

The Analysis of the Monthly Effect in the Peruvian Stock Market



Huey-Ming Yen¹, Wen-Chin Hsiao², Miguel Santamaria³, Wen-Cheng Hsiao⁴

¹Assistant Professor, Department of Business Administration, Ming Chuan University

²Adjunct Instructor, Department of International Trade, National Pingtung University

³IMBA Student, Department of Business Administration, Ming Chuan University

⁴Associate Professor, Department of Business Administration, Ming Chuan University

ABSTRACT: In this study we analyze the existence of the monthly effect in the Lima Stock Exchange of Peru through investigating the indices of IGBVL, ISBVL, and IPS-15, respectively. The study applies the methodology of the regression model with monthly data. The results indicate that the market anomaly exists and higher returns on investments occur in October compared with other months of the year from 1999 to 2010.

KEYWORDS: Monthly Effect, Lima Stock Exchange, Regression Model, Market Anomaly.

1. INTRODUCTION

Calendar effects and seasonal anomalies have been the most discussed studies by academics and professionals in the stock market. Under the efficient market hypothesis (EMH) proposed by Fama and French (1992), investors should not be able to use privileged public information to generate abnormal profits, as security prices should reflect all available information. Market efficiency for financial securities means that security prices always incorporate and fully reflect all available information about the assets. However, the existence of several calendar anomalies is well documented in the financial literature, and the term anomalies are often interpreted as evidence of market inefficiency.

In addition, the anomalies in stock returns have been documented across a broad spectrum of stock markets throughout the world. However, this is the first study to examine the presence of calendar anomalies in the Lima Stock Exchange of Peru onwards referred to as BVL, to determine whether the most significant anomaly is present. The Lima Stock Exchange has three stock indices; General Index of the Lima Stock Exchange (IGBVL), Selective Index of the Lima Stock Exchange (ISBVL), and Selective Index Peru-15 (IPS-15). Furthermore, the IGBVL index reflects the average trend in the prices of the major and most traded shares and consists of 32 Peruvian and foreign companies. With respect to the ISBVL index, it includes 15 constituent stocks with the property of high liquidity. Finally, the IPS-15 index is an indicator that represents the top 15 Peruvian companies.

The motivation and importance of this study is to research the characteristics of the Peruvian emerging market in Latin America. Different effects have been detected in stock markets worldwide, consisting of January effect, monthly effect, weekend effect, Monday effect, pre-holiday effect, and turn of the month effect. Among them, the January effect is the most significant anomaly. Recent discussions have been about the possible anomalies that occur on a regular basis in the securities markets. According to the data from the Peru Stock Market as a developing-country market, it is also worthwhile investigating whether it is possible to represent its future behavior on the basis of its own past data. The main objectives of the research are as described: (1) to evaluate performance and effectiveness of the January and monthly effect in the three indices, (2) to identify which month in the indices provides significant returns, and (3) to investigate the significant factors that influence returns in the indices.

The Analysis of the Monthly Effect in the Peruvian Stock Market

2. LITERATURE REVIEW

2.1 January Effect

The January effect, which suggests returns are higher in January than in other months of the year, has been studied such as Dyl (1977), Branch (1977), and Givoly and Ovadia (1983). They find that the January effect in US existed before the introduction of a capital gains tax. Additionally, Keim (1983), Ariel (1990), and Jaffe and Westerfield (1985) even mention that the existence of the January effect is more pronounced for small firms than that for large firms. Furthermore, studies have examined the presence of that anomaly in 16 industrialized countries and has been mentioned by Gultekin and Gultekin (1983).

The literature on the January effect suggests several explanations for the abnormally high returns in January. Two of the most prominent among these theories are the tax-loss selling hypothesis by Wachtel (1942) and the window dressing hypothesis by Haugen and Lakonishok (1988). The tax-loss selling hypothesis suggests that investors sell the losing stocks in their portfolio at the end of the year to gain a tax benefit. On the other hand, the window dressing hypothesis suggests that investors sell certain stocks at the end of the year to present a more acceptable portfolio of stocks. Both theories suggest that these investors repurchase the stocks in the New Year, creating the abnormal returns observed in January. Evidence from Chen and Singal (2004) has identified the tax-loss selling hypothesis as the most likely explanation for the January effect. However, Brown, Keim, and Kleidon (1983) noted that the theory may not be sufficient to explain the abnormally large returns observed in all countries where the tax year for individuals is not the calendar year.

