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Preface

March 29, 2019

New Policy on Journal Referee

It has been 2 years of the journey with Journal of strategic accounting since publishing the first edit. Frequently the board of members has experienced the time on discussing unexpected difficulties to find clear path for the referee applications. The clear instruction is essential for applicant, and we have set a new policy following.

Case 1: Result of referee – "Agree" and "Disagree"

In case that the two referees result "Agree" and "Disagree" as the first result, the board of members notifies applicant of the referee result with suggested improvement for revising or editing. For the second referee result after receiving revised and edited paper, the third person referees the paper to replace the first result of "Disagree." Following options apply based on the result of the third referee's result on revised paper.

(1) Option: "Agree"

In case that study paper is qualified as "Agree" by the third referee, the board of members authorizes publishing a study paper on journal.

(2) Option: "Neutral"

In case that the third referee results as "Neutral", the board of members examines qualification to publish on meeting once again.

(3) Option: "Disagree"

In the case of "Disagree" by the third referee, the board of member notifies applicant of referee result with suggested improvement for re-editing once again. After receiving re-edited paper, a new referee examines the paper to replace the second result of "Disagree." The same process follows and repeats until the referee result obtains "Agree" for publishing or "Neutral" for examining qualification on meeting by the board.

Case 2: Result of referee – "Neutral" and "Disagree"

In case that the two a referees result "Neutral" and "Disagree" as the first result, the board of members notifies applicant of referee result with suggested improvement for revising or editing. For the second referee result after receiving revised and edited paper, the third person referees the paper to replace the first result of "Disagree." Following options apply based on the result of the third referee's result on revised paper.

(1) Option: "Agree"

In case that the third referee results as "Agree", the board of

members examines referee result of “Agree” from the second result and “Neutral” from the first result for qualifying to publish.

(2) Option: “Neutral”

In the case of “Neutral” by the third referee, the board of member notifies applicant of referee result with suggested improvement for re-editing once again. After receiving re-edited paper, a new referee examines the paper to replace the result of “Neutral.” The same process follows and repeats until the referee result gains “Agree” for publishing or “Neutral” for examining qualification on meeting by the board.

As described on page, we pursue a various account study papers to publish on the journal. Unlike other organizations, one time referee result is not the final decision. Our community accepts study papers internationally and helps applicants to publish on journal in order to contribute for the study of accounting.

NPO Global Academic Community
President Masamichi YOSHIOKA

Articles

An empirical analysis of LIFO reserve in inventory accounting —Conservative behavioral accounting of Japanese firms—

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[abstract]
In America, firms that have adopted the last-in-first-out (LIFO) method are obligated to explain their LIFO reserves (SEC Rules 5-2.5c of Regulation S-X). In Japan, the LIFO method was abolished after 2007 when accounting standard No. 9 was published by the Accounting Standards Board of Japan (ASBJ, 2008). Furthermore, as of March 2012, all Japanese firms were no longer allowed to use the LIFO method.

this study examines the conservative behavioral accounting inventory method at Japanese firms. The study estimates the amount of LIFO reserves at Japanese firms according to Imaeda [2001]. Specifically, we focus on the steel industry, manufacturers of petroleum and coal products, and manufacturers of non-ferrous metals and products.

The main result of the study is that the LIFO reserves in the periods of LIFO use were smaller than in the periods when the LIFO method was changed to another method. This result supports the hypothesis that Japanese firms are conservative in measuring inventory.

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0. Introduction

In America, firms that have adopted the last-in-first-out (LIFO) method are obligated to explain their LIFO reserves (SEC Rules 5-2.5c of Regulation S-X). The adoption of the LIFO method creates a difference between profit and loss, including a difference in the inventories of the firms that have adopted the LIFO method and those that have adopted the first-in-first-out (FIFO) method.

In Japan, the LIFO method was abolished after 2007 when accounting standard No. 9 was published by the Accounting Standards Board of Japan (ASBJ, 2008). Furthermore, as of March 2012, all Japanese firms were no longer allowed to use the LIFO method. There were three reasons for abolishing this method according to accounting standard No. 9. First, the inventory balance at the end of the period did not properly reflect its price at that period (para. 34-6). Second, the LIFO method could not reflect the accrual inventory supply (para. 34-7). Third, this Japanese accounting standard was now following the International Accounting Standards Board's (IASB) decision to abolish the LIFO method in 2002 (IFRS para.26-3).

To investigate this issue in Japan, this study examines the conservative behavioral accounting inventory method at Japanese firms. The study estimates the amount of LIFO reserves at Japanese firms according to Imaeda [2001]. Specifically, we focus on the steel industry, manufacturers of petroleum and coal products, and manufacturers of non-ferrous metals and products. The reason for this is that these firms tend to have a large amount of LIFO reserves and many of these industries had adopted the LIFO method in the past. During our research period, all the firms analyzed had adopted the LIFO method at some point, although not for the entire period. To compare the amount of the LIFO reserves in each period, we estimated these using empirical methods.

The main result of the study is that the LIFO reserves in the periods of LIFO use were larger than in the periods when the LIFO method was changed to another method. This result supports the hypothesis that Japanese firms are conservative in measuring inventory. In other words, the aim of adopting the LIFO method by Japanese firms was to lower profits. Moreover, the aim of changing from the LIFO method was to realize inventory costs sooner to be more conservative.

The remainder of this paper is organized as follows. In Section 1, we review the previous research on earnings management under LIFO adoption including Imaeda's (2001) study. We believe that Imaeda's findings support our research hypothesis. We present our methodology in Section 2 including our hypothesis, the estimation method of LIFO reserves, our sample firms and specific LIFO reserve estimation methods, and our interpretation of the application of LIFO adoption at the firms. In Section 3, we discuss the results of LIFO reserve estimations and present our analysis of the sample firms. Concluding remarks are presented in Section 4.

1. Literature review

There are many studies that discuss mandated or voluntary changes in accounting

policies. Such research can be classified into whether the changes in accounting policies lead to an increase or a decrease in the firm's profit. There are also several overseas studies on the change from LIFO adoption to other methods. These studies discuss this from the perspective of an increase in firm profit.

Pincus and Wasley (1994) examined firms that conducted voluntary changes in accounting policies, changing from LIFO to other methods. They concluded that the firms changing from LIFO had lower sales, earnings growth rates, and interest coverage ratios, and higher debt ratios than firms adopting another method.

Balsam et al. (1995) showed how to select the fiscal years when executive changes were mandated by accounting policies. They concluded that firms that increased their profits by changing from LIFO to other methods tended to select the change when their ROA (leverage) was at its lowest (highest). Their aims were to increase reported earnings and avoid auditing financial restrictions.

Further, there are several studies that discuss the accounting behavior of a firm's managers and the associated inventory method. For example, Hunt (1980) examines why firms adopt the conclusion that they can evade the conflict of financial covenants in the period under the LIFO method.

Niehause (1989) examines the relation between the LIFO method adoption and the manager's equity ratio in terms of competing interests (managers and stockholders). He states that in firms where managers hold higher amounts of stock the FIFO method is adopted. Moreover, he concludes that managers adopt the LIFO method when the stock price is rising more than the FIFO adoption advantage.

The prior studies assume that the inventory costs at LIFO firms tend to be highest when prices are high at the end of the fiscal year. It is natural to assume that higher inventory costs will be closely related to lower earnings. It also implies that LIFO firms have an unrealized gain in inventory and they can capture this by changing from LIFO to another method. However, we posit the hypothesis that there is a different theory for inventory accounting in Japan. In this context, Japanese firms display an appraisal loss or abandonment loss with the change from LIFO to another method (Yukimachi, 2015a).

Although the IASB abolished LIFO in the IFRS No. 2 (2003), there were still reasons to support the LIFO method. It is rational to consider that the cost of corresponding sales must be reflected in current price levels. Thus, LIFO guarantees the available earned surplus or earnings required for real capital maintenance.

Imaeda (2001) justified LIFO method adoption through a different perspective. To justify it, Imaeda examined LIFO method adoption using actual financial data on eight Japanese primary steel makers and eight oil refiner distributors according to Butters (1949). That study compared reserves with and without LIFO method adoption. Imaeda concluded that by adopting the LIFO method the reserves might be negative and would thereby lower the earnings calculated in the FIFO method.

Our study does not intend to verify the legitimacy of the LIFO method in accounting. However, the research of Imaeda (2001) is extremely useful as a way to verify our

hypothesis. We attempt instead, an empirical analysis that compares reserves in the LIFO method to reserves in other methods. In accordance with our earlier article (Yukimachi, 2016b), we propose to show empirically that in the LIFO method, reserves are smaller than those in the other methods.

2. Methodology

We begin by building a hypothesis to create a point of a view for the examination. We posit the following:

H1: Japanese firms select conservative behavioral accounting to decrease profits.

2.1 Estimation of LIFO reserves

Butters (1949) measured the effects of inventory on profit and loss using actual data such as national income, national business income, and firm financial report data. In an analysis of firms in America, Butters (1949) collected the following data:

[1] The national income and business income

[2] The collected statistical data of business income

[3] Individual firms' financial reports.

In this context, Butters (1949) examined specific firm data to assess the influence of business income on investment profit and loss in the LIFO method. Butters results have the following two implications. First, inventory profit and loss is huge in the year when prices drastically fluctuate. Second, each firm and industry has different amounts of inventory profit and loss. Furthermore, Butters reveals the principal factors deciding the amount of inventory profit and loss as follows:

(1) ratio of inventory with regard to total assets or net assets, (2) ratio of cost of goods sold and sales, and (3) the fluctuation of the inventory amounts.

We see that firms with large inventories, low mark-up ratios, and large inventory fluctuation have a huge amount of inventory profit and loss. Because the inventory profit and loss decides the administrative action, Butters[1949] argues that the cost allocation method is a meaningful determinant of a firm's decision-making, as inventory profit and loss has an economically important influence. From these results, Butters reveals that the LIFO method has a special importance and significance in terms of the elimination of inventory profit and loss.

As stated earlier, when a firm adopts the LIFO method in America, it is obligated to disclose the difference between market price and book value (LIFO reserves) under SEC regulation S-X. However, there is no obligation to disclose LIFO reserves in Japan. As stated, Imaeda (2001) made a trial calculation of LIFO reserves for eight Japanese primary steel makers and eight oil refiner distributors according to Butters (1949) and he selected these firms because in their industries, inventory prices easily fluctuated and their raw materials depended on imports.

LIFO reserves are estimated by multiplying the acquisition cost by the price inflation rate. For example, in the case that the commensurate inventory price changes from 100

(at the time of acquisition 10 years ago) to 120, the price inflation rate is 20%

100 (acquisition cost) × 20% （price inflation rate） = 20 (LIFO reserves).
Because LIFO reserves define the following equality, LIFO reserve present -20.

LIFO reserve = FIFO inventory – LIFO inventory

The necessary data for the LIFO reserves calculation is comprised of two elements. The first element is the purchasing time and acquisition cost of the inventory. The second is the price inflation rate between the acquisition time and the calculation time. In addition, the next three assumptions are considered in the estimation. The first is that firms adopt a periodic method for inventory accounting. The second is that an increase in inventory accrues at the time of LIFO adoption. The third is that the price inflation rate uses the price index in Japan.

In other words, the first assumption is that when the inventory increase accrues at the time of LIFO adoption, it assumes the inventory purchases were made at the beginning of each period. The second assumption is that when the inventory adoption method changes from LIFO to another method, the purchasing time of the inventory is assumed to be at the time of the change to the new method. These assumptions classify inventory into three elements (finished goods, work-in-process, raw materials), with each individual element using a price inflation rate considered as an appropriate index.

The method for estimating LIFO reserves is as follows.
(1)- (current price index ÷ price index at acquisition - 1) × a term end inventory amount
(2)- (current price index - price index for the last term) ÷ price index of acquisition × a term end inventory amount.

For the LIFO reserve estimation, (1) is the numerical value of purchasing at the beginning of the term and (2) is the numerical value of holdings from the previous term. The method for estimation uses two patterns. In the first, (1) and (2) are used for the LIFO reserve estimation. In the second, only (2) is used.

2.2 Sample firms and specific LIFO reserve estimations

Because the price of inventory is unstable and raw materials depend on imports, it is presumed that the LIFO reserve amount in the following industries is affected by LIFO method adoption: the steel industry, the manufacturers of petroleum and coal products, and the non-ferrous metals and products industry.

Our examination identified 29 Japanese firms and estimated the LIFO reserves, classified into three categories: raw materials, work-in-process, and finished goods (data on the firms were collected from Financial Quest (Nikkei Media Marketing)). The breakdown of the identified firms is as follows. There were 13 firms from the steel industry, four manufacturers of petroleum and coal products, and 12 from the

non-ferrous metals and product industry.

These firms adopted the LIFO method between 1995 and 2014. We set this distinct period of time to manage the effect of price index data. For our study, the Corporate Goods Price Index (2010 Base) was used to estimate LIFO reserves[i]. The data calculation period is limited to 1995 to 2015.

The financial data from the firms are used on a non-consolidated basis. Although financial data on a consolidated basis is pertinent, such financial data were limited from 2001 to 2014. To perform a long-term examination, our study used the financial data on a non-consolidated basis.

Specific price index data using LIFO reserves estimations were as follows. Finished goods used the Producer Price Index. Specifically, the numerical value of petroleum used the data for "petroleum and coal products" in "All commodities/major group," the numerical value of steel used the data for "Iron and steel" in "All commodities/major group," and the numerical value of non-ferrous metals used the data for "non-ferrous metals" in "All commodities/major group."

The numerical value for raw materials used the Import Price Index. Specifically, the numerical value of petroleum used the data for "crude petroleum" in "petroleum and related products" and the numerical value of steel used the data for "iron ores" in "metals and related products." The numerical value of non-ferrous metal used the average value among "copper ores," "nickel ores," and "zinc ores" in "metals and related products."[ii] The numerical value of work-in-process used the average value between raw materials and finished goods in any industry.

As we have said, there are several requirements and assumptions in LIFO reserve estimations. Therefore, an accurate estimation of LIFO reserves is difficult. However, there may be sufficient information to review the effect of LIFO reserves on the firms identified here. The numerical value of each inventory item (raw materials, work-in-process, finished goods) is as follows in Table 1.

Table 1. The inventory price index for each industry

(1) The price index of manufacturers of petroleum and coal products

year	raw-materials(crude petloreum)	work-in-process	finished goods
1995	26.9	35.15	43.4
1996	35.1	40.5	45.9
1997	39.6	44.45	49.3
1998	29.5	37.95	46.4
1999	29.8	38.45	47.1
2000	46	50.55	55.1
2001	46.3	52.15	58
2002	46.7	53.85	61
2003	50.8	57.5	64.2
2004	57.2	63.7	70.2
2005	81.5	83.15	84.8
2006	106.5	103.3	100.1
2007	116.2	111.15	106.1
2008	152.2	141.3	130.4
2009	81.3	83.8	86.3
2010	100	100	100
2011	125.2	119.6	114

(2) The price index of the steel industry

year	raw-materials(iron ores)	work-in-process	finished goods
1995	16	42.9	69.8
1996	18.6	43.3	68
1997	21.4	45.45	69.5
1998	23	45.4	67.8
1999	18.9	42	65.1
2000	17.9	41.55	65.2
2001	21	42.3	63.6
2002	21.3	42.45	63.6
2003	20.9	44	67.1
2004	22.7	49.5	76.3
2005	37.7	61.25	84.8
2006	51.5	69.25	87
2007	58.6	75.95	93.3
2008	83.8	97.9	112
2009	63.4	82.75	102.1
2010	100	100	100
2011	131.4	119.4	107.4

(3) The price index of the non-ferrous metals and products industry

year	raw-materials(average)	work-in-process	finished goods
1995	45.23333333	55.81666667	66.4
1996	47.3	56.2	65.1
1997	57	63.1	69.2
1998	46.63333333	56.51666667	66.4
1999	39.13333333	50.46666667	61.8
2000	45.86666667	54.28333333	62.7
2001	41.96666667	52.43333333	62.9
2002	39.26666667	51.23333333	63.2
2003	42.13333333	52.76666667	63.4
2004	60.56666667	66.08333333	71.6
2005	77.26666667	78.53333333	79.8
2006	143.3333333	126.7166667	110.1
2007	181.7	150.85	120
2008	123.7666667	118.3833333	113
2009	79.46666667	83.58333333	87.7
2010	100	100	100
2011	102.2333333	104.0166667	105.8

Note: The data period is limited to 1995 to 2011 due to the abolishment of LIFO in Japan after the fiscal year April 2011; thus, the data after 2011 are no longer applicable.

