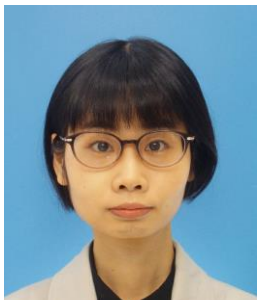
Are Earnings Announcements More Important Than Other Corporate Information?

Junko Jinushi



Junko Jinushi

BA in Commerce, Hitotsubashi University, 2019; MA from School of Business Administration, Hitotsubashi University, 2021; PhD student, School of Business Administration, Hitotsubashi University, 2022-present.

Contact point: bd211002@g.hit-u.ac.jp

Abstract: The purpose of this paper is to determine whether earnings announcements are an important information source compared to other publicly available information (management forecasts, analyst forecasts, securities reports, timely and voluntary disclosure documents, and disclosure documents under the Financial Instruments and Exchange Act). The results indicate that earnings announcements are an important information source for investors and securities analysts because they provide useful information for investment decisions on a regular basis. The results of this paper have implications for the policy evaluation of quarterly disclosure and the simplification of earnings announcements.

1 Introduction

With a history of more than 40 years, earnings announcements (*Kessan Tanshin*) have been considered one of the most important sources of corporate information for investors (Tsuchimoto and Iinuma, 2007). Public comments received by the Tokyo Stock Exchange in 2016 from investors, analysts, institutional investors, and others concerning 'improvement in the degree of freedom regarding the format of earnings reports and quarterly earnings reports' can be considered to indicate a high level of interest in earnings announcements by capital market participants.

However, it is not clear to what degree earnings announcements provide important information for investors in terms of providing new information to the stock market. This paper examines whether earnings announcements are important information or not, assuming that information is important if it provides new information that is useful for investment decisions and causes stock prices to fluctuate. In other words, information that is not necessary for making investment decisions or information that has already been disclosed in other documents is considered to be overweighted and not material information.

Although the importance of earnings announcements has been examined in the US, different conclusions have been drawn depending on how each piece of information is compared, measured, and defined. Ball and Shivakumar (2008) estimated R^2 when regressing annual returns on announcement date returns, while Beyer et al. (2010) estimated partial R^2 and showed that earnings announcements provide less new information than other public information (e.g., earnings forecasts),Lev and Gu (2016) found that the partial R^2 of financial reports combining earnings announcements and 10K and 10Q[1] is declining, while analyst forecasts and SEC filings not related to accounting have risen since 2000. These results suggest that earnings announcements provide less additional information than other information. In contrast, Basu et al. (2013) took issue with the fact that Ball and Shivakumar (2008) did not consider differences in disclosure frequency. Basu et al. (2013) showed that earnings announcements are still important information given the frequency of disclosure.

As mentioned above, studies on the importance of earnings announcements in the US have been accumulated, but there are not many that examine the importance of earnings announcements in Japan. In particular, because the information environment differs between Japan and the US, the US results do not necessarily apply to Japan; for example, in Japan, earnings forecasts are de facto institutional disclosures, and about 96% of companies disclose earnings forecasts (Asano, 2018), while in the US, earnings forecasts are voluntary disclosures and analyst forecasts play a leading role (Ota, 2007).

[1] 10K and 10Q are documents that are equivalent to annual Japanese securities reports and interim and quarterly reports, respectively.

Given that earnings forecasts and analyst forecasts are factors that influence the importance of financial results[2], it is not clear whether the same results can be obtained in earnings forecast-driven Japan as in the analyst forecast-driven US. Therefore, it is necessary to re-examine the importance of earnings reports using Japan as a sample.

This paper organizes the differences in the measurement methods of prior studies and examines the importance of overall information at the time of earnings announcements through multiple measurement methods. The reason for examining the importance of all information at the time of earnings announcements rather than just earnings announcements themselves is that it is difficult to identify the effect of earnings announcements and other information on the date of earnings announcements on stock price. The reason for using multiple measurement methods is that prior studies have drawn different conclusions depending on how each piece of information is compared and how it is measured. In addition, in order to examine whether or not all information at the time of earnings release is important information, a comparative benchmark is necessary. In this paper, management forecasts, analyst forecasts, securities reports, timely and voluntary disclosure documents, and disclosure documents under the Financial Instruments and Exchange Law are used as benchmarks.

