

# An Investigation of the Value Premium: The Case of Large Value Firms in Japan

**Chikashi TSUJI**

Graduate School of Systems and Information Engineering  
University of Tsukuba  
1-1-1 Tennodai, Tsukuba, Ibaraki, Japan

## Abstract

*We examine the existence of the value premium in the returns of the value industry index for large firms in Japan. This paper's contributions are first, we statistically found that the value premium existed in the returns of the Russell-Nomura overall index for large firms from July 2001 to March 2012. Second, we also clarified that out of 29 Russell-Nomura large-size industry indices, 20 industries had the value premium for July 2001 to March 2012. Further, we empirically demonstrated that through all our three sub-periods, in four industries of Foods, Pharmaceutical, Transportation Equipments, and Wholesale Trade, the value premium existed. Finally, we further clarified that after the US Lehman Shock, the value premium still existed in 17 index returns out of 29 Russell-Nomura large-size industry index returns.*

**Keywords:** Value premium, Russell-Nomura value index, industry stock returns.

## 1. Introduction

Such studies of DeBondt and Thaler (1985), Fama and French (1998), Cohen et al. (2003), Conrad et al. (2003), and Ali et al. (2003) excellently researched the value premium, for example. After these papers, many papers follow the above studies, and they are such papers as Zhang (2005), Liu and Zhang (2008), and Nitschka (2010). As far as we know, however, there seems to be few studies which research this value premium in the industry stock returns. Also, we see little study, which carefully divide sample periods before and after the Lehman Shock. With the above setting as to time period, this paper attempts to reveal which industries had the value premium in Japan and in which periods the value premium existed. These are this paper's objectives, and in this paper, we use the Russell-Nomura value industry indices for large-size firms.

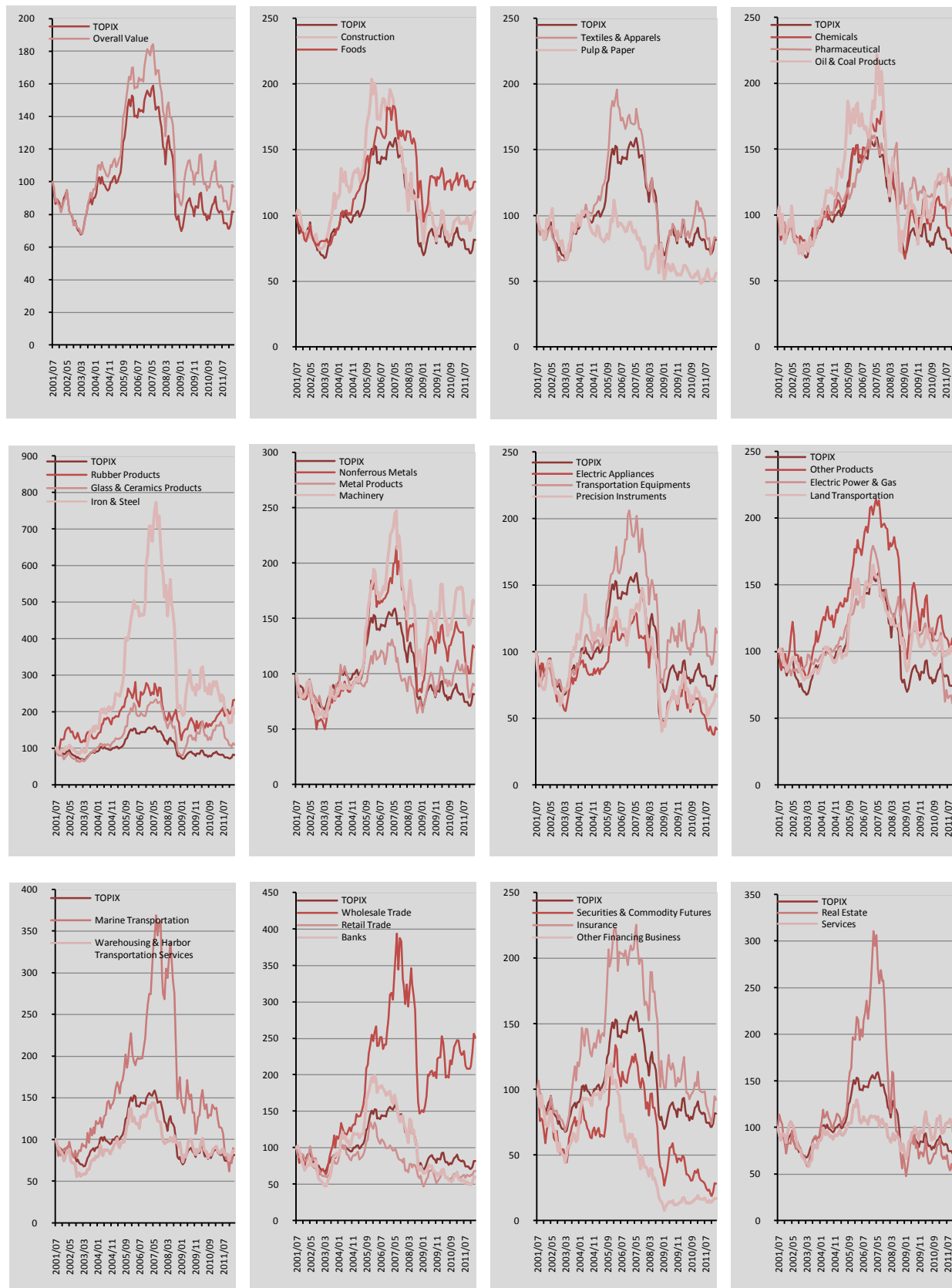
This paper's contributions are as follows. First, we empirically clarified that the value premium existed in the Russell-Nomura overall index for our full sample period, July 2001 to March 2012. Second, out of 29 Russell-Nomura large-size industry index returns, 20 industries had the value premium for July 2001 to March 2012. Third, we found that in our all three sub-periods, in four industries of Foods, Pharmaceutical, Transportation Equipments, and Wholesale Trade, the value premium existed. Finally, we also found that after the US Lehman Shock, the value premium still existed in 17 industries out of 29 Russell-Nomura large-size industry index returns. The rest of the paper is organized as follows. First, Section 2 describes the data and our research design, Section 3 documents our empirical results, and Section 4 concludes the paper.