2.3. The application of the LIFO method adoption at identified firms

The Appendix (Appendix Table 1) provides the list of each firm in the selected industries. This shows the data according to the facts available from Financial Quest as "significant accounting policies." If there are no data in the database (Financial Quest), the inventory method is not included in the fields of the Table.

In the firms, the calculations of clearing unit prices of inventory were mixed through several methods in each year. In this study, we assumed that only the LIFO method was adopted when the firms selected several methods including LIFO. In the next section, we examine the LIFO reserve estimation using a t-test.

3. Results

3.1 The examination of LIFO reserve estimation

Here, we look at LIFO reserves from a statistical analysis perspective. In an earlier

study, we revealed that LIFO firms select behavioral accounting to decrease profits (Yukimachi, 2015,Yukimachi et.al[2018]). Our result differs from the preceding study. Replacing our result with the LIFO reserve estimation, we can infer that LIFO adoption firms have smaller LIFO reserve amounts than firms adopting the other method.

We estimate the LIFO reserves for identified industry firms based on the (1) and (2) calculation methods in Section 2.1 and compare this with the LIFO adoption period and the other method period. The comparative method statistically uses the t-test. The descriptive statistics of LIFO reserve estimations are presented in Table 2.

Table 2. The descriptive statistics of LIFO reserve estimations[iii]

	LIFO method an the other method(LIFO method:1)	Frequency	average value	Median	Standard deviation
The aggregate sum of (1) (2)	0	264	−8168.98775	−380.96473	39185.62484
	1	210	−3507.63928	−274.33508	20289.59371
The aggregate sum of (1)((2)(deflated total asset)	0	264	−0.00923445	−0.0021334	0.027426695
	1	210	−0.00546739	−0.0512293	0.019920782
The aggregate sum of (2)	0	264	−3219.62875	−380.96473	27270.70853
	1	210	−3085.57988	−178.38649	17435.99453
The aggregate sum of	0	264	−0.0082792	−0.003905	0.026304675
	1	210	−0.00517743	−0.0011833	0.01922188

The amount of the LIFO reserve estimation (the aggregate sum of (1) and (2) and the aggregate sum of (2)) is different in the LIFO method period than the other method period. However, the median is smaller than the average value. This result reveals that the LIFO reserve estimation includes a vast amount in the specific firm.

Table 3 reveals the results of t-testing, comparing the LIFO method period with other method period.

Table 3. T-test results of LIFO reserves estimates[iv]

		Statistical test of Levene		Statistical test of difference for two populat mean						
									confidence interval of difference(95%)	
		F-value	P-value	T-value	degree of freedom	P-value(two-sided)	Difference of average value	Standard error of difference	upper bound	lower bound
The aggregate sum of (1) (2)	postulate equal variance	16.926	0.000	-1.565	472	0.118	-4661.348469296650000	2978.864513886680000	1192.128273310300000	-10514.825211903600000
	not postulate equal variance			-1.672	411.356	0.095	-4661.348469296650000	2788.666315954650000	820.465802672725000	-10143.162741266000000
The aggregate sum of (1) (2) (deflated total asset)	postulate equal variance	12.570	0.000	-1.670	472	0.096	-0.003767063371792	0.002255199134390	0.000664408963240	-0.008198535706825
	not postulate equal variance			-1.730	468.318	0.084	-0.003767063371792	0.002176932361939	0.000510701006944	-0.008044827750529
The aggregate sum of (2)	postulate equal variance	6.220	0.013	-0.062	472	0.951	-134.048876848502000	2167.446908894630000	4124.990100220160000	-4393.087853917160000
	not postulate equal variance			-0.065	452.698	0.948	-134.048876848502000	2066.321132073010000	3926.722780918910000	-4194.820534615920000
The aggregate sum of (2) (deflated total asset)	postulate equal variance	12.346	0.000	-1.431	472	0.153	-0.003101758945354	0.002166828582941	0.001156065019560	-0.007359582910269
	not postulate equal variance			-1.482	468.785	0.139	-0.003101758945354	0.002092940737913	0.001010947719445	-0.007214465610153

The aggregate sum of (1) and (2) is statistically significant at 10% (t=-1.672). Similarly, the aggregate sum of (1) and (2) (deflated total assets) is statistically significant at 10% (t=-1.730). The other data are not statistically significant. For robustness of the LIFO reserves estimation, we performed the outlier test (rejection of Smirnov-Grubbs). After performing the test, the earlier t-test result disappears. The result is a weakness but reveals that the LIFO reserves data (in the LIFO method period) were statistically larger than the other data (in the other method period). However, our result is a weakness, our hypothesis that Japanese firms select conservative behavioral accounting to decrease a profit is confirmed.

3.2. Analysis of estimations at the sample firms

Here, we examine the LIFO reserve values of the sample firms and present the results in Table 4.

Table 4. Estimations of (1) and (2) for sample firms

(1) Manufacturers of petroleum and coal product

	SHOWA SHELL SEKYU.KK[5002]	FUJI KOSAN COMPANY .LTD[5003]	TONEN GENERAL SEKYU K.K[5012]
year 1996	−11203	−193	−3418
year 1997	−2427.950792	−194.4863177	−1836.683147
year 1998	29482.45975	369.012094	5239.739088
year 1999	−13945.62848	−86.34912197	−662.2155194
year 2000	−83177.0356	−635.6292308	−17191.44764
year 2001	13144.12051	−121.0338681	5661.391327
year 2002	2017.871238	−101.6900753	−523.5669766
year 2003	−20448.25044	−117.8084508	−17815.56775
year 2004	−35520.95744	−40.44482107	−25266.60339
year 2005	−97446.11607	−54.26984652	−57206.21153
year 2006	−69128.93254	−162.1078659	−31738.49075
year 2007	−28909.06636	−43.63636364	−12214.32587
year 2008	−110335.2163	−241.6258247	−60899.71674
year 2009	105037.0939	129.5268405	49563.4831
year 2010	−49895.11788	−97.94785632	−30552.6905
year 2011	−105283.3339	−116.76	−39408.132
year 2012	−11697.37557	−9.737719298	−12271.51764

(2) Steel industry

	NIPPON STEEL & SUMITOMO METAL CORPORATION[5401]	KOBE STEEL,LTD[3	GODO STEEL,LTD[	TOKYO STEEL CO,L	OSAKA STEEL CO,LT	YODOGAWA STEEL WORKS,LTD[5451]	TAKASAGO TEKI	NIPPON YAKIN KOGYO CO,LTD[5480]	HITACHI METAL	NIPPON DENKO C	MITSUBISHI STEEL MFG,CO,LTD[5632]
year 1996	2470	2300	−441	107	38	−80	27	224	348	81	54
year 1997	−11784.04917	−5159.61223	−499.9212172	−280.5133723	−162.0564446	−702.6076384	−71.08706433	−589.2903567	−1084.821481	−231.6949037	−180.9775569
year 1998	10117.58504	4656.296667	−337.195746	238.8911736	156.1786958	−115.3851622	64.71337911	524.3326228	1006.965587	211.3263137	185.9778019
year 1999	25709.28028	9748.383906	−274.3350621	343.7478752	417.6539158	72.99336862	159.5562734	1220.144733	2254.687114	478.8265115	282.0095824
year 2000	−3486.482051	−959.9963719	−419.4303062	−58.73563735	−85.79684831	−514.440974	−23.72372847	−142.7864044	−286.3560836	−47.63478572	−23.45802671
year 2001	−4139.565169	−298.1045197	−327.2599887	−1.289449249	−161.7056768	−150.2405098	6.076598648	23.61864459	−65.48417981	13.89892677	39.98626189
year 2002	4404.806163	1242.302431	−287.7366746	53.48379713	118.2119205	−462.436312	28.56898104	178.0831727	273.4812643	56.79102468	26.45529591
year 2003	−21949.69708	−8470.474325	−390.8935902	−673.5255588	−512.2511474	−731.0625535	−179.3160265	−972.1890426	−1959.064889	−627.9182017	−284.0606547
year 2004	−52007.63191	−25915.25078	−775.0555827	−1465.985958	−1297.750729	−1370.613163	−587.3133335	−149.0372578	−5116.329577	−1880.073039	−802.2960599
year 2005	−155705.5091	−53966.96453	−1862.104352	−3316.934392	−2617.755461	−661.9453172	−960.3638546	−103.7155963	−12635.53193	−4293.655344	−1464.301771
year 2006	−96295.51339	−37824.20111	−606.8942364	−1641.405165	−1291.256482	−1191.323771	−507.2118162	−24.02358491	−6536.171605	−1717.496924	−616.8995317
year 2007	−52444.24324	−27476.80204	−594.2075761	−1198.300213	−675.1127211	−683.4783531	−405.4090599	−37.87241379	−4612.505063	−1333.811751	−633.9580315
year 2008	−281974.2719	−119064.8559	−1883.445356	−4951.547379	−3268.339066	−1552.188544	−2574.93789	−153.1275456	−24531.99284	−9063.857148	−2238.593985
year 2009	132974.4625	40991.03438	1822.228441	1596.598071	865.0698396	373.6477914	512.3735701	42.25178571	5505.665224	2198.440158	603.4701884
year 2010	−257733.9102	−69572.41468	−432.7662677	−5446.244329	−2341.020374	793.4596135	−748.8249659	6.808031342	−12662.92733	−6323.840526	−591.1543907
year 2011	−213451.018	−78397.594	−1400.11468	−5466.948	−2054.779	−193.72796	−643.355	−7551.151	−14965.267	−4496.919	−708.535
year 2012	102779.1279	33546.45817	630.6846246	3319.382823	1339.661165	315.7898504	135.5546461	3527.674805	12927.24016	2335.511383	463.2688344

(3) Non-ferrous metals and products industry

	MITSUI MINING & SMELT	TOHO ZNC CO.,L	MITSUBISHI MATERIALS CO	SUMITOMO METAL MINING CO.,LTD. [5713]	FURUKAWA CO.,LTD.[	TOHO TITANIUM COMPAN	NIPPON SINDOCO.,LTD	FURUKAWA ELECTRICC	SUMITOMO ELECTRIC INDUSTRIES, LTD.[5802]	FUJIKURA LTD.[5803]
year 1996	-906	-165	-905	-475	-223	-88	-24	-606	-749	-123
year 1997	-6381.189327	-1577.318773	-10966.00946	-6590.178997	-3114.877381	-282.2898574	-174.9563266	-7868.34863	-11803.2585	-4295.508742
year 1998	5299.065278	1610.584691	8002.598738	6195.870449	1945.48301	355.3417846	138.5820712	7740.760842	11229.88047	3879.765651
year 1999	4698.290799	1721.262555	7178.317085	6066.898507	1794.394845	392.6864674	118.5015421	6968.066314	10254.5641	2972.466289
year 2000	-3578.433355	-1272.962365	-5755.484428	-4392.211671	-1189.57661	-388.0774493	-111.2304643	-5370.232532	-6545.197852	-1469.696388
year 2001	1756.660736	546.1579363	2561.730173	2023.358927	716.3061796	192.870976	55.58993593	3782.656028	3398.441289	606.5892314
year 2002	1484.243192	417.257354	1728.450275	1665.787959	351.9434966	145.3238004	26.84698591	2716.065244	2209.765924	335.318067
year 2003	-1771.357022	-463.0798702	-2041.908997	-1809.064286	-325.9491911	-155.4808271	-28.8034829	-2594.603609	-2076.044676	-422.3405081
year 2004	-6699.340414	-4018.857415	-19497.15799	-13964.33319	-1404.851835	-506.9227258	-253.9157566	-11134.0207	-12008.99728	-3455.777728
year 2005	-5883.953958	-2478.790393	-13214.97559	-17552.30674	-3.860209136	-461.0555623	-186.8155442	-6371.490513	-5714.173533	-1802.099099
year 2006	-24412.35494	-12346.25534	-53551.3128	-67624.39981	-20.52113891	-1985.275934	-1033.985486	-16632.94898	-14684.16318	-6061.743893
year 2007	-7993.795339	-3874.419927	-18457.39422	-25400.11677	-13.91906977	-822.4823568	-452.6492638	-5632.972592	-4916.486196	-2259.167057
year 2008	9654.806066	5772.917594	23952.16869	29223.80314	42.08695652	1328.969072	401.3600438	5890.231106	6753.031766	2490.911404
year 2009	10035.44847	6407.455052	23435.63367	22932.82731	60.84837059	2199.198782	281.8518208	6302.611267	8483.237812	3551.134021
year 2010	-8015.580263	-6288.446433	-17994.55122	-24483.60056	-33.33221477	-684.6850163	-292.5451882	-4507.232171	-4631.272427	-2615.395415
year 2011	-1293.654667	-915.2875	-3942.079	-6465.176333	-4.042333333	63.018	-109.483	-776.3508333	-789.2718333	-558.861
year 2012	4452.337589	3595.345882	12195.91612	13820.32181	27.54483208	1308.516403	216.7113709	2731.738147	2422.10587	1590.484589

Table 5. Estimations of (2) for sample firms

(1) Manufacturers of petroleum and coal products

	SHOWA SHELL SEKYU.KK[5002]	FUJI KOSAN COMPANY .LTD[5003]	TONEN GENERAL SEKYU K.K[5012]
year 1996	-11203	-193	-3418
year 1997	-6026.2379	-194.5724426	-1729.160999
year 1998	17688.37456	370.3531862	5239.739088
year 1999	-7058.614344	-86.34912197	-1032.962041
year 2000	-59909.64972	-635.6292308	-16862.29182
year 2001	6200.884931	-121.0338681	7404.029838
year 2002	-1568.660682	-101.8742816	-523.5669766
year 2003	-15327.58242	-117.8084508	-17121.19715
year 2004	-29197.65284	-40.44482107	-25266.60339
year 2005	-83069.18636	-54.26984652	-54669.0393
year 2006	-68190.04579	-162.1078659	-31722.94257
year 2007	-27567.06928	-43.63636364	-12214.32587
year 2008	-81901.37435	-241.6258247	-60899.71674
year 2009	104506.8001	129.5268405	49563.4831
year 2010	-39169.89931	-97.94785632	-30552.6905
year 2011	-82159.90728	-116.76	-38157.828
year 2012	-8992.300369	-9.737719298	-10807.60814