The contribution of this paper is threefold. First, by using multiple measurement methods, it clarified the impact of different measurement methods on the results; Basu et al. (2013) pointed out the possible influence of measurement methods with respect to the differences in conclusions from Beyer et al. (2010). By using four measurement methods, this paper clarifies the impact of different measurement methods on the results. Second, this paper is believed to be the first to make an exhaustive comparison of the materiality of earnings announcements and other public information in Japan. Such an exhaustive comparison reveals how much new information each piece of information provides relative to the others. A similar study to this paper exists in Otogawa and Moriwaki (2017), which compares the usefulness of earnings announcements and securities reports. This study is similar to my paper in that it compares earnings announcements with other publicly available information, but my paper extends the work of Otogawa and Moriwaki (2017) by making a more comprehensive comparison. Third, this paper presents the robustness of the results of Otogawa and Moriwaki (2017), who analyzed by event study using tick data. This paper showed that consistent results are also obtained when analyzed with R.[2]

The structure of this paper is as follows. Section 2 defines the public information to be analyzed. Section 3 describes research design, and Section 4 presents the results. Section 5 is the conclusion.

[2] If earnings information is incorporated into the stock market prior to earnings announcements through management forecasts and analyst forecasts, the importance of earnings announcements will decline, as the amount of additional information provided to the stock market by earnings reports will be minimal.

2 Public Information to be Verified

This paper examines how important overall information at the time of earnings announcements is to investors by comparing it with five other types of corporate information (management forecasts, analyst forecasts, securities reports, timely and voluntary disclosure documents, and disclosure documents under the Financial Instruments and Exchange Law). The definitions of each type of information are as follows.

Earnings Announcement (EA)

I define 'earnings announcement' as the quarterly condensed financial statements (*Kessan Tanshin*) required by stock exchange regulations. This paper does not focus on specific accounting figures in earnings announcements, but rather on all information disclosed in earnings announcements.

Management Forecast (MF)

In Japan, it is common practice to disclose management's earnings forecasts for the next fiscal year in earnings announcements. In addition, when the difference between that forecast and the latest forecast reaches a certain level, companies must announce the revised forecasts immediately (under Securities Listing Regulations Rule 407). In this paper, I define 'management forecast' as the first published earnings forecast or any revision of that forecast.

Analyst Forecast (AF)

Analysts rate stocks on a five-point scale of 'Strong Buy', 'Buy', 'Neutral', 'Sell', and 'Strong Sell'.[3] In this paper, 'analyst forecast' is defined as the average change in the numerical value of each analyst's five-level rating.

Securities Report (SR)

Quarterly reports, interim reports, and annual securities reports are defined as 'securities reports' as stipulated in the Financial Instruments and Exchange Law. Disclosure of quarterly reports began with the fiscal year disclosed on 1 April 2008. Therefore, for periods prior to that, only annual securities reports and interim securities reports are covered.

Timely and Voluntary Disclosure (TD)

Listed companies are required by the listing rules of stock exchanges to disclose timely disclosure information through TDNet when they make decisions that are important for investors to make investment decisions. TDNet is used not only for timely disclosure but also for voluntary disclosure

[3] For consensus analyst forecasts, I use the Capital IQ Estimate (CIQ Estimate) provided by Capital IQ.

by companies. In this paper, documents disclosed through TDNet other than financial statements and management forecasts (‘dividend forecasts’, ‘issuance of shares and stock acquisition rights’, ‘acquisition of treasury stock’, ‘additions and corrections to disclosure documents’, ‘PR information’, ‘corporate governance report’, and ‘other timely disclosure documents’) are defined as ‘timely and voluntary disclosure’. Data for timely and voluntary disclosure is obtained from *eol* (Pronexus Inc.).

