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HOLIDAY EFFECTS DURING QUIET AND TURBULENT TIMES

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Abstract: *The objective of the paper is to examine the possible holiday effects in the stock returns from a group of 28 countries. In our investigation we employ daily values of some representative indexes from January 2000 to December 2011. We split this sample in two sub-samples: before and during the global crisis. We identify the pre or the post holiday effects using regressions with dummy variables. The results indicate significant changes from the pre-crisis period to the crisis period. We find that such changes were more consistent in the case of emerging markets in comparison with the advanced financial markets.*

Keywords: Calendar Anomalies, Global Crisis, Holiday Effect

JEL Classification: G02, G14, G15

1. INTRODUCTION

In the last decades, the presence of calendar anomalies was largely approached in scientific papers for practical and theoretical reasons. The knowledge about the financial markets evolution regularities could be exploited by the investors. The calendar anomalies were often used in theories that opposed the Efficient Market Hypothesis (EMH) which stipulated that past evolution of stocks couldn't serve to predict their future evolution.

The holiday effects are among the best known calendar anomalies consisting in significant differences between the stock returns of the days that precede or follow the public holidays and the rest of the working days. There are two forms of the holiday effects:

- the pre-holiday effect, which refers to the days before the public holidays;
- the post-holiday effect, which refers to the days after the public holidays.

Empirical researches discovered evidences about the holiday effects presence on several stock markets. Lakonishok and Smidt (1988) found for the daily values of Dow Jones Industrial Average (DJIA) returns a pronounced pre-holiday effect for a long period of time [12]. Pettengill (1989) identified significant differences between the pre-holiday returns and the rest of the working days for US both large and small firms [18]. Ariel (1990) investigated the returns of indices provided by the Center for Research in Security Prices (CRSP) and he

proved the existence of a significant pre-holiday effect [1]. Cadsby and Ratner (1992) studied calendar anomalies for the capital markets from ten industrialized countries and they found significant holiday effects for five of them [5]. Kim and Park (1994) identified holiday effects in the United States, in Japan and in United Kingdom [11]. Tan and Wong (1996) analyzed the Singapore capital market and they concluded that in pre-holidays the returns were significantly higher than in other working days [19]. Arsad and Coutts (1997) studied prices anomalies on the London International Stock Exchange and their results supported the holiday effects presence [2]. Meneu and Pardo (2004) analyzed the most important individual stocks of the Spanish Stock Exchange and they discovered high abnormal returns on the trading days prior to the public holidays [16]. Lucey (2005) found a significant pre-holiday effect on the Irish equities evolution [13]. Hansen et al. (2005) tested the calendar effects significance for capital markets from ten industrialized countries and their results indicated that pre-holiday returns were among the best five for the United States, for Norway and for Italy, while the post-holiday returns were among the best five for Norway [8]. Marrett and Worthington (2007) investigated twelve indices from the Australian stock market and they found pre-holiday effects for three of them [15].

There were, however, researches which failed to provide any evidence of the holiday effects. For example, Blandon (2010) analyzed calendar anomalies for the LATIBEX market, formed by Latin-American companies quoted in the Spanish Stock Exchange, finding no holiday effects [3].

Several attempts were made to explain the holiday effects since their discovery. Some of them are based on the behavioral finance approaches and on the investors' psychology. The optimism that animates investors in the days that precede public holidays is considered responsible for high returns, while the lower performances from post-holidays are viewed as corrections after these shocks [4, 20]. There are also theories that contest the independence of the calendar anomalies. For example, Pearce (1996) revealed that almost half of the public holidays occurred on Monday [17].

For the investors which intend to exploit a form of seasonality in the stock prices evolution it is important to analyze its persistence in time. As Dimson and Marsh (1999) concluded in their seminal study, the publication of an anomaly could cause its disappearance or reversal [7].

Several papers revealed, for many stock markets, changes in time of the holiday effects [6, 14, 19, 21]. Sometimes, these changes were provoked by dramatic events such the financial crises [9].

In this paper we investigate the holiday effects presence before and during the global crisis for a group of 28 countries. We use daily values of representative indexes from the stock markets of these countries and we try to identify pre or post-holidays effects by regressions with dummy variables.

The rest of the paper is structured as it follows: the second part describes the data and the methodology employed in our investigation, the third part presents the empirical results and the fourth part concludes.