2.2. January Effect and Monthly Effect in Markets Outside of the US

It is shown to have highest returns in January during a year for various Asia-Pacific markets, such as those that occur in Japan described by Comolli and Ziemba (2000), in Hong-Kong, Korea and Taiwan by Wong, Neoh, Lee and Thjong (1990), and in Thailand by Holden, Thompson and Ruangrit (2005). With respect to other markets, Cabello and Ortiz (2004) find that the January effect exists and is found in several Latin American markets. Meanwhile, Barrone (1990) finds that the January effect also is found in the European markets.

However, Tong (1992) suggests that the months of February, April or December may appear to have the highest returns around a year. Hamori (2001) also confirms that monthly seasonality in Japan has declined over the 1990's. Additionally, Ramcharan (1997) finds that investments in June and May may provide higher returns in Jamaica. Finally, the July effect is found in Kuwait by Al-Saad and Moosa (2005) as well.

3. DATA AND METHODOLOGY

3.1. Sample Period and Data Collection

To analyze the monthly effect in the Peruvian stock market, the sample is collected from monthly closing prices of three indices of the Lima stock exchange, named IGBVL, ISBVL, and IPS-15. Among them, the sample periods for both IGBVL and ISBVL are between 1999 to 2009. On the other hand, the sample period for IPS-15 is between 2003 to 2010. These indices are formed and incorporate adjustments for dividend payments and capital increases. Therefore, both IGBVL and ISBVL indices have 133 months. On the other hand, the IPS-15 index has only 85 months. The data was collected and obtained from the BVL. Therefore, the logarithm return of the indices' will be obtained and the observations for analyses in total are 132 and 84 respectively.

3.2. Research Methodology

According to Redman (1997) for studying monthly or calendar anomalies, a regression model is applied where monthly returns on the three subject indices are regressed on a series of dummy variables that represent the time-period of interest. Thus, the dummies capture the excess average monthly return during that time period.

The January effect suggests that returns are higher in January than in the other months of the year. The regression equation (1), with dummy variables representing the month of the year, is applied to test for and investigate the January effect:

$$R_t = a_1M_{1t} + a_2M_{2t} + a_3M_{3t} + \dots + a_{12}M_{12t} + e_t \quad (1)$$

where

R_t = monthly-logarithm return rate on the indices on date t ;

$M_{1t}=1$ if the biggest return is in January and 0 otherwise; $M_{2t}=1$ if the largest return is in February and 0 otherwise; and so on.

The null hypothesis to be tested under this specification is that the rest of the coefficients of the dummy variables are equal to zero. Additionally, negative values of the dummy coefficients should be considered as evidence of the presence of the January effect. Therefore, the estimation of coefficients in equation (1) reveals which months have lower yields than those obtained in January.

The Analysis of the Monthly Effect in the Peruvian Stock Market

4. RESEARCH RESULTS AND ANALYSIS

4.1. Result and Analysis of General Stock Index (IGBVL)

The results for investigating seasonal anomalies of monthly return on IGBVL are shown on Table 1, 2 and 3. The model ANOVA utilized shows P-value equal to 0.614 more than the significant level of 0.05. The most of coefficients are not significant as they are more than 0.05

We find evidence that the January effect in the period 1999 until 2009 for the IGBVL index is not significant. Nevertheless, it is significant in October with the P-value equal to 0.036.

Table 1 Model Summary: IGBVL

R	R ²	Adjusted R ²	Std. Error of the Estimate
.265	.070	-.015	.0900

Table 2 ANOVA: IGBVL

Model	Sum of Squares	df	Mean Square	F	P-value
Regression	.074	11	.007	.826	.614
Residual	.973	120	.008		
Total	1.046	131			

Table 3 Coefficients: IGBVL

Variables	Unstandardised		Standardised		Significance
	Beta	Std. Error	Beta		
Constant	.044	.027			.111
a ₂	.002	.038	.007		.951
a ₃	.006	.038	.019		.871
a ₄	.004	.038	.012		.917
a ₅	-.012	.038	-.038		.747
a ₆	-.030	.038	-.092		.442
a ₇	-.041	.038	-.128		.284
a ₈	-.028	.038	-.085		.475
a ₉	-.021	.038	-.065		.587
a ₁₀	-.081	.038	-.252		.036**
a ₁₁	-.030	.038	-.092		.441
a ₁₂	-.027	.038	-.083		.487