Legal Disclosure (LD)

In this report, documents in the secondary market required by the Financial Instruments and Exchange Law (‘extraordinary reports’, ‘tender offer notifications, tender offer withdrawal notifications, and tender offer reports’, ‘status reports on purchase of own shares’, and ‘large shareholding reports and change reports’), excluding quarterly reports, interim reports, and annual securities reports, are defined as ‘legal disclosure’. Data is obtained from *eol*.

Each of the above disclosures plays a unique role and is important in its own context. For example, earnings announcements and securities reports play the role of providing periodic financial information. In particular, the former emphasize the importance of speedy reporting, while the latter enhance credibility by requiring audits and making it possible to hold companies legally liable if misstatements are confirmed. In addition, the disclosure content of securities reports is more diverse than that of earnings announcements and includes much qualitative information (e.g., company history, composition of directors and shareholders, etc.). Timely and voluntary disclosure and legal disclosure are intended to promptly provide information useful for investment decisions that has arisen before the disclosure of earnings announcements and securities reports. Although there is much overlap between the two, the former is broader in scope and includes information disclosed voluntarily by companies. In contrast, the latter is a legal document, so its scope is smaller, but it serves to enhance the reliability of the information. Finally, analyst forecasts and management forecasts provide forward-looking information rather than historical information, with the former communicating forward-looking information by outsiders and the latter by insiders.

As described above, each piece of information plays a different role and is not necessarily comparable. However, considering that information is important when it contains new information that may impact the stock price, this paper compares the importance of earnings announcement with five other types of corporate information. Specifically, I measure the proportion of information provided by the above disclosure materials among the information incorporated into stock prices during a quarter period and compare whether information in the earnings announcement is an important source of information for investors.

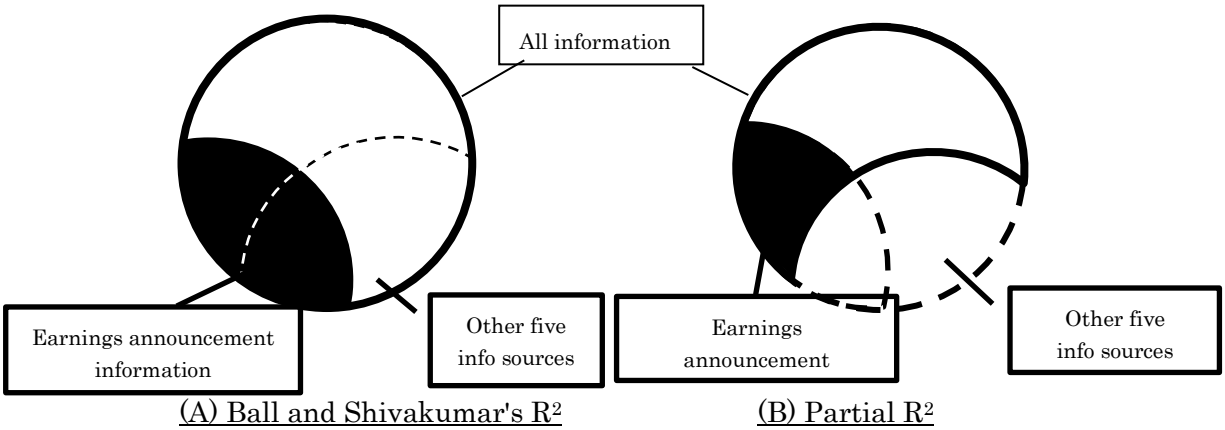
3 Research Design and Samples

(1) Research design

In this paper, I measure information content by stock price reaction on the date of information release. This is because if the publicly disclosed information contains new information, then investors are expected to trade on that information and thus stock price will change. Specifically, I use Ball and Shivakumar's R^2 used in Ball and Shivakumar (2008) and Basu et al. (2013) and partial R^2 used in Beyer et al. (2010) and Lev and Gu (2016). I measure how well stock price responses to announcements explain quarterly return variation. R^2 allows us to measure how informative each announcement is relative to all information reflected into the stock price. Basu et al. (2013) also point out that disclosure frequency affects the results. This paper examines each indicator in two different samples, 'disclosure only' and 'non-disclosure included'.

