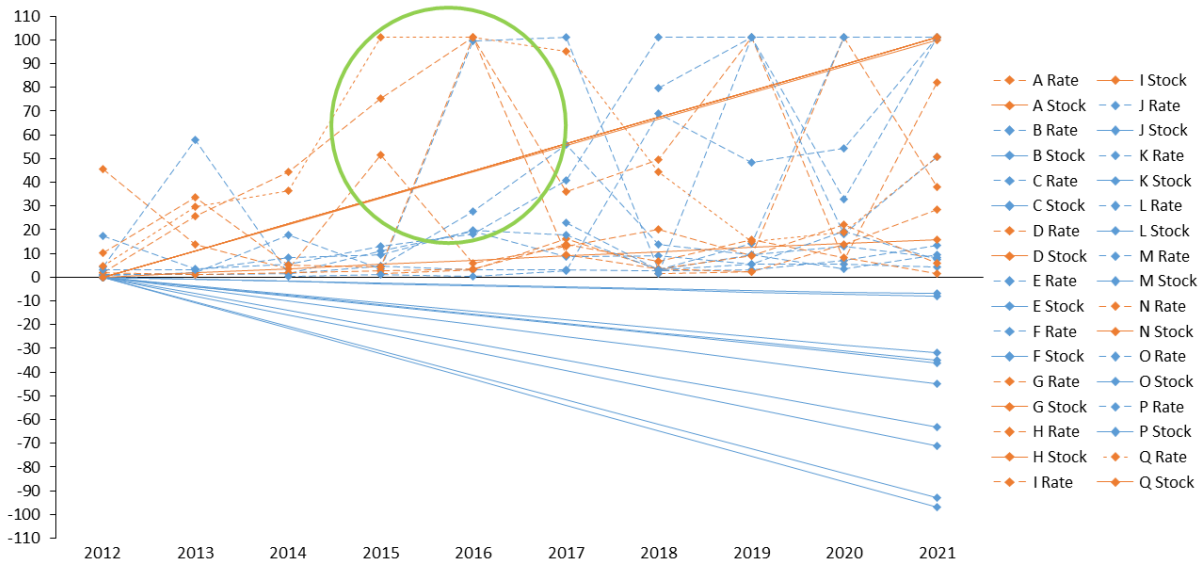

Figure 3. Depreciation rate per capital expenditure on public companies in the metal sub-industry in Indonesia (2012 -2021)

Depreciation has an equivalent position with other types of expenses (ex. expenses in the income statement). Not only equivalent as a reduction in revenue, but also an approach in recognizing the occurrence of these costs. Although it is expected to provide probable economic benefits, asset acquisition is a cost. It is normal to expect that in the future the company may not get value from these assets at all. This is what the concept of depreciation is trying to describe from an economic point of view which tends to be inconsistent with accounting logic. The results of the observation of the depreciation rate per capital expenditure on public companies in the chemical sub-industry in Indonesia are shown in the next page.

The results of the observations in figure 4 show that the industry has a stronger level of consistency in charging depreciation. This condition is sufficient to explain that depreciation is less relevant if it is considered as an estimated cost. Since an asset has been acquired by the company, at that point the company also "realizes" that future losses will be incurred in relation to this asset. However, this way of thinking will not be accepted by all parties. Some particular parties actually have the duty and obligation to maintain performance optimism in the company, so the concept of “early perceived loss” will never fit them.

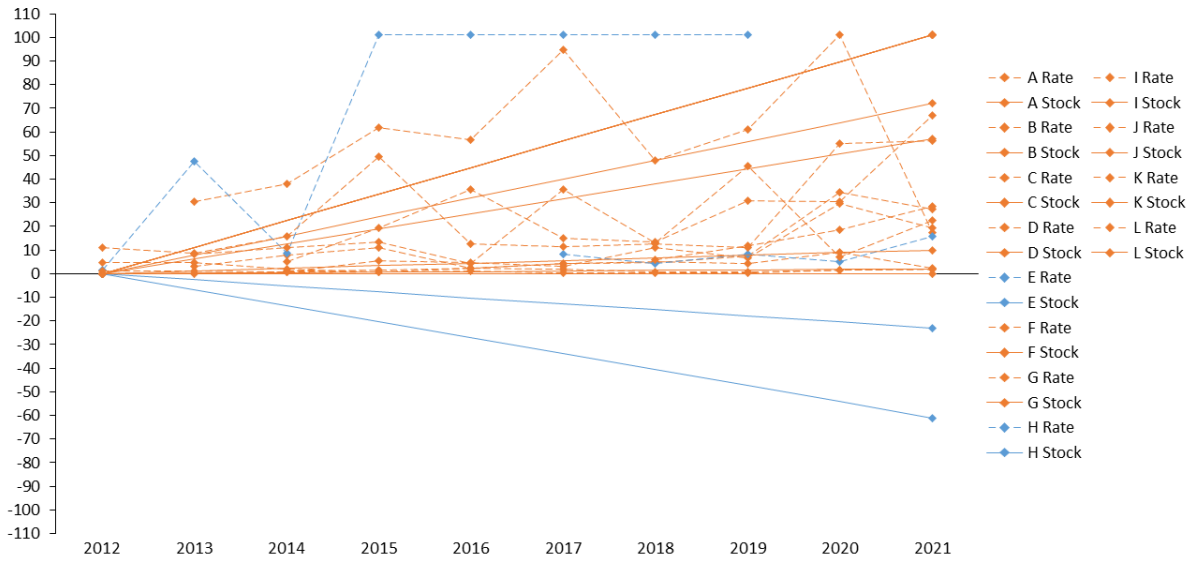

Figure 4. Depreciation rate per capital expenditure on public companies in the chemical sub-industry in Indonesia (2012 -2021)