** is denoted as the value is significant at level of 5%

4.2. Results and Analysis of Selective Index of the Lima Stock Exchange (ISBVL)

The results for investigating seasonal anomalies of monthly return on IGBVL are shown on Table 4,5 and 6. The model ANOVA shows the P-value equal to 0.014. It also shows that most of month-dummies are not significant. Furthermore, the result indicates that the January effect from 1999 until 2009 on ISBVL index does not exist, and that the monthly effect occurs in October.

Table 4 Model Summary: ISBVL

R	R ²	Adjusted R ²	Std. Error of the Estimate
.282	.080	-.005	.0943

The Analysis of the Monthly Effect in the Peruvian Stock Market

Table 5 ANOVA: ISBVL

Model	Sum of Squares	df	Mean Square	F	P-value
Regression	.092	11	.008	.945	.501
Residual	1.066	120	.009		
Total	1.158	131			

Table 6 Coefficients: ISBVL

Variables	Unstandardised	Std. Error	Standardised	Significance
	Beta		Beta	
Constant	.041	.028		.151
a ₂	.013	.040	.038	.746
a ₃	.008	.040	.023	.848
a ₄	.017	.040	.051	.669
a ₅	-.009	.040	-.027	.818
a ₆	-.031	.040	-.092	.439
a ₇	-.036	.040	-.105	.378
a ₈	-.028	.040	-.082	.491
a ₉	-.022	.040	-.066	.579
a ₁₀	-.085	.040	-.250	.037**
a ₁₁	-.021	.040	-.061	.606
a ₁₂	-.025	.040	-.074	.535

** is denoted as the value is significant at level of 5%

4.3. Results and Analysis of Selective Index Peru-15 (IPS-15)

The results for investigating seasonal anomalies of monthly return on IPS-15 are shown on Table 7,8 and 9. The empirical results from three tables mentioned above also indicate that the data collected do not provide enough evidence for the existence of the monthly or the January effects in the Lima Stock Exchange.

Table 7 Model Summary: IPS-15

R	R ²	Adjusted R ²	Std. Error of the Estimate
.347	.121	-.014	.1120

Table 8 ANOVA: IPS-15

Model	Sum of Squares	df	Mean Square	F	P-value
Regression	.124	11	.011	.897	.548
Residual	.902	72	.013		
Total	1.026	83			

Table 9 Coefficients: IPS-15

Variables	Unstandardised	Std. Error	Standardised	Significance
	Beta		Beta	
Constant	.037	.042		.388
a ₂	.038	.060	.095	.529
a ₃	.052	.060	.130	.387

The Analysis of the Monthly Effect in the Peruvian Stock Market

a ₄	.049	.060	.123	.413
a ₅	.014	.060	.034	.819
a ₆	-.015	.060	-.038	.803
a ₇	-.014	.060	-.034	.822
a ₈	-.025	.060	-.061	.683
a ₉	.008	.060	.020	.896
a ₁₀	-.095	.060	-.238	.115
a ₁₁	-.022	.060	-.056	.710
a ₁₂	-.017	.060	-.043	.775

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

This study examines market anomalies in the Lima Stock Exchange. Specifically, it looks for the existence of the monthly or the January effects based on the investigation of the indices of IGBVL, ISBVL and IPS-15. The empirical results do not provide evidence for the existence of calendar anomalies for the Lima Stock Exchange.

However, the study finds that there is the October effect on both indices of IGBVL and ISBVL. The possible reason for this may come from the fact that Peru is a Catholic country. Peruvian people usually celebrate during the last two weeks in October for their holy worship and a holy celebration. Meanwhile, investors in Peru have spare time to pay attention to the stock market and trading more in stocks. As a result, it may provide the opportunity to generate higher returns for most traded shares on IGBVL and ISBVL in October. Therefore, it seems that the October effect comes from the Christian Holy month effect.