2. DATA AND METHODOLOGY

In our investigation we employ daily closing values of the stock market indexes from 28 countries for a time period between January 2000 and December 2011. Based on MSCI Index Base Dates we split this group of countries into two broad categories: developed markets and emerging markets.

In order to identify the changes induced by the global crisis we divide our sample in two sub-samples:

- first sub-sample, corresponding to a pre-crisis period, from 1st of January 2000 to the 15th of September 2008 (when it was announced the bankruptcy of Lehman Brothers);

- second sub-sample, corresponding to the crisis period, from the 16th of September 2008 to the 31st of December 2011.

We calculate the returns of the indexes using the formula:

$$R_t = \ln (P_t) - \ln (P_{t-1}) \quad (1)$$

where:

- R_t is the return on the day t;
- P_t is the closing market index price on the day t.

We identify pre or post-holiday effects performing regressions with dummy variables:

$$R_t = \gamma_0 + \gamma_1 PRE\_HOL + \gamma_2 POST\_HOL + \varepsilon_t \quad (2)$$

where:

- PRE_HOL is a dummy variable taking the value one for the trading day before a public holiday and zero otherwise;
- POST_HOL is a dummy variable taking the value one for the trading day after a public holiday and zero otherwise.

We test all the time series for heteroskedasticity and autocorrelation. In the case we identify only heteroskedasticity we apply the White's corrections to standard errors and p-values. When we detect both heteroskedasticity and autocorrelation we use the Newey - West corrections.

3. EMPIRICAL RESULTS

The Table 1 presents the regressions results for the developed markets. We found no evidence of pre or post-holiday effects, before or during the global crisis, for seven indexes: AEX General, Hang Seng, Straits Times, S&P TSX Composite, Swiss Market, Standard & Poor's and All Ordinaries. Three indexes exhibited before the crisis pre-holiday effects which disappeared during the crisis: ATX, CAC 40 and FTSE 100. For Taiwan Weighted the pre-holiday effect appeared only during the crisis. Before the crisis we found post-holiday effects for four indexes: BEL-20, ATX, CAC 40 and Nikkei 225. During the crisis this anomaly disappeared for Nikkei 225 but it appeared for FTSE 100.

The results of regressions for the emerging markets are presented in the Table 2. Four indexes: CROBEX, BSE 30, KLSE Composite and TA 100 exhibited no holiday effects before or during the crisis. We identified pre-holiday effects before the crisis on four indexes: BET-C, Bovespa, Seoul Composite and IPC. For all these indexes the pre-holiday effects disappeared during the crisis. Instead, these anomalies appeared for other four indexes: Jakarta Composite, Shanghai Composite, BUX and Athex Composite Share Price Index. Two indexes, PX Index and BET-C, exhibited before the crisis post-holiday effects which disappeared during the crisis. For other two indexes, Jakarta Composite and MerVal, these calendar effects appeared during the crisis.

4. CONCLUSIONS

In this paper we studied the holiday effects from 28 stock markets for two periods: the first from January 2000 to September 2008, when the financial markets experienced relative quiet evolutions and the second one during the actual global crisis. Our investigation revealed significant changes in pre and post-holidays effects from quiet to turbulent times.

For many countries, the holiday effects identified on quiet times disappeared during the global crisis. We could link this evolution with the decline of pre-holiday euphoria, which is one of the main explanations of the holiday effects. Instead, during the turbulent times, many investors are probably worried about the changes that could occur during the public holiday and they prefer to sell the high risk assets. There are also some countries where the holiday effects, which hadn't been identified in the

quiet times, appeared during the global crisis. Some of them, as Hungary and Greece, are European countries highly affected by the global crisis. Others, as Indonesia, Taiwan and China, are countries from the South-East Asia with high economic growth in the last years. In such economies, in the turbulent times, the investors' behavior could be very sensitive to expectations about events that could occur during the public holidays.

We found significant differences in the holiday effects evolutions between the developed markets and the emerging markets. On developed markets, the holiday effects experienced much more stability in comparison with the emerging markets. This situation could be explained by the fact that in general the impact of the global crisis was more consistent on the emerging markets than on the developed markets.