(2) Steel industry

	NIPPON STEEL & SUMITOMO METAL CORPORATION[5401]	KOBE STEEL,LTD[3	GODO STEEL,LTD[	TOKYO STEEL CO,L	OSAKA STEEL CO,L	YODOGAWA STEEL WORKS,LTD[545 1]	TAKASAGO TEK	NIPPON YAKIN KOGYO CO,LTD[5480]	HITACHI METAL	NIPPON DENKO C	MITSUBISHI STEEL
year 1996	10790	2084	-74	107	-92	-302	27	224	348	119	61
year 1997	-1309.559101	-5068.979258	-173.002484	-280.5133723	-70.08292754	-479.5639236	-71.08706433	-589.2903567	-1084.821481	-231.3196825	-177.6398086
year 1998	4379.623754	4560.270861	126.3435619	238.8911736	13.1830123	-45.98202391	64.71337911	524.3326228	1006.965587	226.093618	167.4866295
year 1999	-1250.066124	9748.383906	384.649557	343.7478752	162.5076638	389.8497336	158.9937336	1220.144733	2254.687114	476.5321013	282.0095824
year 2000	1938.329138	-959.9963719	-68.72092	-58.73563735	-77.5326394	-340.0565895	-20.04896494	-142.7864044	-286.3560836	-45.91498824	-23.45802671
year 2001	12217.42793	-233.8838301	-133.2357707	-1.289449249	-272.1082293	-459.2269394	6.076598648	23.61864459	-65.48417981	67.38066427	43.47092447
year 2002	-3113.471983	1198.411707	71.35348418	53.48379713	118.2119205	-76.61776834	28.56898104	178.0831727	273.4812643	54.29801325	23.59436876
year 2003	746.8434637	-8470.474325	-274.9503308	-673.5255588	-336.8108958	-587.921908	-179.1331804	-972.1890426	-1959.064889	-702.3278089	-284.0606547
year 2004	7131.272553	-23762.90988	-917.980594	-1465.985958	-915.7656317	-1325.5037	-574.8892896	-149.0372578	-5116.329577	-2093.171861	-802.2960599
year 2005	87196.32698	-50397.34933	-3608.26584	-3316.934392	-2392.972749	-2940.618592	-960.3638546	-103.7155963	-12635.53193	-4509.619835	-1224.717072
year 2006	51275.29742	-28102.37678	-1669.000739	-1641.405165	-1261.28678	-2544.108047	-507.2118162	-24.02358491	-6536.171605	-1662.664393	-593.1833155
year 2007	14499.09355	-21074.5821	-668.8289567	-1198.300213	-473.6575487	-1378.214095	-391.1623519	-37.87241379	-4612.505063	-1349.498463	-587.4502595
year 2008	117385.1475	-99288.21384	-1967.65515	-4951.547379	-2807.894315	-6188.01876	-2387.595181	-153.1275456	-24531.99284	-10135.39584	-2238.593985
year 2009	-35184.61372	35803.37337	3031.301677	1596.598071	656.9930539	1754.037879	512.3735701	42.25178571	5505.665224	2179.17957	631.8442955
year 2010	195205.5619	-69572.41468	-6360.037449	-5446.244329	-2414.777475	-4568.901128	-748.8249659	6.808031342	-12662.92733	-6129.365691	-591.1543907
year 2011	100366.086	-63950.298	-3063.503	-5466.948	-1553.586	-3442.52086	-643.355	-7551.151	-14965.267	-4256.47	-708.535
year 2012	-31105.90835	33546.45817	998.1364521	3319.382823	819.3052448	1160.970665	135.5546461	3527.674805	12927.24016	2268.430388	463.2688344

(3) Non-ferrous metals and product industry

	MITSUI MINING & SMELT	TOHO ZNC CO.,L	MITSUBISHI MATERIALS CO	SUMITOMO METAL MINING CO.,LTD. [5713]	FURUKAWA CO.,LTD.[5	TOHO TITANIUM COMPAN	NIPPON SINDOCO.,LTD	FURUKAWA ELECTRICC	SUMITOMO ELECTRIC INDUSTRIES, LTD.[5802]	FUJIKURA LTD.[5803]
year 1996	-906	-165	-905	-475	-223	27	-24	-606	-749	-123
year 1997	-6381.189327	-1577.318773	-10966.00946	-6590.178997	-3114.877381	-586.3574457	-174.9563266	-7868.34863	-11803.2585	-4295.508742
year 1998	5299.065278	1610.584691	8002.598738	6195.870449	1945.48301	516.2203974	138.5820712	7740.760842	11229.88047	3879.765851
year 1999	4698.290799	1721.262555	7178.317085	6066.898507	1794.394845	668.1322505	118.5015421	6968.066314	10254.5641	2972.466289
year 2000	-3578.433355	-1272.962365	-5755.484428	-4392.211671	-1189.57661	-471.8444396	-111.2304643	-5370.232532	-6545.197852	-1469.696388
year 2001	1756.660736	546.1579363	2561.730173	2023.358927	716.3061796	179.4164305	55.58993593	3782.656028	3398.441289	606.5892314
year 2002	1484.243192	417.257354	1728.450275	1665.787959	351.9434966	125.2061533	26.84698591	2716.065244	2209.765924	335.318067
year 2003	-1771.357022	-463.0798702	-2041.908997	-1809.064286	-325.9491911	-171.3605739	-28.8034829	-2594.603609	-2076.044676	-422.3405081
year 2004	-6699.340414	-4018.857415	-19497.15799	-13964.33319	-1404.851835	-1348.910107	-253.9157566	-11134.0207	-12008.99728	-3455.777728
year 2005	-5883.953958	-2478.790393	-13214.97559	-17552.30674	-3.860209136	-914.3460651	-186.8155442	-6371.490513	-5714.173533	-1802.099099
year 2006	-24412.35494	-12346.25534	-53551.3128	-67624.39981	-20.52113891	-3453.193227	-1033.985486	-16632.94898	-14684.16318	-6061.743893
year 2007	-7993.795339	-3874.419927	-18457.39422	-25400.11677	-13.91906977	-1170.106335	-452.6492638	-5632.972592	-4916.486196	-2259.167057
year 2008	9654.806066	5772.917594	23952.16669	29223.80314	42.08685652	1570.935738	401.3600438	5890.231106	6753.031766	2490.911404
year 2009	10035.44847	6407.455052	23435.63367	22932.82731	60.84837059	3127.910287	281.8518208	6302.611267	8483.237812	3551.134021
year 2010	-8015.580263	-6288.446433	-17994.55122	-24483.60056	-33.33221477	-1997.994024	-292.5451882	-4507.232171	-4631.272427	-2615.395415
year 2011	-1293.654667	-915.2875	-3942.079	-6465.176333	-4.042333333	-573.126	-109.483	-776.3508333	-789.2718333	-558.861
year 2012	4452.337589	3595.345882	12195.91612	13820.32181	27.54483208	2084.868009	216.7113709	2731.738147	2422.10587	1590.484589

Among the manufacturers of petroleum and coal products, when the LIFO reserves increased, the firms change from LIFO to another method. Among the non-ferrous metals and product firms, when the LIFO reserves decreased, they changed from LIFO to another method. In the steel industry, the firms took both actions, respectively.

In other words, the firms in the manufacture of petroleum and coal products changed

methods to take a realized profit at the time, whereas the firms in the non-ferrous metals and product market changed from LIFO to another method to take a loss. In the steel industry, it is left to the judgment of each company based on the external risk whether to realize a profit or discharge costs. Table 6 shows the expense or loss of LIFO adoption when changing from LIFO to another method in the period.

Table 6. The expense or loss of firms adopting LIFO

company code	type of industry	firm name	abolition year	abolition items	The effect of profit (one million yen)	The gain and loss from LIFO adoption changing (one million yen)
5002	petroleum and coal product	SHOWA SHELL SEKYU.KK [5002]	year 2000 December	inventories	17,104 (increase)	
5410	the steel industry	GODO STEEL.LTD [5410]	year2002 March	inventories	248 (increase)	wright-downs 2.197 (extraordinary loss) (preceding fiscal year)
5486	the steel industry	HITACHI METALS.LTD [5486]	year 2002 March	row-material	minor	wright-downs 2,847 (other expenses)
5715	non-ferrous metals and product	FURUKAWA CO.,LTD. [5715]	year 2002 March	finished goods and work-in-process	307 (decrease)	loss on disposal 4,402 (extraordinary loss)
5001	petroleum and coal product	FUJI KOSAN COMPANY .LTD [5003]	year 2003 March	finished goods	295 (increase)	
5451	the steel industry	YODOGAWA STEEL WORKS,LTD [5451]	year 2003 March	finished goods, work-in-process and row-material	1,137 (increase) (operating income, ordinaryincome),2,038 (extraordinary loss)	loss on disposal 613 (extraordinary loss) (predecing fiscal year)
5480	the steel industry	NIPPON YAKIN KOGYO CO,LTD [5480]	year 2003 March	excluded the stock	578 (increase)	The recognition of loss as a review (asset evaluation)
5632	the steel industry	MITSUBISHI STEEL MFG,CO.LTD [5632]	year 2004 March	inventories	536 (decrease)	
5714	non-ferrous metals and product	DOWA HOLDINGS [5714]	year 2004 March	finished goods, semifinished goods and row-material	614 (increase) (operating income),597 (increase) (ordinary income) (hedge activity used derivative transaction)	wright-dowms10,113 (extraordinary loss) (predecing fiscal year)
5458	the steel industry	TAKASAGO TEKKO K.K [5458]	year 2005 March	finished goods, work-in-process and row-material	234 (increase)	loss on disposal 183 (extaordinary loss)
5486	the steel industry	HITACHI METALS.LTD [5486]	year 2005 March	row-material	no account	wright-dowms and loss on disposal 1,623 (other expenses)
5753	non-ferrous metals and product	NIPPON SINDOCO.,LTD.[5753]	year 2005 March	finished foods and row-material	116 (increase)	
5406	the steel industry	KOBE STEEL.LTD [5406]	year 2006 March	the steel, aluminium, copper	24,288 (increase)	wright-dowms 10,944 (extraordinary loss) (prededing fiscal year)
5727	non-ferrous metals and product	TOHO TITANIUM COMPANY.CO.,LTD. [5727]	year 2006 March	excluded the stock	minor	wright-dowm 53 (ordinary loss) (preceding fiscal year),wright-dowm 48 (exraordinary loss)
5801	non-ferrous metals and product	FURUKAWA ELECTRICCO.,LTD.[5801]	year 2006 March	row-material	1,6058 (increase)	loss on disposal 3,484 (preceding fiscal year),loss on disposal 2,101
5401	the steel industry	NIPPON STEEL & SUMITOMO METAL CORPORATION [5401]	year 2007 March	finished goods, semifinished goods and row-material (in subsidiary)	1,243 (increase) (operating income), 1,246 (increase) (ordinary income)	
5727	non-ferrous metals and product	TOHO TITANIUM COMPANY.CO.,LTD. [5727]	year 2007 March	excluded the stock	1,945 (decrease)	
5706	non-ferrous metals and product	MITSUI MINING & SMELTING CO.,LTD. [5706]	year 2009 March	inventories	6,649 (increase) (allowance set for inventory)	wright-dowm 4,728 (extraordinary loss)
5707	non-ferrous metals and product	TOHO ZNC CO,.LTD. [5707]	year 2009 March	excluded the stock	1,915 (decrease)	
5802	non-ferrous metals and product	SUMITOMO ELECTRIC INDUSTRIES, LTD. [5802]	year 2009 March	row-material	1,490 (increase)	loss on retirement 4,668 (othe expenses)(preceding fiscal year)

In the steel and non-ferrous metals and products industries, several firms accumulated losses, such as appraisal losses, and wrote down expenses before and after the LIFO change. Overseas, the change from LIFO to another method is aimed at achieving a

realized inventory profit. However, our result shows that this premise does not necessarily apply to Japanese firms.

4. Conclusion, limitations, and future research

Our study statistically estimated and compared the amount of LIFO reserves at 29 Japanese firms in three industries (manufacturers of petroleum and coal products, the steel industry, and the non-ferrous metals and products market) during the adoption periods for LIFO and other methods. However, a weakness was observed in the results, which revealed that the LIFO reserves data (in the LIFO method period) were statistically smaller than the other data (in the other methods period). We also specifically examined the value of LIFO reserves in the sampled firms. Our results reveal that the aims of overseas firms did not necessarily apply to Japanese firms.

The limitations of this study are as follows. First, since several assumptions and estimations concerning this topic exist, the results of the study are provisional. Second, as several specific firms tend to contain vast LIFO reserves, it is necessary to pursue a case study of these specific firms. Third, this study used non-consolidated data from 1995 to 2011; thus, it is necessary to verify the findings on a consolidated basis. Fourth, although income valuation and asset valuation represent the two issues for inventory assets, we limited out discussion only to income valuation. Fifth, the study takes the perspective of explaining a corporate organization's accounting behavior. However, as there are several studies that examine corporate behavior from the perspective of agency, we do not conduct the study only to analyze the accounting behavior of corporate organization.

As this study used Japanese firm data, we need to pursue a parallel examination of overseas firms in future studies to generalize our hypothesis.

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[i] The Corporate Goods Price Index reflects the price of merchandise trading business to business, and is updated every five years.

[ii] Several firms in our study tend to store copper and nickel, zinc ores. Certainly, other minerals may be stored as well. However, to simplify the augment, our study assumes that these firms mainly store the minerals previously mentioned.

[iii] Our study uses the value of the LIFO reserve estimation. However, it is necessary to control our data for the reserve amount as proxy for firm size, as it is very dependent on firm size. In the examination, we use deflated total asset amounts or inventory amounts.

[iv] The sample data consist of 29 firms in three industries. Because it is possible that our data sample does not meet a normal distribution condition, we performed a normality test (the normality test of Kolmogorov-Smirnov and p-value of Shapiro-Wilk). As both of the preceding conditions were satisfied, we conducted a t-test statistically.

Appendix

Table 1. The application of LIFO adoption in sampled firms

L=Lower of cost or market basis　H=Historical cost basis　LAST=Last purchase price method　A=Periodic average method　S=Specific identification method

(1) The application of LIFO adoption among manufacturers of petroleum and coal products

SHOWA SHELL SEKIYU KK.(5002)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
DEC.1975	○		A	-		-	-		-	-		-	○		A
DEC.1976	○		A	-		-	-		-	-		-	○		A
DEC.1977	○		A	-		-	-		-	-		-	○		A
DEC.1978	○		A	-		-	-		-	-		-	○		A
DEC.1979	○		A	-		-	-		-	-		-	○		A
DEC.1980	○		A	-		-	-		-	-		-	○		A
DEC.1981	○		A	-		-	-		-	-		-	○		A
DEC.1982	○		A	-		-	-		-	-		-	○		S and A
DEC.1983	○		A	-		-	-		-	-		-	○		S and A
DEC.1984	○		A	-		-	-		-	-		-	○		S and A
DEC.1985	○		A	-		-	-		-	-		-	○		S and A
DEC.1986	○		A	-		-	-		-	-		-	○		A
DEC.1987	○		A	-		-	-		-	-		-	○		A
DEC.1988	○		A	-		-	-		-	-		-	○		A
DEC.1989	○		A	-		-	-		-	-		-	○		LIFO
DEC.1990	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
DEC.1991	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
DEC.1992	○		LIFO	-		-	-		-	-		-	○		LIFO and S
DEC.1993	○		LIFO and S	-		-	-		-	-		-	○		LIFO and S
DEC.1994	○		LIFO and S	-		-	○		LIFO	-		-	○		LIFO and S
DEC.1995	○		LIFO and S	-		-	○		LIFO	-		-	○		LIFO
DEC.1996	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
DEC.1997	○		LIFO and S	-		-	○		LIFO	-		-	○		LIFO
DEC.1998	○		LIFO and S	○		LIFO	○		LIFO	-		-	○		LIFO
DEC.1999	○		LIFO and S	○		LIFO	○		LIFO	-		-	○		LIFO
DEC.2000	○		S and A	○		A	○		A	-		-	○		A
DEC.2001	○		S and A	○		A	○		A	-		-	○		A
DEC.2002	○		S and A	○		A	○		A	-		-	○		A
DEC.2003	○		S and A	○		A	○		A	-		-	○		A
DEC.2004	○		S and A	○		A	○		A	-		-	○		A
DEC.2005	○		S and A	○		A	○		A	○		A	○		A
DEC.2006	○		A	○		A	○		A	○		A	○		A
DEC.2007	○		S and A	○		A	○		A	-		-	○		A
DEC.2008	○		S and A	○		A	○		A	-		-	○		A
DEC.2009	○		A	○		A	○		A	-		-	○		A
DEC.2010	○		A	○		A	○		A	-		-	○		A
DEC.2011										-					