The difference between Ball and Shivakumar's R^2 and partial R^2 is shown in Figure 1. For example, let us assume that I measure the R^2 of earnings announcements: when measured by Ball and Shivakumar's R^2, I measure the share of earnings announcements information (black-colored area in Figure 1(A)) out of the total information used by investors (the circle in Figure 1(A)). In contrast, partial R^2 measures the share of earnings announcements information (the portion in black in Figure 1(B)) in the total information used by investors (the portion surrounded by the thick solid line in Figure 1(B)), excluding the five other information sources.

Figure 1 Difference Between Ball and Shivakumar's R^2 and Partial R^2 (for earnings announcements)

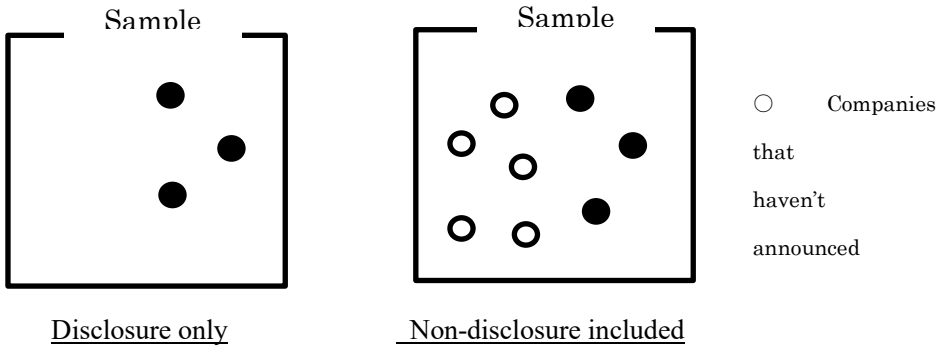


Source: Prepared by the author.

The differences between the 'disclosure only' and 'non-disclosure included' samples are shown in Figure 2. Earnings announcements and securities reports are required to be disclosed every quarter. In contrast, other disclosure documents are disclosed only when an event occurs. In 'disclosure only' I measure R^2 excluding samples that have never been disclosed in each quarter. On the other hand, 'non-

disclosure included' measures R^2, which includes the samples for which no announcements were made in each quarter. Thus, 'disclosure only' measures the importance of an announcement when disclosed, while 'non-disclosure included' measures the importance of that information to the overall stock market. For example, announcements of corporate acquisitions are considered to be a major factor explaining a firm's quarterly returns (R^2 measured by 'disclosure only' is considered high). However, the number of firms that make corporate acquisitions is small, and such news is not necessarily important information for the stock market as a whole (R^2 measured by 'non-disclosure included' is considered low). Details of each measurement method are described below.

Figure 2　Difference between 'Disclosure Only' and 'Non-Disclosure Included' Samples



Source: Prepared by the author.

A. Ball and Shivakumar's R^2

The first, Ball and Shivakumar's R^2, is a method that measures how well quarterly announcement-day returns explain the variation in quarterly returns. Specifically, it is measured by the coefficient of determination in Equation (1), which regresses firm i's quarterly abnormal returns in quarter q ($AR_{q,i}$) on its cumulative 3-day abnormal returns ($AR\_announce_{q,i}$)[4] for ±1 day before and after the announcement date.[5]

$$AR_{q,i} = \beta_0 + \beta_1 AR\_announce_{q,i} + \varepsilon_i \quad (1)$$

[4] Abnormal returns are estimated from the market model. The estimation window for β in quarter q is from q-2 to q+2 quarters. Returns for ±2 business days after the earnings release date are excluded from the estimation window. We exclude from the sample those with less than 40 non-zero returns in the estimation window and those with missing returns on the announcement date.

[5] Ball and Shivakumar (2008) and Basu et al. (2013) utilize returns rather than abnormal returns. This paper uses abnormal returns to exclude the impact of market factors on the results. The results are not significantly different when returns are used.