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APPENDIX

Table 1 - Estimated coefficient of regression for developed markets

Index	Before the crisis			During the crisis		
	const	**pre_hol**	**post_hol**	**const**	**pre_hol**	**post_hol**
AEX General	-0.0326075 (0.0314608) [0.30011]	0.126011 (0.155799) [0.41872]	0.42162 (0.315495) [0.18156]	-0.0487961 (0.0660461) [0.46022]	0.578339 (0.644339) [0.36967]	1.68807 (1.03018) [0.10167]
BEL-20	-0.0140631 (0.0259824) [0.58839]	0.0436764 (0.1791) [0.80736]	0.569178 (0.254351) [0.02534**]	-0.0626982 (0.0597737) [0.29451]	0.439873 (0.399067) [0.27067]	1.50304 (0.630492) [0.01735**]
Taiwan Weighted	-0.0215681 (0.0354362) [0.54282]	0.0793878 (0.197617) [0.68793]	0.092035 (0.283748) [0.74570]	-0.0103438 (0.0536593) [0.84719]	0.771576 (0.303215) [0.01112**]	0.43046 (0.475395) [0.36548]
ATX	0.0243068 (0.0243393) [0.31807]	0.212556 (0.110614) [0.05479*]	0.289749 (0.157816) [0.06650*]	-0.100213 (0.0836856) [0.23146]	0.46745 (0.402354) [0.24566]	0.433921 (0.656797) [0.50902]
Hang Seng	-0.0036987 (0.0320519) [0.90814]	0.0920851 (0.169028) [0.58595]	0.179194 (0.242752) [0.46049]	-0.0356625 (0.0745747) [0.63263]	0.435673 (0.468409) [0.35258]	0.598024 (0.45073) [0.18494]
Straits Times	-0.0058228 (0.0261801) [0.82401]	0.031657 (0.139893) [0.82099]	0.146481 (0.182831) [0.42311]	-0.0066412 (0.0530025) [0.90032]	0.139749 (0.355163) [0.69407]	0.546956 (0.677707) [0.41986]
S&P TSX Composite	0.010084 (0.0227573) [0.65773]	0.0037797 (0.111773) [0.97303]	0.283012 (0.200373) [0.15797]	-0.0293777 (0.0622735) [0.63723]	0.0773305 (0.214469) [0.71852]	0.538173 (0.363856) [0.13950]
Swiss Market	-0.0131117 (0.0261949) [0.61674]	0.163237 (0.123567) [0.18663]	0.227362 (0.190292) [0.23229]	-0.0106538 (0.0517575) [0.83697]	-0.142735 (0.419136) [0.73353]	-0.457011 (0.674614) [0.49831]
CAC 40	-0.0278097 (0.0306059) [0.36364]	0.440745 (0.13241) [0.00089***]	0.593794 (0.286582) [0.03838**]	-0.0546225 (0.0682985) [0.42407]	0.698159 (0.52379) [0.18293]	1.35683 (0.722814) [0.06084*]
DAX	-0.0145083 (0.0332359)	0.464072 (0.18767)	0.0894356 (0.437846)	-0.0049968 (0.0658933)	0.528084 (0.407144)	-0.366427 (0.661704)

	[0.66250]	[0.01348**]	[0.83817]	[0.93957]	[0.19497]	[0.57989]
FTSE 100	-0.0235883 (0.0254844) [0.35476]	0.276294 (0.148398) [0.06276*]	0.175264 (0.20347) [0.38912]	-0.0146677 (0.0592876) [0.80466]	0.291387 (0.21087) [0.16740]	0.7106 (0.37173) [0.05627*]
Standard & Poor's	-0.0091456 (0.0253619) [0.71843]	0.0144746 (0.113843) [0.89884]	-0.025141 (0.142653) [0.86012]	0.00186778 (0.0674073) [0.97790]	0.240503 (0.423348) [0.57012]	-0.106702 (0.38972) [0.78431]
Nikkei 225	-0.0504494 (0.0319163) [0.11410]	0.0462626 (0.110951) [0.67675]	0.576414 (0.200604) [0.00410***]	-0.0767815 (0.0708407) [0.27875]	-0.205473 (0.327461) [0.53053]	0.761613 (0.539121) [0.15813]
All Ordinaries	0.017687 (0.0184754) [0.33851]	0.0580814 (0.103652) [0.57530]	0.0464089 (0.181663) [0.79839]	-0.032376 (0.0499242) [0.51684]	0.31268 (0.333134) [0.34821]	0.221229 (0.246595) [0.36991]

Note: Standard Errors are within round brackets, while p-values of the statistical tests are within the squared brackets.