## 2. Data and Research Design

This paper uses the data of the Tokyo Stock Price Index (TOPIX) and the Russell-Nomura overall value and industry value indices for large firms. The full sample period spans from July 2001 to March 2012. For this full sample period, we can obtain 29 Russell-Nomura's industry indices for large firms. Their concrete names of industries are listed in Tables 1 to 4. The time-series dynamics of the TOPIX, the Russell-Nomura large-size value overall index, and the Russell-Nomura large-size value industry indices are exhibited in Figure 2.

Using the TOPIX data and 29 Russell-Nomura large-size value industry indices, we design our empirical research. More concretely, to perform our empirical tests, first, we divide our full sample periods into three sub-periods. That is, our first sub-sample period is from July 2001 to January 2005, the second sub-sample period is from February 2005 to August 2008, and the third sub-sample period is from September 2008 to March 2012. It is noted that the above third period is after the US Lehman Shock. After this setting, we use *t*-tests for investigating the existence of the value premium. More specifically, we examine which industries and which periods had statistically significant value premium. Our benchmark in the *t*-tests is the return of the TOPIX, thus we use the excess industry returns over the TOPIX returns.

**Figure 1. TOPIX and the Russell-Nomura Value Overall Index for Large Firms and Value Industry Indices for Large Firms**



**Table 1. The *t*-tests of the value premium for large-size value indices: From July 2001 to March 2012**

Industry	<i>t</i> -value ( <i>p</i> -value)	Industry	<i>t</i> -value ( <i>p</i> -value)
Overall Index	5.3161*** (0.0000)	Transportation Equipments	3.4515*** (0.0004)
Construction	2.6476*** (0.0046)	Precision Instruments	0.7212 (0.2361)
Foods	3.2867*** (0.0007)	Other Products	3.4501*** (0.0004)
Textiles & Apparels	0.8691 (0.1932)	Electric Power & Gas	-0.5258 ( - )
Pulp & Paper	-0.3806 ( - )	Land Transportation	2.5541*** (0.0059)
Chemicals	2.3121** (0.0112)	Marin Transportation	1.9576** (0.0262)
Pharmaceutical	3.6930*** (0.0002)	Warehousing & Harbor Transportation Services	1.7801** (0.0387)
Oil & Coal Products	3.2884*** (0.0007)	Wholesale Trade	8.2060*** (0.0000)
Rubber Products	5.3101*** (0.0000)	Retail Trade	0.3490 (0.3638)
Glass & Ceramics Products	3.7261*** (0.0001)	Banks	-0.3056 ( - )
Iron & Steel	6.1220*** (0.0000)	Securities & Commodity Futures	-2.3667 ( - )
Nonferrous Metals	4.1900*** (0.0000)	Insurance	2.4908*** (0.0070)
Metal Products	2.2784** (0.0122)	Other Financing Business	-3.7513 ( - )
Machinery	6.1458*** (0.0000)	Real Estate	1.8615** (0.0325)
Electric Appliances	-3.6070 ( - )	Services	3.5128*** (0.0003)

Notes: The *t*-tests of the value premium are conducted by using the Russell-Nomura large-size value industry indices. The null hypothesis is that there exists no value premium while the alternative hypothesis is that there exist positive value premium over the TOPIX. \*\*\* denotes the statistical significance at the 1% level, \*\* denotes the statistical significance at the 5% level, and \* denotes the statistical significance at the 10% level, respectively.