Quarterly earnings announcements and quarterly and annual securities reports are required to be published once per quarter. Therefore, the quarterly announcement date return corresponding to each quarterly return can be tied on a one-to-one basis. However, other announcements are not regularly published and cannot be linked one-to-one; as Basu et al. (2013) point out, the relative importance of quarterly earnings announcements and quarterly and annual securities reports is underestimated when observations that are not announced are excluded from the sample. This is because these documents are released every quarter regardless of whether the information is material or not, whereas other information is disclosed only when material changes occur. Therefore, this paper calculates R^2 in two ways: 'disclosure only' and 'non-disclosure included'. In the 'disclosure only' case, observations for which no announcements have been published for the quarter are excluded from the sample, and in cases where announcements have been published multiple times, the total abnormal return on the day of publication is used as the announcement return. In the case of 'non-disclosure included', if there is no corresponding announcement for a given quarter, the abnormal return for a randomly selected day from that quarter is used as the announcement return, and if the announcement has been published multiple times, the abnormal return for all announcements published in that quarter is used as the announcement return with the largest absolute value. Thus, the R^2 for other information is likely to be estimated higher for 'disclosure only' and lower for 'non-disclosure included'. In order to mitigate the effect of random selection on R^2, this paper uses the average value of R^2 after 100 similar calculations.

B. Partial R^2

Partial R^2 is measured in three steps. First, the abnormal return for a given quarterly earnings announcement date is regressed on the other five announcement date abnormal returns for that quarter (Equation (2))[6]. The residuals from this regression of the model are $\varepsilon_{.q,i}$

$$AR\_EA_{q,i} = \beta_0 + \beta_1 AR\_MF_{q,i} + \beta_2 AR\_AF_{q,i} + \beta_3 AR\_SR_{q,i} + \beta_4 AR\_TD_{q,i} + \beta_5 AR\_LD_{q,i} + \varepsilon_{q,i} \quad (2)$$

I then regress the firm's quarterly abnormal returns on the abnormal returns for the five non-earnings announcement dates for that quarter (Equation (3)). The residual from this regression of the model is $\rho_{.q,i}$

$$AR_{q,i} = b_0 + b_1 AR\_MF_{q,i} + b_2 AR\_AF_{q,i} + b_3 AR\_SR_{q,i} + b_4 AR\_TD_{q,i} + b_5 AR\_LD_{q,i} + \rho_{q,i} \quad (3)$$

Finally, I regress the second regression residual ($\rho_{q,i}$) on the first regression residual ($\varepsilon_{q,i}$) on a quarterly basis (Equation (4)), and define R^2 as partial R^2 that measures the contribution to the earnings announcements.

[6] If no announcements are published in a given quarter, the abnormal return for a randomly selected day from that quarter is used; if multiple announcements are published, the abnormal return for the day with the largest absolute value of abnormal returns is used.

$$\rho_{q,i} = \varphi + \gamma\, \varepsilon_{q,i} + \theta_{q,i} \quad (4)$$

This process is repeated for the other five announcements as well to estimate partial R^2 for each. Quarterly earnings announcements and annual and quarterly securities reports are always released on a quarterly basis, but other announcements may not be released. Similar to the model in Ball and Shivakumar's R^2, this paper computes partial R^2 in two ways, one 'including non-disclosures', which uses abnormal returns on randomly selected dates from the quarter when they are not disclosed, and the other 'disclosure only', which excludes observations with no disclosure from the sample. Like Ball and Shivakumar's R^2, I use the average of 100 similar calculations to mitigate the effect of random selection.

(2) Data and samples

The analysis in this paper is based on announcements published between 1 July 2002, when quarterly earnings data became available, and 30 June 2019, which meet the following five conditions. They are (1) general business firms listed on Japanese stock markets excluding banks, securities, insurance, and other financial firms[7], (2) firms with fiscal years ending in March, June, September, and December, (3) firms with a period of 60 days or less between the date of the fiscal year end and date of announcement of financial statements, (4) firms with a 12-month accounting period, (5) firms with the data necessary for estimation of Ball and Shivakumar's R^2 and partial R^2. For announcements other than earnings announcements, I impose two additional conditions: (6) the announcement must be disclosed on a different date than the earnings announcement[8] and (7) there must not be multiple announcements on the same date. The announcement date for each piece of information used in the analysis in this paper is the date obtained from Nikkei's *NEEDS-FinancialQUEST*, *eol*, and *Capital IQ*, while the stock return is the ex-rights and ex-dividend adjusted stock price obtained from Nikkei's *NEEDS-FinancialQUEST*. Taking into account the possibility that the announcement date is published after trading hours, I define the announcement date of the relevant document as the business day following the publication date recorded in the database.