Conclusions and Suggestions

Finally, the findings in this article cannot be separated from shortcomings that can be discussed for further research. The discussion in this article assumes that currency exchange rates have been constant over the past decade. This is deemed necessary to be considered further as a factor that influences management's view of the depreciation charged. In addition, the discussion in this article does not involve comparisons with other operational expenses which are also used as explanatory variables in measuring the company's performance on an ongoing basis. Despite providing criticism of accounting practices, this article continues to encourage further research to explore the dynamics of accounting as one of the main languages for sustainable business.

References

Alarussi, A. S., & Alhaderi, S. M. (2018). Factors affecting profitability in Malaysia. *Journal of Economic Studies*.

Atik, A. (2009). Detecting income-smoothing behaviors of Turkish listed companies through empirical tests using discretionary accounting changes. *Critical Perspectives on Accounting*, *20*(5), 591–613.

Baker, P. S. (2011). An examination of potential changes in ratio measurements historical cost versus fair value measurement in valuing tangible operational assets. *Journal of Accounting and Finance*, *11*(2), 170–176.

Barth, M. E. (2000). Valuation-based accounting research: Implications for financial reporting and opportunities for future research. *Accounting & Finance*, *40*(1), 7–32.

Barth, M. E. (2014). Measurement in financial reporting: The need for concepts. *Accounting Horizons*, *28*(2), 331–352.

Brignall, T. J., Fitzgerald, L., Johnston, R., & Silvestro, R. (1991). Product costing in service organizations. *Management Accounting Research*, *2*(4), 227–248.

Castanheira, L. G., Oliveira, N. C. de, Gonçalves, M. N., Ribeiro, R. R. M., & Sanches, S. L. R. (2014). Operational Result Through Variable Costing: Agricultural and Poultry Production. *International Journal of Food and Agricultural Economics (IJFAEC)*, *2*(1128-2016–92051), 55–70.

Dichev, I. D. (2008). On the balance sheet-based model of financial reporting. *Accounting Horizons*, *22*(4), 453–470.

Feltham, G. A., & Ohlson, J. A. (1996). Uncertainty resolution and the theory of depreciation measurement. *Journal of Accounting Research*, *34*(2), 209–234.

Gassen, J., Uwe Fülbier, R., & Sellhorn, T. (2006). International differences in conditional conservatism–the role of unconditional conservatism and income smoothing. *European Accounting Review*, *15*(4), 527–564.

Grant, J., Markarian, G., & Parbonetti, A. (2009). CEO Risk-related incentives and income smoothing. *Contemporary Accounting Research*, *26*(4), 1029–1065.

Herrmann, D., & Inoue, T. (1996). Income smoothing and incentives by operating condition: an empirical test using depreciation changes in Japan. *Journal of International Accounting, Auditing and Taxation*, *5*(2), 161–177.

Lane, J., & Willett, R. (1997). Depreciation need not be arbitrary. *Accounting and Business Research*, *27*(3), 179–194.

Li, W. C. Y., & Hall, B. H. (2020). Depreciation of business R&D capital. *Review of Income and Wealth*, *66*(1), 161–180.

Nadiri, M. I., & Prucha, I. R. (1996). Estimation of the depreciation rate of physical and R&D capital in the US total manufacturing sector. *Economic Inquiry*, *34*(1), 43–56.

Nechaev, A. S., Zakharov, S. V, Barykina, Y. N., Vel'm, M. V, & Kuznetsova, O. N. (2022). Forming methodologies to improving the efficiency of innovative companies based on leasing tools. *Journal of Sustainable Finance & Investment*, *12*(2), 536–553.

Nerlove, M., Razin, A., Sadka, E., & von Weizsäcker, R. K. (1993). Comprehensive income taxation, investments in human and physical capital, and productivity. *Journal of Public Economics*, *50*(3), 397–406.

Özbayrak, M., Akgün, M., & Türker, A. K. (2004). Activity-based cost estimation in a push/pull advanced manufacturing system. *International Journal of Production Economics*, *87*(1), 49–65.

Phusavat, K., Comepa, N., Sitko-Lutek, A., & Ooi, K. (2011). Interrelationships between intellectual capital and performance: Empirical examination. *Industrial Management & Data Systems*, *111*(6), 810–829.

Rogerson, W. P. (2008). Intertemporal cost allocation and investment decisions. *Journal of Political Economy*, *116*(5), 931–950.

Schündeln, M. (2013). Appreciating depreciation: Physical capital depreciation in a developing country. *Empirical Economics*, *44*(3), 1277–1290.

Shubita, M. F. (2015). The impact of income smoothing on earnings quality in emerging markets: Evidence from GCC markets. *Journal of Accounting in Emerging Economies*.

Sultan, A., & Adam, M. (2015). The effect of capital structure on profitability: An empirical Analysis of listed firms in Iraq. *European Journal of Accounting, Auditing and Finance Research*, *3*(2), 61–78.

Welc, J. (2022). Financial statement analysis. In *Evaluating Corporate Financial Performance* (pp. 131–212). Springer.