**Table 2. The *t*-tests of the value premium for large-size value indices: From July 2001 to January 2005**

Industry	<i>t</i> -value ( <i>p</i> -value)	Industry	<i>t</i> -value ( <i>p</i> -value)
Overall Index	4.7377*** (0.0000)	Transportation	1.3912* (0.0858)
Construction	4.4186*** (0.0000)	Equipments	2.1540** (0.0185)
Foods	2.4224*** (0.0099)	Precision Instruments	4.6616*** (0.0000)
Textiles & Apparels	1.5231* (0.0676)	Other Products	0.7635 (0.2247)
Pulp & Paper	-0.0120 ( - )	Electric Power & Gas	0.1293 (0.4489)
Chemicals	1.4681* (0.0748)	Land Transportation	3.6781*** (0.0003)
Pharmaceutical	2.0860** (0.0215)	Marin Transportation	1.2438 (0.1102)
Oil & Coal Products	2.4885*** (0.0084)	Warehousing & Harbor	3.3106*** (0.0010)
Rubber Products	4.3583*** (0.0000)	Transportation Services	0.3321 (0.3707)
Glass & Ceramics	3.4298*** (0.0007)	Retail Trade	2.1297** (0.0195)
Products		Banks	-2.0547 ( - )
Iron & Steel	7.0148*** (0.0000)	Securities &	Commodity Futures
Nonferrous Metals	-0.2604 ( - )	Insurance	4.6653*** (0.0000)
Metal Products	1.5688* (0.0621)	Other Financing	0.5184 (0.3035)
Machinery	-0.3817 ( - )	Business	Real Estate
Electric Appliances	-2.0002 ( - )	Services	2.1856** (0.0172)
			0.1105 (0.4563)

Notes: The *t*-tests of the value premium are conducted by using the Russell-Nomura large-size value industry indices. The null hypothesis is that there exists no value premium while the alternative hypothesis is that there exist positive value premium over the TOPIX. \*\*\* denotes the statistical significance at the 1% level, \*\* denotes the statistical significance at the 5% level, and \* denotes the statistical significance at the 10% level, respectively.

**Table 3. The *t*-tests of the value premium for large-size value indices: From February 2005 to August 2008**

Industry	<i>t</i> -value ( <i>p</i> -value)	Industry	<i>t</i> -value ( <i>p</i> -value)
Overall Index	4.5632*** (0.0000)	Transportation Equipments	3.1015*** (0.0017)
Construction	-2.7841 ( - )	Precision Instruments	-2.7543 ( - )
Foods	1.7619** (0.0427)	Other Products	1.7102** (0.0473)
Textiles & Apparels	-2.0156 ( - )	Electric Power & Gas	1.5886* (0.0598)
Pulp & Paper	-1.5869 ( - )	Land Transportation	1.3836* (0.0869)
Chemicals	-1.9265 ( - )	Marin Transportation	4.8008*** (0.0000)
Pharmaceutical	2.0957** (0.0211)	Warehousing & Harbor Transportation Services	-0.0372 ( - )
Oil & Coal Products	0.1500 (0.4408)	Wholesale Trade	7.8158*** (0.0000)
Rubber Products	0.0131 (0.4948)	Retail Trade	-3.3107 ( - )
Glass & Ceramics Products	2.8641*** (0.0033)	Banks	-1.5392 ( - )
Iron & Steel	5.5613*** (0.0000)	Securities & Commodity Futures	1.7705** (0.0419)
Nonferrous Metals	4.8307*** (0.0000)	Insurance	1.2104 (0.1165)
Metal Products	-2.3881 ( - )	Other Financing Business	-7.7996 ( - )
Machinery	6.9701*** (0.0000)	Real Estate	-0.4989 ( - )
Electric Appliances	0.1428 (0.4436)	Services	-1.8284 ( - )

Notes: The *t*-tests of the value premium are conducted by using the Russell-Nomura large-size value industry indices. The null hypothesis is that there exists no value premium while the alternative hypothesis is that there exist positive value premium over the TOPIX. \*\*\* denotes the statistical significance at the 1% level, \*\* denotes the statistical significance at the 5% level, and \* denotes the statistical significance at the 10% level, respectively.

