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Lunar calendar effect: evidence of the Chinese Farmer's Calendar on the equity markets in East Asia

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Abstract

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auspicious date for equity trading. The lunar calendar effect in the three equity markets is confirmed.

Keywords: lunar calendar effect Chinese Farmer's Calendar CATREG Classification Tree Analysis CART

Notes

1. Confirming empirical analyses include: (1) Floros ([2008](#)), (2) Dowling and Lucey ([2008](#)), and (3) Kang et al. ([2010](#)), etc.
2. The other major festivals in Chinese lunar calendar exercising significant effect include: Dragon Boat Festival (Tomb Festival, in summer season) and Moon Festival (mid-autumn festival, in autumn season).
3. The 24 solar terms are: spring begins (立春), the rains (雨水), insects awaken (惊蛰), vernal equinox (春分), clear and bright (清明), grain rain (谷雨), summer begins (立夏), grain buds (小满), grain in ear (芒种), summer solstice (夏至), slight heat (小暑), great heat (大暑), autumn begins (立秋), stopping the heat (处暑), white dews (白露), autumn equinox (秋分), cold dews (寒露), hoar-frost falls (霜降), winter begins (立冬), light snow (小雪), heavy snow (大雪), winter solstice (冬至), slight cold (小寒), great cold (大寒).
4. In imperial days, the Chinese type was certified, decreed and published exclusively by the central government, initially for farming purpose. This lunar calendar is also called the royal calendar. It is esteemed as the royal calendar (钦定皇历), while the private calendar (民间历) is used in the twentieth century.
5. Chinese lunar calendar is used in the Chinese market.
6. An empirical analysis of the lunar calendar effect on the Chinese market is conducted and analyzed by Chamberlain and Mitchell (1988), and by Chamberlain, Chua, and Mitchell (1998). The number of lunar calendar days is selected as the independent variable.



fixed, the quantification of the response variable is estimated. In the second step, holding fixed the quantification of the response variable, the quantifications of the predictor variables and the regression coefficients are estimated for one variable at a time.

12. As one of methods for linear regularization of ill-posed problems, Ridge regression reduces coefficient estimates variability by shrinking the coefficients, resulting in more prediction accuracy at the cost of only a small increase of bias. Lasso improves prediction accuracy and model interpretability by combining the nice features of Ridge regression and subset selection. However, Lasso has certain limitation. For example, it tends to select one variable from a group and ignores the others. The number of selected variables is bounded by the sample size. Elastic net regularization further improves Lasso by encouraging grouping of highly correlated variables, while Lasso fails in grouped selection. Elastic net regularization removes the limitation on the number of selected variables.

13. The performance of a fitted regression model can be determined by its future observations. The optimality of the quantifications can be obtained from the observed data to predict future response and the usual criterion is the expected prediction error. For a linear regression, the apparent prediction error is the average loss of the observed data, which is minimized over the regression weights. The apparent prediction error is not an appropriate estimate for expected prediction error because the expected prediction error is estimated from the same data that were used for fitting the model and consequently leads to an optimistic estimate.

14. These over-fitted methods are handicapped

15. The logistic analysis, squares class



16. CART working parametric methods

17. The CART algorithm is a recursive procedure; starting at the root node, and then at every internal node, it selects a single feature, and a threshold value to split the group of individuals at the node into two groups to be placed at two new daughter nodes. CART grows the largest tree possible, called a maximal tree that is the tree whose terminal nodes cannot be split any further. A node may not be split any further either because it contains only cases that belong to a single class, or because no reduction in total diversity can be obtained by further splitting. The recursive computational process can be categorized into four steps: (1) specifying the criteria for predictive accuracy; (2) selecting splits; (3) determining when to stop splitting; and (4) selecting the 'right-sized' tree.

18. It still remains an open question as to which criterion is most appropriate for a given data-set.

19. Both methods are for estimating generalization error based on resampling. Cross-validation is markedly superior for small data-sets.

20. The detailed information for these 10 capitalization-weighted indices are available in the following respective websites: Taiwan Stock Exchange Corporation, <http://www.twse.com.tw/en/>; Hang Seng Indexes Company, <http://www.hsi.com.hk/HSI-Net/>; Shanghai Stock Exchange, <http://www.sse.com.cn/sseportal/en/home/home.shtml>; Shenzhen Stock Exchange, <http://www.szse.cn/main/en/>; Singapore Exchange, <http://www.sgx.com/wps/portal/marketplace/mp-en/home>; Philippine Stock Exchange, <http://www.pse.com.ph/>; Korea Exchange, <http://eng.krx.co.kr/>; Tokyo Stock Exchange, <http://www.tse.or.jp/english/>; Indonesia Stock Exchange, <http://www.idx.co.id/>; Bursa Malaysia

21. Observe that the observed data are from the same markets, to the best of our knowledge.



22. Some data are missing for some data period. Not all the data are representative of the five items.

23. There are some data points that are not reported here. Their estimation outcomes are hardly significant in terms of adjusted

R squares and coefficient estimates.

25. In terms of data transformation, numeric data (market information and market rate of return) are transformed by grouping which I follow the default and assume normal distribution of seven categories. Normal distribution is more appropriate than the only other selection: uniform distribution, for grouping variables of market information and market rate of return. Market status variable is transformed by the grouping method with one equal interval because there are only two outcomes. Step functions are used for nominal and ordinal scaling because there are limited number of categories in the CFC items and market status.

26. Possibly due to the high number of bootstrapping, there is marginal difference in the CATREG estimation outcomes in terms of various scaling levels (numeric, ordinal and nominal) and the discretization method (grouping, ranking and multiplying) of the variables in this study.

27. The high adjusted R squares in Regression 9 can be due to the high collinearity between the variables of the market rate of return and market status.

28. The high adjusted R squares may contribute to the significant correlation between the variables of market rate of return and market status.

29. The Red Guards in the Great Proletarian Cultural Revolution campaigned to 'Destroy the Four Olds', intriguing to break the old thought, culture, custom and habit of the traditional Chinese society.

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