While the primary interest of this paper is earnings announcements, 'earnings announcements' in the above research design covers all information disclosed on the date of earnings announcements (including financial results presentation materials, etc.). This is because it is difficult to estimate whether investors' use of any of this information caused stock prices to fluctuate. However, the research design of this paper has the advantage of being able to measure the importance of earnings

[7] The *Nikkei* medium classification is used.

[8] Following Beyer et al. (2010), I classify earnings announcements with other announcements as earnings announcements. Thus, earnings announcements are more likely to be rated higher than other announcements in my research design.

announcements, including the frequency of disclosure[9]. Therefore, this paper will examine the importance of earnings announcements, using all information disclosed on the date of announcement.

4. Results

(1) R^2 of each announcement

Table 1 R^2 of Each Announcement

	Earnings announcements (EA)	Management forecasts (MF)	Analyst forecasts (AF)	Timely and voluntary disclosure (TD) *	Securities reports (SR)	Legal disclosure (LD) **
Ball and Shivakumar's R^2						
(a)Disclosure only	12.7%	15.4%	11.1%	11.2%	2.6%	4.2%
(b) Non-disclosure included	-	3.4%	3.3%	5.4%	-	3.1%
Partial R^2						
(c)Disclosure only	11.9%	16.4%	12.0%	12.1%	2.7%	4.8%
(d) Non-disclosure included	-	3.1%	2.4%	5.5%	-	2.6%
Sample size						
Disclosure only	193,594	21,600	24,363	104,293	67,229	71,641
Non-disclosure included	-	193,594	193,594	193,594	-	193,594

Source: Prepared by the author.

Notes:

* More than half of the sample consists of 'Other Timely Disclosure Documents', followed by 'PR Information, etc.' and 'Additions and Corrections to Disclosure Documents', which make up three-quarters of the total. 'Other Timely Disclosure Documents', 'PR Information, etc.', and 'Additions and Corrections to Disclosure Documents' are often voluntary disclosure information and include non-financial information.

** 'Large Shareholding Reports and Change Reports' account for about half of the disclosure documents under the Financial Instruments and Exchange Law, while 'Reports on Status of Purchase of Own Shares' and 'Extraordinary Reports' each account for about one-quarter.

1. Ball and Shivakumar's R^2 is R^2 when quarterly returns are regressed on each announcement date return, respectively. Partial R^2 is partial R^2 when quarterly returns are regressed together on each announcement date return.

2. 'Disclosure only' is the result of measuring R^2 by excluding observations with no announcements in each quarter from the sample. Specifically, the observations for which the corresponding announcement has never been published in that quarter is excluded from the sample, and if the announcement has been published multiple times, the announcement return is the sum of the abnormal returns on the day it was published. 'Non-disclosure included' is the result of measuring R^2, which also includes the sample for which no announcements were made in each quarter. Specifically, if there is no announcement applicable to a quarter, the abnormal return for a randomly selected day from that quarter is used as the announcement return, and if there are multiple announcements published, the announcement with the largest absolute value of abnormal return is used.