FUJI KOSAN COMPANY, LTD.(5009)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1976	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1977	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1978	○		FIFO	-		-	-		-	-		-	○	○	FIFO
MAR.1979	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1980	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1981	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1982	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1983	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1984	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1985	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1986	○		FIFO	-		-	-		-	-		-	○		FIFO
MAR.1987	○		FIFO	-		-	-		-	-		-			
MAR.1988	○		FIFO	-		-	-		-	-		-			
MAR.1989	○		FIFO	-		-	-		-	-		-			
MAR.1990	○		FIFO	-		-	-		-	-		-			
MAR.1991	○		FIFO	-		-	-		-	-		-			
MAR.1992	○		FIFO	-		-	-		-	-		-			
MAR.1993	○		FIFO	-		-	-		-	-		-			
MAR.1994	○		FIFO	-		-	-		-	-		-			
MAR.1995	○		LIFO	-		-	-		-	-		-			-
MAR.1996	○		LIFO	-		-	○		LIFO	-		-			-
MAR.1997	○		LIFO	-		-	-		-	-		-			-
MAR.1998	○		LIFO	-		-	○		LIFO	-		-			-
MAR.1999	○		LIFO	○		LIFO	○		LIFO	-		-			-
MAR.2000	○		LIFO	○		LIFO	○		LIFO	-		-			-
MAR.2001	○		LIFO	-		-	○		LIFO	-		-			-
MAR.2002	○		A	-		-			-	-		-			-
MAR.2003	○		A	-		-			-	-		-			-
MAR.2004	○		A	-		-			-	-		-			-
MAR.2005	○		A	-		-			-	-		-			-
MAR.2006	○		A	-		-			-	-		-			-
MAR.2007	○		A	-		-			-	-		-			-
MAR.2008	○		A	-		-			-	-		-			-
MAR.2009	○		A	-		-			-	-		-			-
MAR.2010	○		A	-		-			-	-		-			-
MAR.2011										-					

TONEN GENERAL SEKIYU K.K.(5012)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-p	H	L	raw-materials
DEC. 1975	○		A		-	-		-	-			-	-		-
DEC.1976	○		FIFO		-	-		-	-			-	-		-
DEC.1977	○		FIFO		-	-		-	-			-	-		-
DEC.1978	○		FIFO		-	-		-	-			-	-		-
DEC.1979	○		FIFO		-	-		-	-			-	-		-
DEC.1980	○		FIFO		-	-		-	-			-	-		-
DEC.1981	○		FIFO		-	-		-	-			-	○		FIFO
DEC.1982	○		FIFO		-	-		-	-			-	○		FIFO
DEC.1983	○		FIFO		-	-		-	-			-	○		FIFO
DEC.1984	○		FIFO		-	-		-	-			-	○		FIFO
DEC.1985	○		FIFO		-	-		-	-			-	○		FIFO
DEC.1986	○		FIFO		-	-		-	-			-	○		FIFO
DEC.1987	○		FIFO		-	-		-	-			-	○		FIFO
DEC.1988	○		FIFO		-	-		-	-			-	○		FIFO
DEC.1989	○		A		-	-		-	-			-	○		FIFO
DEC.1990	○		LIFO		-	-		-	-			-	○		LIFO
DEC.1991	○		LIFO		-	-		-	-			-	○		LIFO
DEC.1992	○		LIFO		-	-		-	-			-	○		LIFO
DEC.1993	○		LIFO		-	-		-	-			-	○		LIFO
DEC.1994	○		LIFO		-	-		-	-			-	○		LIFO
DEC.1995	○	○	LIFO		-	-		○	LIFO			-		○	LIFO
DEC.1996	○	○	LIFO		-	-		○	LIFO			-		○	LIFO
DEC.1997	○	○	LIFO		○	-		○	LIFO			-		○	LIFO
DEC.1998	○	○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.1999	○	○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.2000	○		LIFO	○		LIFO	○		LIFO			-	○		LIFO
DEC.2001		○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.2002		○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.2003		○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.2004		○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.2005		○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.2006		○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.2007		○	LIFO		○	LIFO		○	LIFO			-		○	-
DEC.2008		○	LIFO		○	LIFO		○	LIFO			-		○	LIFO
DEC.2009	○		LIFO	○		LIFO	○		LIFO			-	○		LIFO
DEC.2010	○		LIFO	○		LIFO	○		LIFO			-	○		LIFO
DEC.2011															

(2) The application of LIFO method adoption in the steel industry

NIPPON STEEL & SUMITOMO METAL CORPORATION(5401)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		LIFO	-		-		○	S		-	-		○	LIFO
MAR.1976	○		A	-		-		○	S		-	-	○		FIFO
MAR.1977	○		A	-		-		○	S		-	-	○		FIFO
MAR.1978	○		A	-		-		○	S		-	-	○		FIFO
MAR.1979	○		A	-		-		○	S		-	-	○		FIFO
MAR.1980	○		A	-		-		○	S		-	-	○		FIFO
MAR.1981	○		A	-		-		○	S		-	-	○		FIFO
MAR.1982	○		A	-		-		○	S		-	-	○		FIFO
MAR.1983	○		A	-		-		○	S		-	-	○		FIFO
MAR.1984	○		A	-		-		○	S		-	-	○		FIFO
MAR.1985	○		A	-		-		○	S		-	-	○		FIFO
MAR.1986	○		A	-		-		○	S		-	-	○		FIFO
MAR.1987	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1988	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1989	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1990	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1991	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1992	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1993	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1994	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1995	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1996	○		LIFO	-		-		○	S		-	-	○		LIFO
MAR.1997	○		A	-		-		○	S		-	-	○		A
MAR.1998			-	○		A	○		A		○	S	○		A
MAR.1999			-	○		A	○		A		○	S	○		A
MAR.2000			-	○		A	○		A		○	S	○		A
MAR.2001	○		A	○		A	○		A		○	S	○		A
MAR.2002			-	○		A	○		A		○	S	○		A
MAR.2003			-	○		A	○		A		○	S	○		A
MAR.2004			-	○		A	○		A		○	S	○		A
MAR.2005			-	○		A	○		A		○	S	○		A
MAR.2006			-	○		A	○		A		○	S	○		A
MAR.2007			-	○		A	○		A		○	S	○		A
MAR.2008			-	○		A	○		A		○	-	○		A
MAR.2009			-	○		A	○		A		○	-	○		A
MAR.2010			-	○		A	○		A		○	-	○		A
MAR.2011															

KOBE STEEL, LTD.(5406)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		S and A	–		–	○		S	–		–	○		A
MAR.1976	○		S and A	–		–	○		S	–		–	○		A
MAR.1977	○		S and A	–		–	○		S	–		–	○		A
MAR.1978	○		S and A	–		–	○		S	–		–	○		A
MAR.1979	○		S and A	–		–	○		S	–		–	○		A
MAR.1980	○		S and A	–		–	○		S	–		–	○		A
MAR.1981	○		S and A	–		–	○		S	–		–	○		A
MAR.1982	○		S and A	–		–	○		S	–		–	○		A
MAR.1983	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1984	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1985	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1986	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1987	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1988	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1989	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1990	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1991	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1992	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1993	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1994	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1995	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1996	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1997	○		LIFO and S and A	–		–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1998			–	○		LIFO and S and A	○		LIFO and A	○		LIFO and S and A	○		LIFO and A
MAR.1999			–	○		LIFO and S and A	○		LIFO and A	○		LIFO and S and A	○		LIFO and A
MAR.2000			–	○		LIFO and S and A	○		LIFO and A	○		LIFO and S and A	○		LIFO and A
MAR.2001			–	○		LIFO and S and A	○		LIFO and A	○		LIFO and S and A	○		LIFO and A
MAR.2002			–	○		LIFO and S and A	○		LIFO and A	○		LIFO and S and A	○		LIFO and A
MAR.2003			–	○		LIFO and S and A	○		LIFO and A	○		LIFO and S and A	○		LIFO and A
MAR.2004			–	○		LIFO and S and A	○		LIFO and A	○		LIFO and S and A	○		LIFO and A
MAR.2005			–	○		LIFO and S and A	○		LIFO and A	○		LIFO and S and A	○		LIFO and A
MAR.2006			–	○		S and A	○		A	○		S and A	○		A
MAR.2007			–	○		S and A	○		A	○		S and A	○		A
MAR.2008			–	○		S and A	○		A	○		S and A	○		A
MAR.2009			–	○		S and A	○		A	○		S and A	○		A
MAR.2010			–	○		S and A	○		A	○		S and A	○		A
MAR.2011															

GODO STEEL,LTD.(5410)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		A	–		–	○		A	–		–	○		A
MAR.1976	○		A	–		–	–		–	–		–	○		A
MAR.1977	○		A	–		–	–		–	–		–	○		A
MAR.1978	○		A	–		–	–		–	–		–	○		A
MAR.1979	○		A	–		–	–		–	–		–	○		A
MAR.1980	○		A	–		–	–		–	–		–	○		A
MAR.1981	○		A	–		–	○		A	–		–	○		A
MAR.1982	○		A	–		–	○		A	–		–	○		A
MAR.1983	○		A	–		–	○		A	–		–	○		A
MAR.1984	○		A	–		–	○		A	–		–	○		A
MAR.1985	○		A	–		–	○		A	–		–	○		A
MAR.1986	○		A	–		–	○		LIFO	–		–	○		A
MAR.1987	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1988	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1989	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1990	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1991	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1992	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1993	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1994	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1995	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1996	○		FIFO	–		–	○		FIFO	–		–	○		FIFO
MAR.1997	○		LIFO	–		–	○		LIFO	–		–	○		LIFO
MAR.1998			–	○		LIFO	○		LIFO	○		LIFO	○		LIFO
MAR.1999			–	○		LIFO	○		LIFO	○		LIFO	○		LIFO
MAR.2000			–	○		LIFO	○		LIFO	○		LIFO	○		LIFO
MAR.2001			–	○		LIFO	○		LIFO	○		LIFO	○		LIFO
MAR.2002			–	○		A	○		A	○		A	○		A
MAR.2003			–	○		A	○		A	○		A	○		A
MAR.2004			–	○		A	○		A	○		A	○		A
MAR.2005	○		A	○		A	○		A	○		A	○		A
MAR.2006	○		A	○		A	○		A	○		A	○		A
MAR.2007	○		A	○		A	○		A	○		A	○		A
MAR.2008			–			–			–			–			–
MAR.2009			–			–			–			–			–
MAR.2010			–			–			–			–			–
MAR.2011															

TOKYO STEEL CO,LTD.(5423)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975		○	A		–	–		–	–		–	–		○	A
MAR.1976		○	A		–	–		–	–		–	–		○	A
MAR.1977		○	A		–	–		–	–		–	–		○	A
MAR.1978		○	A		–	–		–	–		–	–		○	A
MAR.1979		○	A		–	–		–	–		–	–		○	A
MAR.1980		○	A		–	–		–	–		–	–		○	LIFO
MAR.1981		○	LIFO		–	–		–	–		–	–		○	LIFO
MAR.1982		○	LIFO		–	–		–	–		–	–		○	LIFO
MAR.1983		○	LIFO		–	–		–	–		–	–		○	LIFO
MAR.1984		○	LIFO		–	–		–	–		–	–		○	LIFO
MAR.1985		○	LIFO		–	–		–	–		–	–		○	LIFO
MAR.1986		○	LIFO		–	–		–	–		–	–		○	LIFO
MAR.1987		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1988		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1989		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1990		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1991		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1992		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1993		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1994		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1995		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1996		○	LIFO		–	–		○	LIFO		–	–		○	LIFO
MAR.1997			–		–	–		○	LIFO		–	–		○	LIFO
MAR.1998			–		○	LIFO		○	LIFO		–	–		○	LIFO
MAR.1999			–		○	LIFO		○	LIFO		–	–		○	LIFO
MAR.2000			–		○	LIFO		○	LIFO		–	–		○	LIFO
MAR.2001			–		○	LIFO		○	LIFO		–	–		○	LIFO
MAR.2002			–		○	LIFO		○	LIFO		–	–		○	LIFO
MAR.2003			–		○	LIFO		○	LIFO		○	LIFO		○	LIFO
MAR.2004			–		○	LIFO		○	LIFO		–	–		○	LIFO
MAR.2005			–		○	LIFO		○	LIFO		–	–		○	LIFO
MAR.2006			–		○	LIFO		○	LIFO		–	–		○	LIFO
MAR.2007			–		○	LIFO		○	LIFO		○	LIFO		○	LIFO
MAR.2008		○	LIFO		○	LIFO		○	LIFO		○	LIFO		○	LIFO
MAR.2009			–		○	LIFO		○	LIFO		○	LIFO	○		LIFO
MAR.2010			–		○	LIFO		○	LIFO		○	LIFO	○		LIFO
MAR.2011															

YAMATO KOGYO CO.,LTD.(5444)

MONTH,YEA	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1976	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1977	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1978	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1979	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1980	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1981	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1982	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1983	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1984	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1985	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1986	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1987	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1988	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1989	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1990	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1991	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1992	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1993	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1994	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1995	○		LIFO and A	–		–	○		A	–		–	○		LIFO and A
MAR.1996	○		LIFO and A	–		–	○		LIFO and A	–		–	○		LIFO and A
MAR.1997	○		LIFO and A	–		–	○		LIFO	○		A	○		LIFO and A
MAR.1998	–		–	○		LIFO	○		LIFO	○		A	○		LIFO and A
MAR.1999	–		–	○		LIFO and S and A	○		LIFO	○		A	○		LIFO and A
MAR.2000	–		–	○		LIFO and S and A	○		LIFO	○		A	○		LIFO and A
MAR.2001	–		–	○		LIFO and S and A	○		LIFO	○		A	○		LIFO and A
MAR.2002	–		–	○		LIFO and S and A	○		LIFO	○		A	○		LIFO and A
MAR.2003	–		–	○		LIFO and S and A	○		LIFO	○		A	○		LIFO and A
MAR.2004	–		–	○		LIFO and S and A	○		LIFO	○		A	○		LIFO and A
MAR.2005	–		–			–			–			–			–
MAR.2006	–		–			–			–			–			–
MAR.2007	–		–			–			–			–			–
MAR.2008	–		–			–			–			–			–
MAR.2009	–		–			–			–			–			–
MAR.2010	–		–			–			–			–			–
MAR.2011															

OSAKA STEEL CO.,LTD.(5449)

MONTH,YEA	H	L	merchandi	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	–		–	–		–	–		–	–		–	–		–
MAR.1976	–		–	–		–	–		–	–		–	–		–
MAR.1977	–		–	–		–	–		–	–		–	–		–
MAR.1978	–		–	–		–	–		–	–		–	–		–
MAR.1979	○		A	–		–	○		S	–		–	○		LIFO
MAR.1980	○		A	–		–	○		S	–		–	○		LIFO
MAR.1981	○		A	–		–	○		S	–		–	○		LIFO
MAR.1982	○		A	–		–	○		S	–		–	○		LIFO
MAR.1983	○		A	–		–	○		S	–		–	○		LIFO
MAR.1984	○		A	–		–	○		S and A	–		–	○		LIFO
MAR.1985	○		A	–		–	○		S and A	–		–	○		LIFO
MAR.1986	○		A	–		–	○		S	–		–	○		LIFO
MAR.1987	○		LIFO	–		–	○		S	–		–	○		LIFO
MAR.1988	○		FIFO	–		–	○		FIFO	–		–	○		FIFO
MAR.1989	○		LIFO	–		–	○		LIFO and S	–		–	○		LIFO
MAR.1990	○		LIFO	–		–	○		S	–		–	○		LIFO
MAR.1991	○		LIFO	–		–	○		S	–		–	○		LIFO
MAR.1992	○		FIFO	–		–	○		S	–		–	○		FIFO
MAR.1993	○		LIFO	–		–	○		S	–		–	○		LIFO
MAR.1994	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1995	○		LIFO	–		–	○		LIFO and S	–		–	○		LIFO
MAR.1996	○		LIFO	–		–	○		LIFO and S	–		–	○		LIFO
MAR.1997	○		LIFO	–		–	○		LIFO and S	–		–	○		LIFO
MAR.1998			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.1999			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2000			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2001			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2002			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2003			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2004			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2005			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2006			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2007	○		LIFO	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2008			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2009			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2010			–	○		LIFO	○		LIFO	○		S	○		LIFO
MAR.2011															