5.2. Research Suggestions and Recommendations for Further Research

First of all, the Peruvian stock market supervisors consider the competitive nature on the market by introducing security investment organizations such as mutual funds and pension plans. The existence of the October effect in Peru Stock Market is also of great interest to investors, as will help to create investment strategies to exploit the benefits of presence of this effect.

In addition, for some countries the monthly effect is shown in February, June, and July. In general, it can be observed in any month of the year. Therefore, the study suggests that we need to regularly check if the patterns are the same or change over the time. For example, we may investigate for any new changes in different time periods, recurring seasonal effects in certain months of the year or days of the week.

REFERENCES

- 1) Al-Saad, K., and Moosa, I. A. (2005). Seasonality in stock returns: Evidence from an emerging market. *Applied Financial Economics*, 15, 63–71.
- 2) Ariel, R. (1990). High Stock Returns Before Holidays: Existence and Evidence on Possible Causes, *Journal of Finance*, 45, 1611-1626.
- 3) Barrone, E. (1990). The Italian stock market: efficiency and calendar anomalies. *Journal Banking Finance*, 14, 483-526.
- 4) Branch, B. (1977). A tax loss trading rule, *Journal of Business*, April,198-207.
- 5) Brown, P., Keim, D. B., Kleidon, A. W., and Marsh, T. A. (1983). Stock return seasonalities and the tax-loss selling hypothesis: Analysis of the arguments and Australian evidence. *Journal of Financial Economics*, 12, 105-127.
- 6) Cabello, A. and Ortiz, E. (2004). Day of the week and month of the year effects at the Latin American emerging markets, *Journal Semana Economica*, 56, 23-27.
- 7) Chen, H. and Singal, V. (2004). All things considered, taxes drive the January effect, *Journal of Financial Research*, 27, 351-372.
- 8) Comolli, L. and Ziemba, W. (2000). Japanese security market regularities, *Journal of Business*, 5, 256-285..
- 9) Dyl, E. (1977). Capital gains taxation and year-end stock market behavior, *Journal of Finance*, 23, 165-75.
- 10) Fama, E. and K. French. (1992). The Cross Section of Expected Stock Returns, *Journal of Finance*, 47, 427-466.
- 11) Givoly, D. and Ovadia, A. (1983). Year-end tax-induced sales and stock market seasonality, *Journal of Finance*, 12, 171-85.

The Analysis of the Monthly Effect in the Peruvian Stock Market

- 12) Gultekin, M. N. and Gultekin, N. B. (1983). Stock market seasonality: international evidence, *Journal of Financial Economic*, 12, 469-81.
- 13) Hamori, S. (2001). Seasonality and Stock returns: Some evidence from Japan. *Journal World Economy of Japan* , 13, 463–481.
- 14) Haugen, R. A. and Lakonishok, J. (1988). The Incredible January Effect. *Journal of Finance*, 65, 56-71.
- 15) Holden, K., Thompson, J., and Ruangrit, Y. (2005). The Asian crisis and calendar effects on stock returns in Thailand. *European Journal of Operational Research*, 163, 242–252.
- 16) Jaffe, J. and Westerfield, R. (1985). The weekend effect in common stock returns: the international evidence, *Journal of Finance*, 32, 433-54.
- 17) Keim, D. B. (1983). Size-related anomalies and stocks return seasonality: Further empirical evidence. *Journal of Financial Economics*, 12, 13-32.
- 18) Ramcharran, H. (1997). Seasonality in the Jamaican stock market: An examination of stock returns and the volume traded. *Journal of Emerging Markets*, 2, 23–35.
- 19) Redman, A. L. (1997). Real estate investment trust and calendar anomalies, *Journal of Real Estate Research*, 14, 19-28.
- 20) Tong, W. and Brusa, L. (1992). An analysis of the January effect of United States, Taiwan and South Korean stock returns. *Asia Pacific Journal of Management*, 9, 189–207.
- 21) Wachtel, S. (1942). Certain Observations on Seasonal Movements in Stock Prices, *Journal of Business*, 15, 184-93.
- 22) Wong, P. L., Neoh, S., Lee, K., and Thjong, T. (1990). Seasonality in the Malaysian stock market. *Asia Pacific Journal of Management*, 7, 43–63.



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0)

(<https://creativecommons.org/licenses/by-nc/4.0/>), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.