3. In Table 1: (b) Ball and Shivakumar's R^2 non-disclosure included, (c) partial R^2 disclosure only, and (d) partial R^2 non-disclosure included use returns as of the date of the arbitrary selection in the absence of an announcement for the relevant quarter. To mitigate

[9] In order to remove the effect of other information released on the date of earnings announcements, one possible approach would be to limit the sample to announcements in which no other information is released at the same time as the earnings announcements. However, this approach has the problem of biasing the sample, in addition to the inability to measure effects including the frequency of disclosure. Observations for which no other information is disclosed on the date of the earnings announcements would be concentrated among smaller firms in the first and third quarters, which would undermine the generality of the results.

the impact of the selection results on R^2, this paper uses the average of R^2 calculated from over 100 selected dates

Table 1 shows the results of Ball and Shivakumar's R^2 and partial R^2, which measure the explanatory power of each announcement date return for two patterns of quarterly returns, 'disclosure only' and 'non-disclosure included', respectively. The table shows average R^2 estimated for each quarter.

Rows (a) and (b) in Table 1 show the estimation results from Ball and Shivakumar's model for R^2. (a) is the 'disclosure-only' result, which excludes from the sample those firms that did not have a corresponding announcement for each firm and quarter. The percentages of each type of information used by investors in each quarter are, in descending order from highest to lowest: management forecasts, 15.4%; earnings announcements, 12.7%; timely and voluntary disclosure, 11.2%; analyst forecasts, 11.1%; legal disclosure, 4.2%; and securities reports, 2.6%. Although not shown in the table, R^2 is 2.7% on the arbitrarily selected date, meaning that securities reports and legal disclosure do not supply additional information that could cause stock price fluctuations. Otogawa and Moriwaki (2017) found that securities reports do not contain additional information. The results of this paper suggest that legal disclosure also does not play a role in supplying new information.

(b) is the result for 'non-disclosure included', which uses abnormal return on an arbitrarily selected date from the relevant quarter if there is no corresponding announcement for each company and quarter. R^2 for each announcement is 3.4% for management forecasts, 3.3% for analyst forecasts, 5.4% for timely and voluntary disclosure, and 3.1% for legal disclosure, a significant decrease compared to (a). This is due to the smaller frequency of disclosure of the four announcements. For example, the number of observations where analyst forecasts are disclosed is 24,363 firm-quarters, or about 13% of the total. Therefore, R^2 for 'disclosure only' is about 11.1%, while overall R^2, which includes firms-quarters that are not disclosed, is estimated to be as low as 3.3%.

Rows (c) and (d) in Table 1 show the estimated results for partial R^2. The results for (c) 'disclosure only' are, in descending order of partial R^2: management forecasts 16.4%, timely and voluntary disclosure 12.1%, analyst forecasts 12.0%, earnings announcements 11.9%, legal disclosure 4.8%, and securities reports 2.7%. Except for earnings announcements, (a) Ball and Shivakumar's R^2 has a larger value than (c) partial R^2, but earnings announcements the opposite result. This may be due to the high correlation between earnings announcements information and other announcement information (see Table 2). The information in earnings announcements has many parts that are explained by other public information, and partial R^2 that removes this information is smaller. (d) is the result for 'non-disclosure included'. Similar to the result in (b), partial R^2 is much lower than the result in (c) because the four announcements are disclosed less frequently.

(2) Time-series transition

Table 2 Time-series Change in R^2 for Each Announcement

	EA	MF		AF		TD		SR	LD	
		Disclosure only	Non-disclosure included	Disclosure only	Non-disclosure included	Disclosure only	Non-disclosure included		Disclosure only	Non-disclosure included
Ball and Shivakumar's R^2										
2002-06	9%	18%	4%	11%	3%	9%	4%	4%	5%	3%
2007-10	10%	14%	4%	10%	3%	11%	5%	2%	4%	3%
2011-14	11%	13%	4%	13%	3%	11%	5%	2%	4%	3%
2015-19	20%	16%	4%	11%	4%	15%	7%	2%	4%	3%
Partial R^2										
2002-06	8%	18%	4%	10%	3%	8%	4%	4%	6%	3%
2007-10	9%	14%	3%	12%	2%	11%	5%	2%	4%	2%
2011-14	10%	15%	3%	14%	2%	12%	6%	2%	4%	3%
2015-19	19%	18%	3%	12%	2%	17%	8%	2%	5%	2%

Source: Prepared by the author.