YODOGAWA STEEL WORKS, LTD.(5451)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		S	–	–	–	○		S	–		–	○		LIFO
MAR.1976	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1977	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1978	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1979	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1980	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1981	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1982	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1983	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1984	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1985	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1986	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1987	○		S and LIFO	–	–	–	○		S and LIFO	–		–	○		LIFO
MAR.1988	○		S and LIFO	–	–	–	○		S	–		–	○		LIFO
MAR.1989	○		S and LIFO	–	–	–	○		LIFO and S and A	–		–	○		LIFO
MAR.1990	○		LIFO and S and A	–	–	–	○		LIFO	–		–	○		LIFO and A
MAR.1991	○		LIFO	–	–	–	○		LIFO and S and A	–		–	○		LIFO
MAR.1992	○		LIFO and S and A	–	–	–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1993	○		LIFO and S and A	–	–	–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1994	○		LIFO and S and A	–	–	–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1995	○		LIFO and S and A	–	–	–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1996	○		LIFO and S and A	–	–	–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1997	○		LIFO and S and A	–	–	–	○		LIFO and S and A	–		–	○		LIFO and A
MAR.1998	○		S	○	○	LIFO and A			–	○		LIFO and S and A	○		LIFO and A
MAR.1999	○		S	○	○	LIFO and A			–	○		LIFO and S and A	○		LIFO and A
MAR.2000	○		S	○	○	LIFO and A			–	○		LIFO and S and A	○		LIFO and A
MAR.2001	○		LIFO	○	○	LIFO and A			–	○		LIFO and S and A	○		LIFO and A
MAR.2002	○		LIFO and S and A	○	○	LIFO and A			–	○		LIFO and S and A	○		LIFO and A
MAR.2003	○		S	○	○	A			–	○		S and A	○		A
MAR.2004	○		S	○	○	A			–	○		S and A	○		A
MAR.2005	○		S	○	○	A			–	○		S and A	○		A
MAR.2006	○		A	○	○	A	○		S&A	○		S and A	○		A
MAR.2007	○		S	○	○	A			–	○		S and A	○		A
MAR.2008	○		S	○	○	A			–	○		S and A	○		A
MAR.2009	○		S	○	○	A			–	○		S and A	○		A
MAR.2010	○		S	○	○	A			–	○		S and A	○		A
MAR.2011															

TAKASAGO TEKKO KK.(5458)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1976	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1977	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1978	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1979	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1980	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1981	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1982	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1983	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1984	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1985	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1986	○		FIFO	-		-	○		FIFO	-		-	○		FIFO
MAR.1987	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1988	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1989	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1990	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1991	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1992	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1993	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1994	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1995	○		LIFO and FIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1996	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1997	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1998	-		-	○		LIFO			-	○		LIFO and FIFO	○		LIFO
MAR.1999	-		-	○		LIFO			-	○		LIFO and FIFO	○		LIFO
MAR.2000	-		-	○		LIFO			-	○		LIFO	○		LIFO
MAR.2001	-		-	○		LIFO			-	○		LIFO	○		LIFO
MAR.2002	-		-	○		LIFO			-	○		LIFO	○		LIFO
MAR.2003	-		-	○		LIFO			-	○		LIFO	○		LIFO
MAR.2004	-		-	○		LIFO			-	○		LIFO	○		LIFO
MAR.2005	-		-	○		A			-	○		A	○		A
MAR.2006	-		-	○		A			-	○		A	○		A
MAR.2007	-		-	○		A			-	○		A	○		A
MAR.2008	-		-	○		A			-	○		A	○		A
MAR.2009	-		-	○		A			-	○		A	○		A
MAR.2010	-		-	○		A			-	○		A	○		A
MAR.2011															

NIPPON YAKIN KOGYO CO.,LTD.(5480)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-pr	H	L	raw-materials
MAR.1975	○		A	-		-	○		A	-		-	○		A
MAR.1976	○		A	-		-	○		A	-		-	○		A
MAR.1977	○		A	-		-	○		A	-		-	○		A
MAR.1978	○		A	-		-	○		A	-		-	○		A
MAR.1979	○		A	-		-	○		A	-		-	○		A
MAR.1980	○		A	-		-	○		A	-		-	○		A
MAR.1981	○		A	-		-	○		A	-		-	○		A
MAR.1982	○		A	-		-	○		A	-		-	○		A
MAR.1983	○		A	-		-	○		A	-		-	○		A
MAR.1984	○		A	-		-	○		A	-		-	○		A
MAR.1985	○		A	-		-	○		A	-		-	○		A
MAR.1986	○		A	-		-	○		A	-		-	○		A
MAR.1987	○		A	-		-	○		A	-		-	○		A
MAR.1988	○		A	-		-	○		A	-		-	○		A
MAR.1989	○		A	-		-	○		A	-		-	○		A
MAR.1990	○		A	-		-	○		A	-		-	○		A
MAR.1991	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1992	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1993	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1994	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1995	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1996	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1997	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
MAR.1998	○		LIFO	○		LIFO			-	○		LIFO	○		LIFO
MAR.1999	○		LIFO	○		LIFO			-	○		LIFO	○		LIFO
MAR.2000	○		LIFO	○		LIFO	○		LIFO	○		LIFO	○		LIFO
MAR.2001	○		LIFO	○		LIFO			-	○		LIFO	○		LIFO
MAR.2002	○		LIFO	○		LIFO			-	○		LIFO	○		LIFO
MAR.2003	○		A	○		A			-	○		A	○		A
MAR.2004	○		A	○		A			-	○		A	○		A
MAR.2005	○		A			-			-			-	-		-
MAR.2006	○		A			-			-			-	-		-
MAR.2007	○		A			-			-			-	-		-
MAR.2008			-			-			-			-	-		-
MAR.2009			-			-			-			-	-		-
MAR.2010			-			-			-			-	-		-
MAR.2011															

HITACHI METALS, LTD.(5486)

MONTH.YEA	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-pr	H	L	raw-materials
MAR.1975		○			-	-		○	S and A		-	-		○	A
MAR.1976		○	S and A		-	-		○	S and A		-	-		○	A
MAR.1977		○	S and A		-	-		○	S and A		-	-		○	A
MAR.1978		○	S and A		-	-		○	S and A		-	-		○	A
MAR.1979		○	S and A		-	-		○	S and A		-	-		○	A
MAR.1980		○	S and A		-	-		○	S and A		-	-		○	A
MAR.1981		○	S and A		-	-		○	S and A		-	-		○	A
MAR.1982		○	S and A		-	-		○	S and A		-	-		○	A
MAR.1983		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1984		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1985		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1986		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1987		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1988		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1989		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1990		○	S and A		-	-		○	A		-	-		○	LIFO and A
MAR.1991		○	S		-	-		○	S and A		-	-		○	LIFO and A
MAR.1992		○	S and A		-	-		○	A		-	-		○	LIFO and A
MAR.1993		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1994		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1995		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1996		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1997		○	S and A		-	-		○	S and A		-	-		○	LIFO and A
MAR.1998			-		○	S and A		○	S and A		○	S and A		○	LIFO and A
MAR.1999			-		○	S and A		○	S and A		○	S and A		○	LIFO and A
MAR.2000			-		○	S and A		○	S and A		○	S and A		○	LIFO and A
MAR.2001			-		○	S and A		○	S and A		○	S and A		○	LIFO and A
MAR.2002			-		○	S and A		○	S and A		○	S and A		○	A
MAR.2003			-		○	S and A		○	S and A		○	S and A		○	A
MAR.2004			-		○	S and A		○	S and A		○	S and A		○	A
MAR.2005			-		○	S and A		○	S and A		○	S and A		○	A
MAR.2006			-		○	S and A		○	S and A		○	S and A		○	A
MAR.2007			-		○	S and A		○	S and A		○	S and A		○	A
MAR.2008			-	○		S and A	○		S and A	○		S and A	○		A
MAR.2009	○		S and A	○		S and A			-			-	○		A
MAR.2010	○		S and A	○		S and A			-			-	○		A
MAR.2011															

NIPPON DENKO CO.,LTD.(5563)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
DEC. 1975	○		A	-		-	○			-		-	○		A
DEC.1976	○		A	-		-	○		A	-		-	○		A
DEC.1977	○		A	-		-	○		A	-		-	○		A
DEC.1978	○		A	-		-	○		A	-		-	○		A
DEC.1979	○		A	-		-	○		A	-		-	○		A
DEC.1980	○		A	-		-	○		A	-		-	○		A
DEC.1981	○		A	-		-	○		A	-		-	○		A
DEC.1982	○		A	-		-	○		A	-		-	○		A
DEC.1983	○		A	-		-	○		A	-		-	○		A
DEC.1984	○		A	-		-	○		A	-		-	○		A
DEC.1985	○		A	-		-	○		A	-		-	○		A
DEC.1986	○		A	-		-	○		A	-		-	○		A
DEC.1987	○		A	-		-	○		A	-		-	○		A
DEC.1988	○		A	-		-	○		A	-		-	○		A
DEC.1989	○		A	-		-	○		A	-		-	○		A
DEC.1990	○		A	-		-	○		A	-		-	○		A
DEC.1991	○		A	-		-	○		A	-		-	○		A
DEC.1992	○		A	-		-	○		A	-		-	○		A
DEC.1993	○		A	-		-	○		LIFO	-		-	○		LIFO
DEC.1994	○		A	-		-	○		LIFO	-		-	○		LIFO
DEC.1995	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
DEC.1996	○		LIFO	-		-	○		LIFO	-		-	○		LIFO
DEC.1997	○		LIFO	○		LIFO	○		LIFO	○		LIFO	○		LIFO
DEC.1998	○		A	○		A	○		A	○		A	○		A
DEC.1999	○		A	○		A	○		A	○		A	○		A
DEC.2000	○		A	○		A	○		A	○		A	○		A
DEC.2001	○		A	○		A	○		A	○		A	○		A
DEC.2002	○		A	○		A	○		A	○		A	○		A
DEC.2003	○		A	○		A	○		A	○		A	○		A
DEC.2004	○		A	○		A	○		A	○		A	○		A
DEC.2005	○		A	○		A	○		A	○		A	○		A
DEC.2006	○		A	○		A	○		A	○		A	○		A
DEC.2007	○		A	○		A	○		A	○		A	○		A
DEC.2008	○		A	○		A	○		A	○		A	○		A
DEC.2009	○		A	○		A	○		A	○		A	○		A
DEC.2010	○		A	○		A	○		A	○		A	○		A
DEC.2011															

NIPPON CHUTETSUKAN,K.K.(5612)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goo	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		A	-		-	○		S and A	-		-	○		A
MAR.1976	○		A	-		-	○		S and A	-		-	○		A
MAR.1977	○		A	-		-	○		S and A	-		-	○		A
MAR.1978	○		A	-		-	○		S and A	-		-	○		A
MAR.1979	○		A	-		-	○		S and A	-		-	○		A
MAR.1980	○		A	-		-	○		S and A	-		-	○		A
MAR.1981	○		A	-		-	○		A	-		-	○		A
MAR.1982	○		A	-		-	○		A	-		-	○		A
MAR.1983	○		A	-		-	○		A	-		-	○		A
MAR.1984	○		A	-		-	○		A	-		-	○		A
MAR.1985	○		A	-		-	○		A	-		-	○		A
MAR.1986	○		A	-		-	○		A	-		-	○		A
MAR.1987	○		A	-		-	○		A	-		-	○		A
MAR.1988	○		A	-		-	○		A	-		-	○		A
MAR.1989	○		A	-		-	○		A	-		-	○		A
MAR.1990	○		A	-		-	○		A	-		-	○		A
MAR.1991	○		A	-		-	○		A	-		-	○		A
MAR.1992	○		A	-		-	○		A	-		-	○		A
MAR.1993	○		A	-		-	○		A	-		-	○		A
MAR.1994	○		A	-		-	○		A	-		-	○		A
MAR.1995	○		A	-		-	○		A	-		-	○		A
MAR.1996	○		A	-		-	○		A	-		-	○		A
MAR.1997	○		A	-		-	○		A	-		-	○		A
MAR.1998			-	○		A			-	○		A	○		A
MAR.1999			-	○		A			-	○		A	○		A
MAR.2000			-	○		A	○		A	○		A	○		A
MAR.2001			-	○		A	○		A	○		A	○		A
MAR.2002	○		A	○		A	○		A	○		A	○		A
MAR.2003			-	○		A	-		-	○		A	○		A
MAR.2004			-	○		A	-		-	○		A	○		A
MAR.2005			-	○		A	-		-	○		A	○		A
MAR.2006			-	○		A	-		-	○		LIFO	○		LIFO
MAR.2007			-	-		-	-		-			-			-
MAR.2008			-	-		-	-		-			-			-
MAR.2009			-	○		A	-		-	○		A	○		A
MAR.2010			-	○		A	-		-	○		A	○		A
MAR.2011															

MITSUBISHI STEEL MFG.CO.,LTD.(5632)

MONTH.YEA	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975			LIFO	-		-		○	LIFO	-		-		○	LIFO
MAR.1976	○		S and LIFO	-		-	○	○	S and LIFO	-		-		○	LIFO
MAR.1977	○		S and LIFO	-		-	○	○	S and LIFO	-		-		○	LIFO
MAR.1978	○		S and LIFO	-		-	○	○	S and LIFO	-		-		○	LIFO
MAR.1979	○		S and LIFO	-		-	○	○	S and LIFO	-		-		○	LIFO
MAR.1980	○		S and LIFO	-		-	○	○	S and LIFO	-		-		○	LIFO
MAR.1981	○		S and LIFO	-		-	○	○	S and LIFO	-		-		○	LIFO
MAR.1982	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1983	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1984	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1985	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1986	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1987	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1988	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1989	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1990	○		LIFO	-		-	○		LIFO	-		-	○	○	
MAR.1991	○		LIFO	-		-	○		LIFO	-		-	○	○	
MAR.1992	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1993	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1994	○		S and LIFO	-		-	○		S and LIFO	-		-		○	
MAR.1995	○		LIFO	-		-	○		LIFO	-		-		○	A
MAR.1996	○		LIFO	-		-	○		LIFO	-		-		○	A
MAR.1997			-	○		S and LIFO	○		S and LIFO	○		S and LIFO		○	LIFO and A
MAR.1998			-	○		LIFO	○		LIFO	○		LIFO		○	LIFO and A
MAR.1999			-	○		LIFO	○		LIFO	○		LIFO		○	LIFO and A
MAR.2000			-	○		S and LIFO	○		S and LIFO	○		S and LIFO		○	LIFO and A
MAR.2001			-	○		S and LIFO	○		S and LIFO	○		S and LIFO		○	LIFO and A
MAR.2002			-	○		S and LIFO	○		S and LIFO	○		S and LIFO		○	LIFO and A
MAR.2003			-	○		LIFO	○		S and LIFO	○		S and LIFO		○	LIFO and A
MAR.2004			-	○		S and A	○		S and A	○		S and A		○	A
MAR.2005			-	○		S and A	○		S and A	○		S and A		○	A
MAR.2006			-	○		S and A	○		S and A	○		S and A		○	A
MAR.2007			-	○		S and A	○		S and A	○		S and A		○	A
MAR.2008			-	○		S and A	○		S and A			-		○	A
MAR.2009			-	○		S and A	○		A			-	○		A
MAR.2010			-	○		A	○		A			-	○		A
MAR.2011															

(3) The application of LIFO adoption in non-ferrous metals and product.