Table 2 - Estimated coefficient of regression for emerging markets

Index	**Before the crisis**			**During the crisis**		
	const	**pre_hol**	**post_hol**	**const**	**pre_hol**	**post_hol**
CROBEX	0.0677542 (0.0295166) [0.02180*]	0.117473 (0.118059) [0.31983]	-0.060608 (0.133376) [0.64958]	-0.0862212 (0.0645811) [0.18222]	0.493399 (0.491361) [0.31560]	-0.190338 (0.389321) [0.62505]
PX Index	0.00143294 (0.0289779) [0.96056]	0.262531 (0.174206) [0.13191]	0.417237 (0.195973) [0.03333**]	-0.0627432 (0.0744568) [0.39965]	0.416841 (0.566706) [0.46221]	0.400434 (0.501889) [0.42518]
BET-C	0.0728586 (0.0295037) [0.01361**]	0.587697 (0.188711) [0.00187***]	1.06965 (0.431443) [0.01324**]	-0.0390125 (0.0742) [0.59919]	0.594205 (0.369483) [0.10817]	-0.629303 (0.676777) [0.35272]
Bovespa	0.0325835 (0.0413507) [0.43079]	0.486912 (0.195716) [0.01293**]	-0.0846322 (0.206955) [0.68262]	0.0117187 (0.0810892) [0.88513]	0.00713362 (0.25647) [0.97782]	0.271723 (0.336854) [0.42010]
Seoul Composite	-0.0111984 (0.0405356) [0.78237]	0.369656 (0.138206) [0.00754***]	0.317084 (0.317084) [0.21384]	0.0276231 (0.0632281) [0.66231]	-0.0535583 (0.372066) [0.88558]	-0.0099817 (0.599474) [0.98672]
BSE 30	0.0293893 (0.036513) [0.42097]	0.16382 (0.146796) [0.26456]	0.217843 (0.217395) [0.31643]	-0.0168153 (0.0673484) [0.80290]	0.100154 (0.332232) [0.76314]	0.483848 (0.410215) [0.23855]
Jakarta Composite	0.0514878 (0.0325847) [0.11423]	-0.0131068 (0.135775) [0.92311]	-0.102612 (0.170296) [0.54687]	0.0848183 (0.0643783) [0.18805]	-0.385688 (0.212886) [0.07041*]	0.692518 (0.339438) [0.04166**]
Shanghai Composite	0.0182577 (0.0331412) [0.58175]	1.34147 (3.886) [0.72997]	-3.12918 (11.3067) [0.78199]	-0.0218391 (0.0619656) [0.72460]	0.511231 (0.227886) [0.02515**]	0.514976 (0.586386) [0.38009]
BUX	0.0352781 (0.0309973) [0.25520]	0.0482806 (0.127249) [0.70442]	-0.0311874 (0.210172) [0.88205]	-0.000043 (0.07967) [0.99957]	-0.790729 (0.371243) [0.03347**]	0.199966 (0.82732) [0.80907]
MerVal	0.0278962 (0.0474027) [0.55626]	0.192684 (0.232422) [0.40718]	0.318763 (0.248613) [0.19992]	-0.00805019 (0.085836) [0.92530]	0.0667229 (0.217448) [0.75904]	1.23216 (0.593753) [0.03829**]
KLSE Composite	0.000987126 (0.0209674) [0.96245]	0.0471481 (0.115402) [0.68291]	0.19824 (0.165212) [0.23031]	0.082899 (0.0541508) [0.12619]	-0.131166 (0.206108) [0.52470]	-0.569805 (0.574474) [0.32156]
Athex	0.234809	-0.354297	0.0849023	-0.228943	1.15126	0.30388

Composite Share Price Index	(0.267227) [0.37967]	(1.77006) [0.84137]	(3.40889) [0.98013]	(0.0833038) [0.00612***]	(0.499368) [0.02139**]	(0.60522) [0.61573]
IPC	0.0718107 (0.0307048) [0.01944**]	-0.320249 (0.179795) [0.07502*]	-0.106727 (0.20727) [0.60666]	0.0335757 (0.0588002) [0.56815]	-0.0681973 (0.24576) [0.78147]	0.536675 (0.447604) [0.23087]
TA 100	0.0263518 (0.034578) [0.44610]	-0.0245662 (0.0997893) [0.80557]	0.0713 (0.205461) [0.72861]	0.0788864 (0.0750868) [0.29379]	-0.239756 (0.157033) [0.12725]	-0.13197 (0.247619) [0.59422]

Note: Standard Errors are within round brackets, while p-values of the statistical tests are within the squared brackets.