Note: Results are shown for each of the four periods (2002-06, 2007-10, 2011-14, 2015-19). The table shows the average value of R^2 for each period.

Table 2 shows the results of Table 1 for each of the four periods (2002-06, 2007-10, 2011-14, and 2015-19). Focusing on the time-series changes in Ball and Shivakumar's R^2 and partial R^2 in the earnings announcements (EA), R^2 for the 2015-19 period is higher than for the other three periods. Also, comparing the R^2 of each announcement in the 2015-19 period, Ball and Shivakumar's R^2 (20%) and partial R^2 (19%) of the earnings announcements are higher than the R^2 of other announcements. Thus, the importance of earnings announcements increased in the 2015-19 period, suggesting that information on the date of publication of earnings announcements has been more important than other announcements in recent years. The same period coincides with the introduction of fair disclosure regulations, which may have increased the relative importance of public information (Chiyachantana et al., 2004).

Noting the time-series changes in other announcements, 'disclosure only' of management forecasts (MF) is highest in the 2002-06 period (18% for Ball and Shivakumar's R^2 and 18% for partial R^2) and has since declined. The reason for the decline is not clear but may be related to the difficulty in

forecasting performance (Asano, 2018) following the onset of the global financial crisis.[10] However, since the decline has been increasing in the 2015-19 period (16% for Ball and Shivakumar's R^2 and 18% for partial R^2), the decline may have been a temporary phenomenon between 2007 and 2014. Analyst forecasts (AF) have not increased or decreased significantly over the four periods. Timely and voluntary disclosure documents have gradually increased from 2002 to 2019. This result suggests that the importance of non-financial and financial information revealed in timely and voluntary disclosure may be increasing. Finally, the R^2 of securities reports and legal disclosure is low, indicating that they do not contain additional information in all periods.

5. Conclusion

This paper examines how much new information earnings announcements provide the stock market by comparing with other announcements. The analysis reveals three points. First, considering both the frequency and the volume, information on the date of earnings announcements is one of the most important sources of information for investors. Second, considering only the volume of information when disclosed, information on the date of earnings announcements is not necessarily an important source of information compared to other information. When the effects of other announcements are removed, the R^2 for earnings announcements is estimated to be lower, revealing the impact of the different measurement methods pointed out by Basu et al. (2013) on the results. Third, a time-series analysis showed that the importance of information on the date of earnings announcements has increased in recent years (2015-19); Lev and Gu (2016) measured the time-series change in R^2 for earnings announcements, 10K and 10Q combined, and found that R^2 remained unchanged. However, by estimating earnings announcements and securities reports separately, this paper shows that R^2 for earnings announcements is elevated relative to R^2 for other disclosures.

In recent years, there has been a review of the content of disclosures, such as the simplification of *Kessan Tanshin*, and the elimination of quarterly disclosure. The results of this paper indicate that earnings announcements regularly convey a certain amount of new information to the stock market and are an important source of information for investors and analysts. Therefore, we need to be cautious about oversimplifying the useful information published in earnings announcements. There is also concern that if quarterly disclosure is abolished without an increase in timely voluntary disclosure by companies, the information provided to the stock market will be significantly reduced.

However, this paper remains problematic. First, the results of this paper show that the R^2 of earnings announcements has increased during the period when *Kessan Tanshin* was simplified (2015-19). This can be interpreted as the simplified information being supplemented by other materials such

[10] The reasons for the decline R^2 in earnings estimate from 2007 to 2014 require a multifaceted examination of the frequency of revisions, the content of revisions, and other factors. However, since the primary interest of this paper is earnings reports, a detailed analysis is a topic for future research.

as financial results presentation materials. In the future, it will be necessary to examine, using detailed data, what information is particularly important on the date of earnings announcements, what information should be requested in the earnings announcements, and what information should be disclosed on a voluntary basis. Second, even if quarterly disclosure is abolished, the information provided the stock market may increase if companies increase their voluntary disclosure information. In order to assess the impact of abolishing quarterly disclosure on the stock market, it would be necessary to clarify how the decrease in information due to the change in the system would affect the voluntary disclosure behavior of firms.

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