MITSUI MINING & SMELTING CO.,LTD.(5706)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○	○	LIFO	-			○		LIFO						LIFO
MAR.1976	○	○	LIFO	-			○		LIFO						LIFO
MAR.1977	○	○	LIFO	-			○		LIFO						LIFO
MAR.1978	○		LIFO	-			○		LIFO						LIFO
MAR.1979	○		LIFO	-			○		LIFO						LIFO
MAR.1980	○		LIFO	-			○		A and LIFO						A and LIFO
MAR.1981	○	○	S and LIFO	-			○	○	A and LIFO						A and LIFO
MAR.1982	○	○	S and LIFO	-			○	○	A and LIFO						A and LIFO
MAR.1983	○	○	S and LIFO	-			○	○	A and FIFOand LIFO						A and FIFO and LIFO
MAR.1984	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1985	○	○	-	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1986	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1987	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1988	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1989	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1990	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1991	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1992	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1993	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1994	○	○	A and FIFOand LIFO	-			○	○	A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1995	○	○	A and FIFOand LIFO	-			○		A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1996	○		A and FIFOand LIFO	-			○		A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1997	○		A and FIFOand LIFO	-		A and FIFOand LIFO	○		A and FIFOand LIFO				○		A and FIFO and LIFO
MAR.1998	○		A and FIFOand LIFO	-		-	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.1999	-	-	-	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.2000	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.2001	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.2002	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.2003	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.2004	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.2005	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.2006	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFOand LIFO	○		A and FIFO and LIFO
MAR.2007	○		A and FIFOand LIFO	-		A and FIFOand LIFO									
MAR.2008	-		-			-									
MAR.2009	-		-			-									
MAR.2010	-		-			-									
MAR.2011															

TOHO ZINC CO.,LTD.(5707)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		A				○		A				○		A
MAR.1976	○		A				○		A				○		A
MAR.1977	○		A				○		A				○		A
MAR.1978	○		A				○		A				○		A
MAR.1979	○		LIFO				○		LIFO				○		LIFO
MAR.1980	○		LIFO				○		LIFO				○		LIFO
MAR.1981	○		LIFO				○		LIFO				○		LIFO
MAR.1982	○		LIFO				○		LIFO				○		LIFO
MAR.1983	○		LIFO				○		LIFO				○		LIFO
MAR.1984	○		LIFO				○		LIFO				○		LIFO
MAR.1985	○		LIFO				○		LIFO				○		LIFO
MAR.1986	○		LIFO				○		LIFO				○		LIFO
MAR.1987	○		LIFO				○		LIFO				○		LIFO
MAR.1988	○		LIFO				○		LIFO				○		LIFO
MAR.1989	○		LIFO				○		LIFO				○		LIFO
MAR.1990	○		LIFO				○		LIFO				○		LIFO
MAR.1991	○		LIFO				○		LIFO				○		LIFO
MAR.1992	○		LIFO				○		LIFO				○		LIFO
MAR.1993	○		LIFO				○		LIFO				○		LIFO
MAR.1994	○		LIFO				○		LIFO				○		LIFO
MAR.1995	○		LIFO				○		LIFO				○		LIFO
MAR.1996	○		LIFO				○		LIFO				○		LIFO
MAR.1997	○		LIFO				○		LIFO				○		LIFO
MAR.1998	○		A and LIFO	○		LIFO and A	○		A and LIFO	○		A and LIFO	○		A and LIFO
MAR.1999	○		A and LIFO	○		LIFO and A	○		A and LIFO	○		A and LIFO	○		A and LIFO
MAR.2000	○		LIFO	○		LIFO and A	○		LIFO	○		A and LIFO	○		LIFO
MAR.2001	○		A and LIFO	○		LIFO and A	○		A and LIFO	○		A and LIFO	○		A and LIFO
MAR.2002	○		A and LIFO	○		LIFO and A	○		A and LIFO	○		A and LIFO	○		A and LIFO
MAR.2003	○		A and LIFO	○		LIFO and A	○		A and LIFO	○		A and LIFO	○		A and LIFO
MAR.2004	○		A and LIFO	○		LIFO and A	○		A and LIFO	○		A and LIFO	○		A and LIFO
MAR.2005	○		A and LIFO	○		LIFO and A	○		A and LIFO	○		A and LIFO	○		A and LIFO
MAR.2006	○		LIFO	○		LIFO	○		LIFO	○		A and LIFO	○		LIFO
MAR.2007	○		LIFO	○		LIFO	○		LIFO	○		A and LIFO	○		LIFO
MAR.2008	○		A and LIFO	○		LIFO and A	○		A and LIFO	○		A and LIFO	○		A and LIFO
MAR.2009	○		FIFO and A	○		FIFO and A	○		FIFO and A	○		A and LIFO	○		FIFO and A
MAR.2010	○		FIFO and A	○		FIFO and A	○		FIFO and A	○		A and LIFO	○		FIFO and A
MAR.2011															

MITSUBISHI MATERIALS CORPORATION (5711)

MONTH/YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw materials
MAR.1975	○	○	A					○	A					○	A
MAR.1976	○	○	A&LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1977	○	○	A&LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1978	○	○	A&LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1979	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1980	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1981	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1982	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1983	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1984	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1985	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1986	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1987	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1988	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1989	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1990	○	○	A and LIFO				○	○	A and LIFO				○	○	A and LIFO
MAR.1991	○	-	A				○	○	A				○	○	A
MAR.1992	○	-	A				○		A				○		A
MAR.1993	○	○	A and FIFO and FIFO and Sand LAST				○		S and FIFO and LIFO and A				○		S and FIFO and LIFO and A
MAR.1994	○	○	A and FIFO and FIFO and Sand LAST				○	○	S and FIFO and LIFO and A				○	○	S and FIFO and LIFO and A
MAR.1995	○	○	A and FIFO and FIFO and Sand LAST				○	○	S and FIFO and LIFO and A				○	○	S and FIFO and LIFO and A
MAR.1996	○	○	A and FIFO and FIFO and Sand LAST				○	○	S and FIFO and LIFO and A				○	○	S and FIFO and LIFO and A
MAR.1997	○	○	A and FIFO and FIFO				○	○	FIFO and LIFO and A				○	○	FIFO and LIFO and A
MAR.1998	○	○	A and FIFO	○	○	A and FIFO and LAST	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.1999	○	○	A and FIFO	○	○	A and FIFO and LAST	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2000	○	○	A and FIFO	○	○	A and FIFO	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2001	○	○	A and FIFO	○	○	A and FIFO	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2002	○	○	A and FIFO	○	○	A and FIFO	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2003	○	○	A and FIFO	○	○	A and FIFO	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2004	○	○	A and FIFO	○	○	A and FIFO	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2005	○	○	A and FIFO	○	○	A and FIFO	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2006	○	○	A and FIFO	○	○	A and FIFO	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2007	○	○	A and FIFO	○	○	A and FIFO	○	○	FIFO and A	○	○	FIFO and A	○	○	FIFO and A
MAR.2008															
MAR.2009															
MAR.2010															
MAR.2011															

DOWA HOLDINGS CO.LTD (5714)

MONTH/YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw materials
MAR.1975	○	○	S and LIFO and FIFO	-	-	-	-		-				○	○	LIFO and A
MAR.1976	○	○	S and LIFO and FIFO	-	-	-	-		-				○	○	LIFO and A
MAR.1977	○	○	S and LIFO and FIFO	-	-	-	-		-				○	○	LIFO and A
MAR.1978	○	○	LIFO and A	-	-	-	-		-				○	○	LIFO and A
MAR.1979	○	○	LIFO and A	-	-	-	-		-				○	○	LIFO and A
MAR.1980	○	○	LIFO and A	-	-	-	-		-				○	○	LIFO and A
MAR.1981	○	○	LIFO and A	-	-	-	-		-				○	○	LIFO and A
MAR.1982	○	○	LIFO and A	-	-	-	-		-				○		LIFO and A
MAR.1983	○	○	LIFO and A	-	-	-	-		-				○		LIFO and A
MAR.1984	○	○	S and LIFO and A	-	-	-	-		-				○		LIFO and A
MAR.1985	○	○	S and LIFO and A	-	-	-	-		-				○		LIFO and A
MAR.1986	○	○	S and LIFO and A	-	-	-	-		-				○		LIFO and A
MAR.1987	○	○	S and LIFO and A	-	-	-	-		-				○		LIFO and A
MAR.1988	○	○	S and LIFO and A	-	-	-	-		-				○		LIFO and A
MAR.1989	○	○	S and LIFO and A	-	-	-	○		LIFO and A				○		LIFO and A
MAR.1990	○	○	S and LIFO and A	-	-	-	○		LIFO and A				○		LIFO and A
MAR.1991	○	○	S and FIFO and LIFO and A	-	-	-	○		FIFO and LIFO and A				○		FIFO and LIFO and A
MAR.1992	○	○	S and FIFO and LIFO and A	-	-	-	○		FIFO and LIFO and A				○		FIFO and LIFO and A
MAR.1993	○	○	S and FIFO and LIFO and A	-	-	-	○		S and FIFO and LIFO and A				○		FIFO and LIFO and A
MAR.1994	○	○	S and FIFO and LIFO and A	-	-	-	○		S and FIFO and LIFO and A				○		FIFO and LIFO and A
MAR.1995	○	○	S and FIFO and LIFO and A	-	-	-	○		S and FIFO and LIFO and A				○		FIFO and LIFO and A
MAR.1996	○	○	S and FIFO and LIFO and A	-	-	-	○		S and FIFO and LIFO and A				○		FIFO and LIFO and A
MAR.1997	○	○	S and FIFO and LIFO and A	-	-	-	○		S and FIFO and LIFO and A				○		FIFO and LIFO and A
MAR.1998	○		S	○	○	FIFO and LIFO and A	○		FIFO and LIFO and A	○		S	○		FIFO and LIFO and A
MAR.1999	○		S	○	○	FIFO and LIFO and A	○		S and FIFO and LIFO and A	○		S	○		FIFO and LIFO and A
MAR.2000	○		S	○	○	FIFO and LIFO and A	○		FIFO and LIFO and A	○		S and FIFO and LIFO	○		LIFO
MAR.2001	○		S	○	○	FIFO and LIFO and A	○		FIFO and LIFO and A	○		S	○		FIFO and LIFO and A
MAR.2002	○		S	○	○	FIFO and LIFO and A	○		FIFO and LIFO and A	○		S	○		FIFO and LIFO and A
MAR.2003	○		S	○	○	FIFO and LIFO and A	○		FIFO and LIFO and A	○		S	○		FIFO and LIFO and A
MAR.2004	○		S	○	○	FIFO and LIFO and A	○		FIFO and A	○		S	○		FIFO and A
MAR.2005	○		S	○	○	FIFO and LIFO and A	○		FIFO and A	○		S	○		FIFO and A
MAR.2006	○		S	○	○	FIFO and LIFO and A	○		FIFO and A	○		S	○		FIFO and A
MAR.2007															
MAR.2008															
MAR.2009															
MAR.2010															
MAR.2011															

SUMITOMO METAL INDUSTRIES, LTD. (5713)

MONTH/YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw materials
MAR.1975		○	A	-		-		○	A	-				○	A
MAR.1976	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1977	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1978	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1979	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1980	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1981	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1982	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1983	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1984	○	○	LIFO and A	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1985	○	○	LIFO	-		-	○	○	LIFO and A	-			○	○	LIFO and A
MAR.1986	○	○	LIFO	-		-	○	○	LIFO	-			○	○	LIFO
MAR.1987	○	○	LIFO	-		-	○	○	LIFO	-			○	○	LIFO
MAR.1988	○		LIFO	-		-	○		LIFO	-			○		LIFO
MAR.1989	○		LIFO	-		-	○		LIFO	-			○		LIFO
MAR.1990	○		LIFO	-		-	○		LIFO	-			○		LIFO
MAR.1991	○		LIFO and FIFO	-		-	○		LIFO and FIFO	-			○		LIFO and FIFO
MAR.1992	○		LIFO and FIFO	-		-	○		LIFO and FIFO	-			○		LIFO and FIFO
MAR.1993	○		LIFO and FIFO	-		-	○		LIFO and FIFO	-			○		LIFO and FIFO
MAR.1994	○		LIFO and FIFO	-		-	○		LIFO and FIFO	-			○		LIFO and FIFO
MAR.1995	○		LIFO and FIFO	-		-	○		LIFO and FIFO	-			○		LIFO and FIFO
MAR.1996	○		LIFO and FIFO	-		-	○		LIFO and FIFO	-			○		LIFO and FIFO
MAR.1997	○		LIFO and FIFO	-		-	○		LIFO and FIFO	-			○		LIFO and FIFO
MAR.1998	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO
MAR.1999	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO
MAR.2000	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO
MAR.2001	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO
MAR.2002	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO
MAR.2003	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO
MAR.2004	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO	○		LIFO and FIFO
MAR.2005	○		FIFO	○		FIFO	○		FIFO	○		FIFO	○		LIFO and FIFO
MAR.2006	○		FIFO	○		FIFO	○		FIFO	○		FIFO	○		LIFO and FIFO
MAR.2007	○		FIFO	○		FIFO	○		FIFO	○		FIFO	○		LIFO and FIFO
MAR.2008	○		FIFO	○		FIFO	○		FIFO	○		FIFO	○		LIFO and FIFO
MAR.2009	○		FIFO	○		FIFO	○			○		FIFO	○		LIFO and FIFO
MAR.2010	○		FIFO	○		FIFO	○			○		FIFO	○		LIFO and FIFO
MAR.2011															

FURUKAWA CO.,LTD. (5715)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-proc	H	L	raw-materials
MAR.1975		○	A	–		–		○	A				○		A
MAR.1976	○	○	A	–		–	○	○	A				○		LIFO and A
MAR.1977	○	○	A	–		–	○	○	A				○		LIFO and A
MAR.1978	○	○	LIFO and A	–		–	○	○	LIFO and A				○		LIFO and A
MAR.1979	○	○	LIFO and A	–		–	○	○	LIFO and A				○		LIFO and A
MAR.1980	○		LIFO and A	–		–	○		LIFO and A				○		LIFO and A
MAR.1981	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1982	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1983	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1984	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1985	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1986	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1987	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1988	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1989	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1990	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1991	○		LIFO	–		–	○		A				○		A
MAR.1992	○		LIFO	–		–	○		A				○		A
MAR.1993	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1994	○		LIFO and A	–		–	○		LIFO and A				○		A
MAR.1995	○		S and LIFO and A	–		–	○		LIFO and A				○		A
MAR.1996	○		S and LIFO and A	–		–	○		LIFO and A				○		A
MAR.1997	○		S and LIFO and A	–		–	○		LIFO and A				○		A
MAR.1998	○		S	○		LIFO and A				○		LIFO and A	○		A
MAR.1999	○		S	○		LIFO and A				○		LIFO and A	○		A
MAR.2000	○		LIFO and A	○		LIFO and A				○		LIFO and A	○		A
MAR.2001	○		LIFO and A	○		LIFO and A				○		LIFO and A	○		A
MAR.2002	○		S	○		A				○		A	○		A
MAR.2003	–		–	○		A				○		A	○		A
MAR.2004	–		–	○		A				○		A	○		A
MAR.2005	○		S												
MAR.2006	○		S												
MAR.2007	○		S												
MAR.2008	○		S												
MAR.2009															
MAR.2010															
MAR.2011															

TOHO TITANIUM COMPANY,LIMITED (5727)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1976	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1977	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1978	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1979	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1980	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1981	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1982	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1983	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1984	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1985	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1986	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1987	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1988	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1989	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1990	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1991	○		FIFO and LIFO	–		–	○		FIFO and LIFO	–			○		LIFO
MAR.1992	○		FIFO and LIFO	–		–	○		FIFO and LIFO	–			○		LIFO
MAR.1993	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1994	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1995	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1996	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1997	○		LIFO	–		–	○		LIFO	–			○		LIFO
MAR.1998	–		–	○		LIFO	–		–	○		LIFO	○		LIFO
MAR.1999	–		–	○		LIFO	–		–	○		LIFO	○		LIFO
MAR.2000	○		LIFO	○		LIFO	○		LIFO	○		LIFO	○		LIFO
MAR.2001	○		LIFO	○		LIFO	○		LIFO	○		LIFO	○		LIFO
MAR.2002				○		FIFO				○		FIFO	○		FIFO
MAR.2003				○		FIFO				○		FIFO	○		FIFO
MAR.2004				○		FIFO				○		FIFO	○		FIFO
MAR.2005				○		FIFO				○		FIFO	○		FIFO
MAR.2006				○		FIFO				○		FIFO	○		FIFO
MAR.2007				○		FIFO				○		FIFO	○		FIFO
MAR.2008				○		FIFO				○		FIFO	○		FIFO
MAR.2009				○		FIFO				○		FIFO	○		FIFO
MAR.2010				○		FIFO				○		FIFO	○		FIFO
MAR.2011															