**Table 4. The *t*-tests of the value premium for large-size value indices: From September 2008 to March 2012**

Industry	<i>t</i> -value ( <i>p</i> -value)	Industry	<i>t</i> -value ( <i>p</i> -value)
Overall Index	0.6678 (0.2540)	Transportation	1.9359** (0.0298)
Construction	2.6012*** (0.0064)	Equipments	1.0030 (0.1608)
Foods	1.5399* (0.0655)	Other Products	-0.6575 ( - )
Textiles & Apparels	1.5110* (0.0691)	Electric Power & Gas	-2.2566 ( - )
Pulp & Paper	0.7075 (0.2416)	Land Transportation	2.5983*** (0.0064)
Chemicals	3.3697*** (0.0008)	Marin Transportation	-3.9251 ( - )
Pharmaceutical	2.1646** (0.0181)	Warehousing & Harbor	1.8630** (0.0347)
Oil & Coal Products	2.6219*** (0.0061)	Transportation Services	3.2580*** (0.0011)
Rubber Products	4.3232*** (0.0000)	Wholesale Trade	3.3558*** (0.0008)
Glass & Ceramics Products	0.9979 (0.1620)	Retail Trade	3.3558*** (0.0008)
Iron & Steel	-1.9691 ( - )	Banks	-2.4023 ( - )
Nonferrous Metals	3.3137*** (0.0010)	Securities & Commodity Futures	-2.6070 ( - )
Metal Products	3.9758*** (0.0001)	Insurance	-1.3990 ( - )
Machinery	5.0938*** (0.0000)	Other Financing Business	0.6892 (0.2472)
Electric Appliances	-3.7154 ( - )	Real Estate	1.7359** (0.0450)
		Services	6.9821*** (0.0000)

Notes: The *t*-tests of the value premium are conducted by using the Russell-Nomura large-size value industry indices. The null hypothesis is that there exists no value premium while the alternative hypothesis is that there exist positive value premium over the TOPIX. \*\*\* denotes the statistical significance at the 1% level, \*\* denotes the statistical significance at the 5% level, and \* denotes the statistical significance at the 10% level, respectively.

### 3. Empirical Results

This section documents our empirical results. Explaining the results of all our tables, first, Table 1 indicates the *t*-test results of the value premium for our full sample period, July 2001 to March 2012. Next, Table 2 displays the *t*-test results of the value premium for July 2001 to January 2005. Further, Table 3 shows the *t*-test results for the value premium for February 2005 to August 2008. Finally, Table 4 exhibits the test results for our third sub-period, September 2008 to March 2012. In all our *t*-tests, the null hypothesis is the zero value premium when we take the average value in the test period, while the alternative hypothesis is the positive value premium when we take the average value in the test period.

We understand that, from Table 1, there were the value premium in our full sample period in the following 20 industries other than the Overall index; Construction, Foods, Chemicals, Pharmaceutical, Oil & Coal Products, Rubber Products, Glass & Ceramics Products, Iron & Steel, Nonferrous Metals, Metal Products, Machinery, Transportation Equipments, Other Products, Land Transportation, Marine Transportation, Warehousing & Harbor Transportation Services, Wholesale Trade, Insurance, Real Estate, and Services. Hence, we understand that in almost 70% industries, value premium over the TOPIX existed for our full sample period. Next, examining Tables 2 to 4, we understand that the value premiums are recognized in four industries of Foods, Pharmaceutical, Transportation Equipments, and Wholesale Trade in all our three sub-periods. Further, using Table 4, scrutinizing our third sub-period, which is after the Lehman Shock, the following industry returns had the value premium: Construction, Foods, Textiles & Apparels, Chemicals, Pharmaceutical, Oil & Coal Products, Rubber Products, Nonferrous Metals, Metal Products, Machinery, Transportation Equipments, Land Transportation, Warehousing & Harbor Transportation Services, Wholesale Trade, Retail Trade, Real Estate, and Services. Hence after the US Lehman Shock, about 60% had the value premium in the Japanese industries for large firms.

#### **4. Conclusions**

This paper researched the existence of the value premium in industry returns in Japan. The empirical tests conducted in this paper supply the following novel contributions. First, this paper statistically found that the value premium existed in the returns of the Russell-Nomura overall index for large firms from July 2001 to March 2012. Second, we also clarified that out of 29 Russell-Nomura large-size industry indices, 20 industries had the value premium for July 2001 to March 2012. Further, we empirically demonstrated that through all our three sub-periods, in four industries of Foods, Pharmaceutical, Transportation Equipments, and Wholesale Trade, the value premium existed. Finally, we further clarified that after the US Lehman Shock, the value premium still existed in 17 index returns out of 29 Russell-Nomura large-size industry index returns.

As above, this paper's findings will contribute to the body of academic researches of the field of finance. We consider that future related studies by exploiting our new findings and related financial data may be also valuable. These researches are our future works.

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