NIHON SEIKO CO.,LTD. (5729)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		LIFO	–		–	○		LIFO				○		LIFO
MAR.1976	○		LIFO	–		–	○		LIFO				○		LIFO
MAR.1977	○		LIFO	–		–	○		LIFO				○		LIFO
MAR.1978	○		LIFO	–		–	○		LIFO				○		LIFO
MAR.1979	○		LIFO	–		–	○		LIFO				○		LIFO
MAR.1980	○		LIFO	–		–	○		LIFO				○		A
MAR.1981	○		LIFO	–		–	○		LIFO				○		A
MAR.1982	○		LIFO	–		–	○		LIFO				○		A
MAR.1983	○		LIFO	–		–	○		LIFO				○		A
MAR.1984	○		LIFO	–		–	○		LIFO				○		A
MAR.1985	○		LIFO	–		–	○		LIFO				○		A
MAR.1986	○		LIFO	–		–	○		LIFO				○		A
MAR.1987	○		LIFO	–		–	○		LIFO				○		A
MAR.1988	○		LIFO	–		–	○		LIFO				○		A
MAR.1989	○		LIFO	–		–	○		LIFO				○		A
MAR.1990	○		LIFO	–		–	○		LIFO				○		A
MAR.1991	○		A	–		–	○		A				○		A
MAR.1992	○		A	–		–	○		A				○		A
MAR.1993	○		A	–		–	○		A				○		A
MAR.1994	○		A	–		–	○		A				○		A
MAR.1995	○		A	–		–	○		A				○		A
MAR.1996	○		A	–		–	○		A				○		A
MAR.1997	○		A	–		–	○		A				○		A
MAR.1998	○		A	○		A	○		A				○		A
MAR.1999	○		A	○		A	○		A				○		A
MAR.2000				○		A	○		A	○		A	○		A
MAR.2001				○		A	○		A	○		A	○		A
MAR.2002				○		A	○		A	○		A	○		A
MAR.2003				○		A	○		A	○		A	○		A
MAR.2004				○		A	○		A	○		A	○		A
MAR.2005				○		A	○		A	○		A	○		A
MAR.2006				○		A	○		A	○		A	○		A
MAR.2007				○		A	○		A	○		A	○		A
MAR.2008															
MAR.2009															
MAR.2010															
MAR.2011															

NIPPON SHINDO CO.,LTD. (5753)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1976	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1977	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1978	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1979	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1980	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1981	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1982	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1983	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1984	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1985	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1986	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1987	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1988	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1989	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1990	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1991	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1992	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1993	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1994	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1995	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1996	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1997	○		LIFO	–		–	○		FIFO	–		–	○		LIFO
MAR.1998				○		FIFO	–		–	○		FIFO	○		LIFO
MAR.1999				○		FIFO	–		–	○		FIFO	○		LIFO
MAR.2000				○		FIFO	○		FIFO	○		FIFO	○		LIFO
MAR.2001				○		FIFO	○		FIFO	○		FIFO	○		LIFO
MAR.2002				○		FIFO				○		FIFO	○		LIFO
MAR.2003				○		FIFO				○		FIFO	○		LIFO
MAR.2004				○		FIFO				○		FIFO	○		FIFO
MAR.2005				○		FIFO				○		FIFO	○		FIFO
MAR.2006				○		FIFO				○		FIFO	○		FIFO
MAR.2007				○		FIFO				○		FIFO	○		FIFO
MAR.2008				○		FIFO				○		FIFO	○		FIFO
MAR.2009				○		FIFO				○		FIFO	○		FIFO
MAR.2010				○		FIFO				○		FIFO	○		FIFO
MAR.2011															

FURUKAWA ELECTRIC CO.,LTD. (5801)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		A	–		–	○		A	–		–	○		A
MAR.1976	○		A	–		–	○		A	–		–	○		A
MAR.1977	○		A	–		–	○		A	–		–	○		A
MAR.1978	○		A	–		–	○		A	–		–	○		A
MAR.1979	○		A	–		–	○		A	–		–	○		A
MAR.1980	○		A	–		–	○		A	–		–	○		A
MAR.1981	○		A	–		–	○		A	–		–	○		A
MAR.1982	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1983	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1984	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1985	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1986	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1987	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1988	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1989	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1990	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1991	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1992	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1993	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1994	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1995	○		A	–		–	○		A	–		–	○		LIFO
MAR.1996	○		LIFO and A	–		–	○		A	–		–	○		A
MAR.1997	○		A	–		–	○		A	–		–	○		LIFO and A
MAR.1998	–		A	○		A	–		–	○		A	○		LIFO and A
MAR.1999	–		A	○		A	–		–	○		A	○		LIFO and A
MAR.2000	○		A	○		A	○		A	○		A	○		A
MAR.2001	○		A	○		A	○		A	○		A	○		LIFO
MAR.2002	○		A	○		A	○		A	○		A	○		LIFO
MAR.2003	–		A	○		A	–		–	○		A	○		LIFO
MAR.2004	–		A	○		A	–		–	○		A	○		LIFO
MAR.2005	○		A	○		A	○		A	○		A	○		LIFO
MAR.2006	○		A	○		A	○		A	○		A	○		A
MAR.2007	○		A	○		A	○		A	○		A	○		A
MAR.2008															
MAR.2009															
MAR.2010															
MAR.2011															

SUMITOMO ELECTRIC INDUSTRIES,LTD. (5802)

MONTH.YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw-materials
MAR.1975	○		A	–		–	○		A	–		–	○	○	A
MAR.1976	○		A	–		–	○		A	–		–	○	○	A
MAR.1977	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1978	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1979	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1980	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1981	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1982	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1983	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1984	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1985	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1986	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1987	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1988	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1989	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1990	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1991	○		A	–		–	○		A	–		–		○	LIFO and A
MAR.1992	○		A	–		–	○		A	–		–		○	LIFO and A
MAR.1993	○		A	–		–	○		A	–		–		○	LIFO and A
MAR.1994	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1995	○		A	–		–	○		A	–		–	○	○	LIFO and A
MAR.1996	○		A	–		–	○		A	–		–		○	LIFO and A
MAR.1997	○		A	–		–				○		A		○	A
MAR.1998				○		A				○		A	○	○	LIFO and A
MAR.1999				○		A				○		A	○	○	LIFO and A
MAR.2000				○		A				○		A		○	LIFO
MAR.2001				○		A				○		A		○	LIFO
MAR.2002				○		A				○		A		○	LIFO
MAR.2003				○		A				○		A	○	○	LIFO
MAR.2004				○		A				○		A	○	○	LIFO and A
MAR.2005				○		A				○		A	○	○	LIFO and A
MAR.2006				○		A				○		A	○	○	LIFO and A
MAR.2007				○		A				○		A	○	○	LIFO and A
MAR.2008				○		A				○		A	○	○	LIFO and A
MAR.2009															
MAR.2010															
MAR.2011															

FUJIKURA LTD. (5803)

MONTH,YEAR	H	L	merchandise	H	L	product	H	L	semi-processed goods	H	L	work-in-process	H	L	raw materials
MAR1975	○		A	-		-	○		A	-			○		A
MAR1976	○		A	-		-	○		A	-			○		A
MAR1977	○		A	-		-	○		A	-			○		A
MAR1978	○		A	-		-	○		A	-			○		A
MAR1979	○		A	-		-	○		A	-			○		A
MAR1980	○		A	-		-	○		A	-			○		A
MAR1981	○		A	-		-	○		A	-			○		A
MAR1982	○		A	-		-	○		A	-			○		A
MAR1983	○		A	-		-	○		A	-			○		LIFO
MAR1984	○		A	-		-	○		A	-			○		LIFO
MAR1985	○		A	-		-	○		A	-			○		LIFO
MAR1986	○		A	-		-	○		A	-			○		LIFO and A
MAR1987	○		A	-		-	○		A	-				○	LIFO and A
MAR1988	○		A	-		-	○		A	-				○	LIFO and A
MAR1989	○		A	-		-	○		A	-				○	LIFO and A
MAR1990	○		A	-		-	○		A	-				○	LIFO
MAR1991	○		A	-		-	○		A	-				○	LIFO
MAR1992	○		A	-		-	○		A	-				○	LIFO
MAR1993	○		A	-		-	○		A	-				○	LIFO
MAR1994	○		A	-		-	○		A	-				○	LIFO
MAR1995	○		A	-		-	○		A	-				○	LIFO
MAR1996	○		A	-		-	○		A	-				○	LIFO
MAR1997	○		A	-		-	○		A	-				○	LIFO
MAR1998	-		-	○		A	-		-	○		A	○	○	LIFO and A
MAR1999	-		-	○		A	-		-	○		A	○	○	LIFO and A
MAR2000	-		-	○		A	-		-	○		A		○	LIFO
MAR2001	○		A	○		A	○		A	○		A	○	○	LIFO and A
MAR2002	○		A	○		A	○		A	○		A	○	○	LIFO and A
MAR2003	○		A	○		A	○		A	○		A	○	○	LIFO and A
MAR2004	-		-	○		A	-		-	○		A	○	○	LIFO and A
MAR2005	○		A	○		A	○		A	○		A	○	○	LIFO and A
MAR2006	○		A	○		A	○		A	○		A	○	○	LIFO and A
MAR2007	○		A	○		A	○		A	○		A	○	○	LIFO and A
MAR2008														○	LIFO
MAR2009													○		LIFO
MAR2010													○		LIFO
MAR2011															

Research on the Relevance between Anxiety among Creditors and Corporate Bankruptcy —Analysis from Enquiries Trend of Credit Reporting Agency—

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Research on the Relevance between Anxiety among Creditors and Corporate Bankruptcy
−Analysis from Enquiries Trend of Credit Reporting Agency—

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Abstract: Bankruptcy prediction has been researched and analyzed in various approaches, but these quantitative analyses only use items of financial statements, which means you need to obtain financials from your customers and suppliers in first place. Unlike public companies, financials of private companies are hard to obtain in every country except where mandatory disclosure are in required by the law. As to bankruptcy prediction using qualitative analysis, no precedent researches cover qualitative information such as anxiety among creditors. This paper measures anxiety among creditors as qualitative information and analyzes the relevance with bankruptcy probability. It has been well known among credit professional that the number of inquiries for credit reporting agencies suddenly increase just before bankruptcy. This paper evaluates the accuracy of this experience rule using statistical method.

Keywords: Credit risk, Bankruptcy, Qualitative analysis, Trade payment, Enquiries trend

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Introduction

Bankruptcy prediction has been researched and analyzed in various approaches, especially model using quantitative analysis such as Altman Z Score, Logit Model are well known. However, these quantitative analyses only use items of financial statements, which means you need to obtain financials from your customers and suppliers in first place. Unlike public companies, financials of private companies are hard to obtain in every country except where mandatory disclosure is required by the law.

When it comes to bankruptcy prediction using qualitative analysis, few precedent researches cover qualitative information such as anxiety among creditors. Okamoto focuses on the relationship of bankruptcy and qualitative information such as organization, president and product [1]. Shirata analyzes the relationship of corporate bankruptcy and keywords appeared in annual reports [2]. Tou researches the relevance between bankruptcy and qualitative information such as market needs, products & services, president and others, using fuzzy sets. He selects bad reputation as one of the qualitative items in other information. This paper measures anxiety among creditors as qualitative information using enquiries trend or inquiries trend and analyzes the relevance with bankruptcy probability.

It has been well known among credit professional that the number of inquiries for credit reporting agencies suddenly increase just before bankruptcy. This paper evaluates the accuracy of this experience rule using statistical method. Provided that the inquiries trend, the number of inquiries for credit reporting agency reflect the anxiety among creditors, this paper analyzes the relevance of inquiries trend and credit risk of the subject company. It is hard to obtain financials of SMEs, but it would be useful if bankruptcy prediction can be realized by qualitative information such as anxiety. Encyclopedia of Psychology defines anxiety as "an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure". [3] Rumor is an interesting story or piece of news that may or may not be true, that spreads quickly from person to person. In this paper, "anxiety among creditors" is the emotion or worried thoughts derived from the rumor, which is not verified the truthfulness of the information. If we can also combine quantitative analysis of precedent researches as mid to long range prediction and qualitative analysis of this research as short-term prediction, accuracy should improve.

Precedent Researches	Year	Country	Data analyzed
Altman	1968	US	Public companies, manufacturing, private companies, non-manufacturing
Shimizu	1985	Japan	SMEs, years in business, president age/background, reputation
Okamaoto	1987	Japan	Organization, president, products
Oohigashi	2008	Japan	Rough sets, news article
Tou	2008	Japan	Fuzzy sets, market needs, products & services, president
Shirata	2011	Japan	Keywords in annual reports

Table 1 Summary of precedent researches

1. Research Method

Research is conducted by randomly obtaining company credit reports of 71 companies in UK who were bankrupted during January to June in 2017 (Table 2 in Appendix). The industries varied from construction to services including wholesale, transportation, manufactures and real estate. Years in operation (age) and capital amount of sample are shown in the Figure 1. Years in operation are less than 10 years in 82% sample companies while capital amount is less than GBP100 for 73% sample companies. It is safe to state sample companies are mostly young SMEs with wide variety of industry. Analysis is done to see the change of "Enquiries Trend", which is the monthly trend of the number of inquiries for credit reporting agency.

Enquiries trend can be seen in credit report only in UK and not available in the market in Japan. This is because this type of qualitative credit information could mislead a company to bankruptcy in Japan when the information is provided by a reliable credit reporting agency. Thus, credit information such as payment delays are always provided verbally in Japan instead of being showed in a credit report.

Company credit reports from Creditsafe are used since few credit reporting agencies show trend of enquiries or inquiries in their credit reports. Creditsafe has been one of the world's largest business information providers with 240 Million database globally. Corporate bankruptcy data are sourced from Office for National Statistics, UK. Bankruptcy ratio is calculated by the number of insolvency by industry divided by the total number of active companies in the same industry in 2016.

The author conducted survey for credit managers and credit professionals in August 2017 [5]. The purpose of survey is to find out the notion of credit professionals about qualitative data of credit. 117 responded to the survey. Demographics of respondents are shown in Table 3 in Appendix. Top 3 industries are Services, Manufacturing and Wholesale. They have been widely known to public that they focus on credit management compared to the other industry. Purpose of the survey is to find out what action they usually take after obtaining credit information such as rumor or bad reputation among industry.

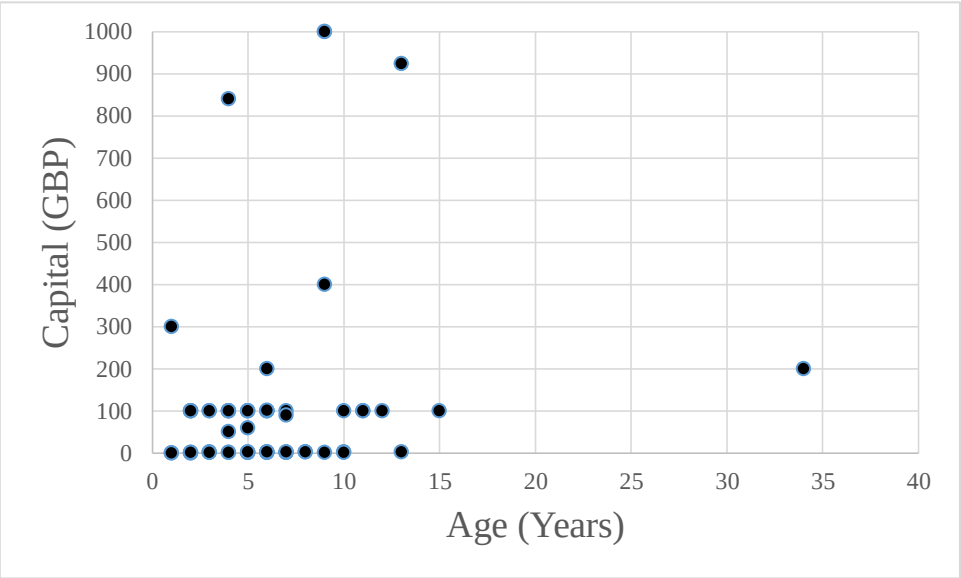

Figure 1 Demographics of sample (X axis: age, Y axis: capital amount)

3. Relevance between anxiety among credit professionals and inquiries trend

64% of respondents answered, "Inquire credit reporting agency" and "Obtain credit report" in the survey conducted for credit managers and credit professionals in corporations (Table 4 in Appendix). Allport and Postman defined rumor as "specific propositions for belief, passed from person to person without secure standards of evidence being present" [6]. This survey results clearly indicates majority of credit professionals turn to credit reporting agencies or credit reports to obtain secure standards of evidence for credit information they obtain from the other sources. This is because credit professionals have various sources to identify credit risk including banks, credit reporting agencies, competitors, industry association, customer's employees and neighborhood. Rosnow says "the difference between the information and rumor is to a high degree a property of the context in which an idea is considered" [7]. Rumor might be only a rumor, but when you hear the same rumor from various sources, a rumor becomes the information.

Figure 2 shows the Enquiries Trend of Dunne Group in Creditsafe's credit report. Dunne Group is a British construction company who went bankrupt in August 2016. Enquiries Trend shows the number of inquiries skyrocketed in July just before insolvency in August 2016. The number increased eight times to 401 while the average number of inquiries per month is 52. It is apparent that creditors of the subject who obtained credit information such as rumor or bad reputation in industry took action to verify the truth by looking at a credit report of the subject.

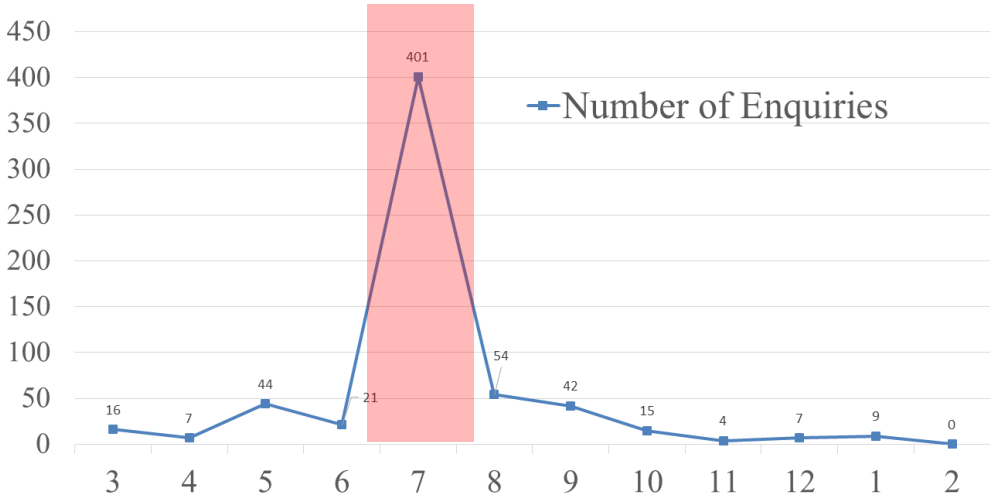

Figure 2 Rapid increase of enquiries before bankruptcy (X axis: month, Y axis: number of enquiries)

4. Analysis on enquiries increase and credit risk by industry

4-1. Enquiries increase, credit score and bankruptcy ratio

The number of enquiries increase just before bankruptcy in some cases while it stays the same in other cases. Comparing average increase ratio of enquiries [8] by industry and credit score was conducted (Figure3). Average credit score is sourced from "2016 A Year in Review" by Creditsafe [9]. Credit score of construction and service are respectively 54 and 50 while average credit score is 61 in 2016. Increase ratio of construction and service are 613% and 532% while average is 470%. This indicates industries with relatively low credit score such as construction and service have higher increase ratio of inquiries. Credit score of real estate and transportation are respectively 64 and 59 while their increase ratios are 352% and 368% respectively. This indicates industries with relatively high credit score such as real estate and transportation have lower increase ratio of enquiries.

Figure 2 also shows comparison between increase ratio of enquiries and bankruptcy ratio. Bankruptcy ratio of construction and service are respectively 1.21% and 0.75% while average bankruptcy ratio in UK is 0.62% in 2016 (Table 5 in Appendix). This indicates industries with higher bankruptcy ratio tend to have higher increase ratio of enquiries. On the other hand, bankruptcy ratio of real estate and transportation are 0.39% and 0.31% respectively. This illustrates industries with higher bankruptcy ratio tend to have lower increase ratio of enquiries. Industries with higher credit risk are located in the upper left corner of the Figure 2 while industries with lower credit risk are located in the lower right corner. Consequently, the relevance between increase ratio of enquiries and credit risk can be observed.

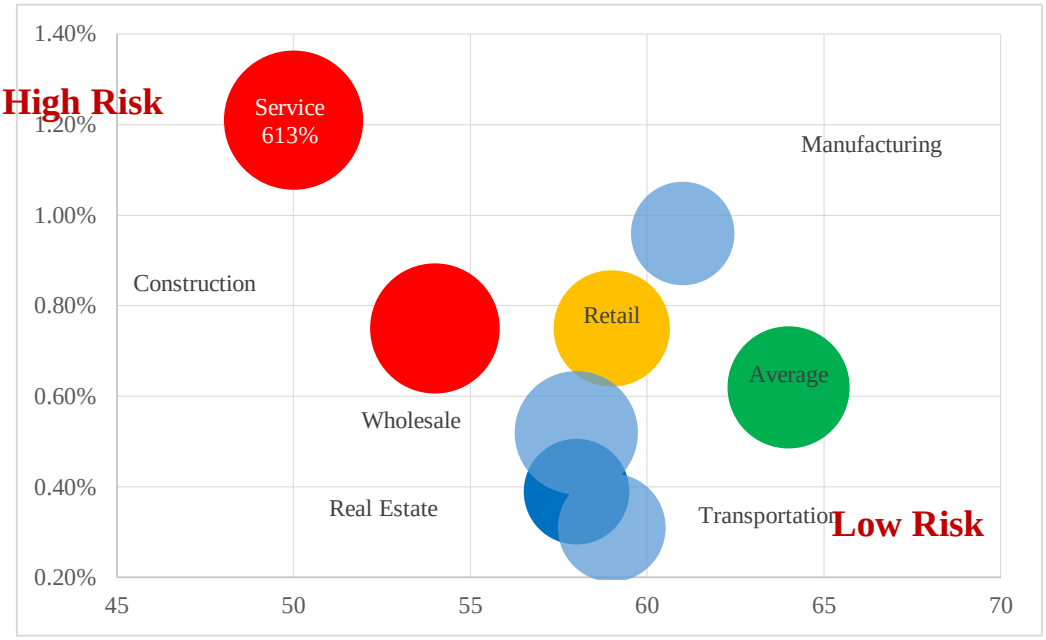

Figure 3 Enquiries increase, credit score and bankruptcy ratio (X axis: credit score, Y axis: bankruptcy ratio, circle size: number of enquiries increase)

4-2. Correlation of credit score and enquiries growth

Correlation analysis is conducted to identify the correlation among average credit score, bankruptcy ratio and enquiries trend, using Microsoft Excel. Correlation analysis is a statistical method to measure the relationship between the two variables. "Credit score and bankruptcy ratio" and "average credit score and enquiries growth" show strong negative correlation while "bankruptcy ratio and enquiries trend" has weak correlation. Especially, "average credit score and enquiries growth" indicates significant negative correlation for 5% significance level, which should be above 0.754% when number of samples is seven. We can conclude when average credit score gets lower, enquiries growth gets higher.

	Average credit score	Bankruptcy ratio	Enquiries growth
Average credit score	1		
Bankruptcy ratio	-0.744969083	1	
Enquiries growth	-0.901385585	0.580865621	1

Table 6 Correlation of credit score and enquiries growth

4-3. Bankruptcy ratio and overdue days by industry

Figure 4 shows the comparison between bankruptcy ratio and overdue days of payment by industry. Again, construction and service are located in the upper right corner of the Figure 3 while real estate and transportation are located in the lower left corner. Average overdue days of payment in construction and service in 2016 are respectively 21 days and 19 days while overall industry average is 17 days according to Creditsafe. It is obvious that industries who suffers longer overdue

days of payment tend to have higher growth ratio of enquiries by comparing average overdue days and bankruptcy ratio by industry.

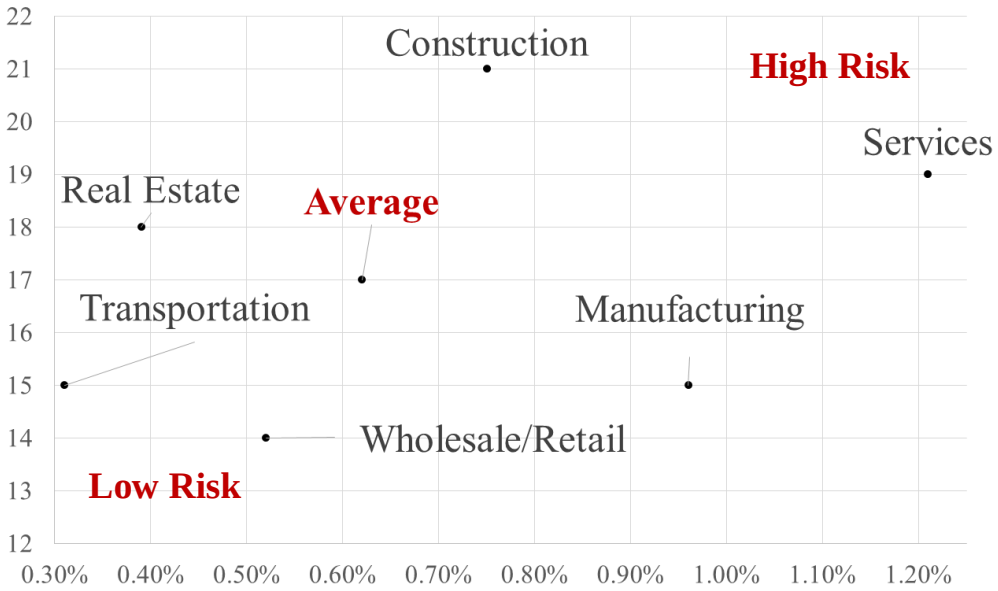

Figure 4 Bankruptcy ratio and overdue days by industry (X axis: bankruptcy ratio, Y axis: overdue days)

4-4. Relevance between Enquiries Trend and bankruptcy

Analysis of months when the number of inquiries increased before bankruptcy shows the number of enquiries increases in the same month of bankruptcy in 39% cases. The number of inquiries increases in one month before the bankruptcy in 24% cases. In 15% cases the increase happens in two months before bankruptcy. In all, 79% of the increase happens from two months before the bankruptcy to the same month in bankruptcy (Table 7). It is hard to distinct the increase is happened before or after the bankruptcy due to the nature of the database in case the month increased and bankrupted are the same. However, the chance of increasing after the bankruptcy is relatively low because majority of bankruptcy happen at the end of the month (Table 8 in Appendix). 28% of bankruptcy used in this research are happened on the 30th of the month.

Months increased	Number	Percentage
Same month	28	39%
One month before	17	24%
Two months before	11	15%
Over two months before	15	21%

Table 7 Months when the number of inquiries increased before bankruptcy

5. Conclusions

64%, majority of credit managers and credit professionals who are in charge of credit management in corporations turn to credit reporting agency for inquiries or obtain a credit report when they receive credit information such as rumor or bad reputation of their customers. Rapid

increase of inquiries, 5 to 6 times larger than average happen in the industries like services and construction. Relatively slow increase, about 3 times are shown in manufacturing, real estate and transportation. Suppliers of construction and services tend to focus on credit management because the number of bankruptcy in these industries is always high.

Especially, bankruptcy ratio of service is about two times higher than average of all industries in UK. This is why they try to verify a fragment information like rumor or reputation. On the other hand, suppliers of real estate and transportation do not dramatically react this type of information because bankruptcy ratio in these industries are not as high as construction and services. Industries with high bankruptcy ratio have a tendency of higher growth ratio of inquiries. On the other hand, industries with low bankruptcy ratio shows lower growth ratio of inquiries. Significant negative correlation can be observed between average credit score and enquiries growth of bankrupted companies. When average credit score gets lower, enquiries growth gets higher.

Percentage of the cases when rapid increase happens from two months to the same month before bankruptcy amounts to 79% Rapid increase of inquiries can be an indicator of bankruptcy prediction. One of the issues of this indicator is that 39% cases of rapid increase happen in the same month of bankruptcy. Only limited measures can be taken to secure their claims when not much time is left before bankruptcy. This indicator is useful for short term prediction as the number of inquiries increase just before bankruptcy, but not effective for long term prediction because the sudden increase of enquiries trend happen just before the bankruptcy. Combining this indicator with traditional bankruptcy prediction should make bankruptcy prediction more accurate. For further research, comparison between active companies and inactive companies should be considered, so that rapid increase only happen just before bankruptcy.

Notes

[1] D. Okamoto, *Research 2 on corporate bankruptcy* (1987)

[2] Y. Shirata, *Company evaluation analysis using text mining* (2009)

[3] A. E. Kazdin, *Encyclopedia of Psychology* (2000, American Psychological Association)

[4] Cambridge Business English Dictionary (Cambridge University Press)

[5] K. Makino, *Analysis on payment trend by industry in Japan and European countries* (2018)

[6] G.W. Allport, L. Postman, *The psychology of rumor* (1947)

[7] R.L. Rosnow, *Factors influencing rumor spreading: replication and extension* (1988)

[8] Increase ratio of enquiries is calculated from the number of enquiries increased before bankruptcy divided by average number of enquiries in recent 12 months.

[9] Creditsafe, *2016 A Year in Review* (2017)

Appendix

Industry	Number	Percentage
Construction	16	22.5%
Wholesale	15	21.1%
Services	14	19.7%
Transportation	10	14.1%

Manufacturing	7	9.8%
Food Service	5	7.0%
Real Estate	4	5.6%
Total	71	100%

Table 2 Bankruptcy companies by industry used in this research

Industry	Number of respondents	Percentage
Services	33	28%
Manufacturing	21	18%
Wholesale	16	14%
Construction	8	7%
Transportation	7	6%
Retail	6	5%
Real Estate	5	4%
Others	21	18%
Total	117	100%

Table 3 Respondents by industry (Source: Survey conducted by the author)

Answers	Number	Percentage
Inquire credit reporting agency	16	31%
Obtain credit report	12	24%
Ask sales person	10	20%
Search internet	7	14%
Inquire bank	6	12%

Table 4 Answers to the question “What action do you take when you feel anxiety about your customers?” (Source: Survey conducted by the author)

Industry	Bankruptcy	Active companies	Bankruptcy ratio
AGRICULTURE, FORESTRY AND FISHING	51		
MINING AND QUARRYING	69	1,745	3.95%
MANUFACTURING	1,430	148,590	0.96%
ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	49	6,630	0.74%
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	137	8,520	1.61%
CONSTRUCTION	2,701	358,410	0.75%

WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	2,174	419,710	0.52%
TRANSPORTATION AND STORAGE	369	119,200	0.31%
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	1,668	175,575	0.95%
INFORMATION AND COMMUNICATION	921	242,960	0.38%
FINANCIAL AND INSURANCE ACTIVITIES	270	45,475	0.59%
REAL ESTATE ACTIVITIES	433	110,595	0.39%
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	1,310	548,420	0.24%
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	3,352	278,120	1.21%
PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	10	-	-
EDUCATION	178	47,825	0.37%
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	324	130,960	0.25%
ARTS, ENTERTAINMENT AND RECREATION	232	70,515	0.33%
OTHER SERVICE ACTIVITIES	593	23,145	2.56%
ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS; UNDIFFERENTIATED GOODS-AND SERVICES-PRODUCING ACTIVITIES OF HOUSEHOLDS FOR OWN USE	4	10,050	0.04%
ACTIVITIES OF EXTRATERRITORIAL ORGANISATIONS AND BODIES	4	84,105	0.00%
ALL OTHERS	1,178	-	-
Total	**17,457**	**2,830,550**	**0.62%**

Table 5 Bankruptcy ratio by industry (Source: Office for National Statistics, 2016)

Date	Number	Percentage
30	20	28%
29	2	3%
28	2	3%
27	1	1%
24	1	1%
23	4	5%
19	1	1%
17	2	3%
16	3	4%
15	9	12%
13	1	1%
11	1	1%
10	5	7%

9	4	5%
8	3	4%
7	2	3%
6	1	1%
5	3	4%
3	1	1%
2	3	5%
1	2	4%
Total	74	100%

Table 8 Date of bankruptcy

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