The influence of cultural factors on price clustering: Evidence from Asia–Pacific stock markets

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Abstract

Price clustering is the tendency of prices to be observed more frequently at some numbers than others. It increases with haziness, or imprecision, about underlying value. Most research on price clustering has been conducted in Western financial markets, where there is manifest preference for trading at round numbers. We focus on number preferences under Chinese culture. Many Chinese believe some numbers are "unlucky" and to be avoided. For instance, the number 4 is inauspicious because the Cantonese pronunciation of 4 is similar to the phrase "to die". We first document clustering of daily closing prices on six Asia–Pacific stock markets, three with predominantly Chinese populations. Next, we fit binomial logit models within these markets to estimate the association between structural and economic factors, and culture, on price clustering. We find some support for the influence of Chinese culture and superstition on year-round number preferences of traders, but it is located solely in the Hong Kong market. Furthermore, in the Hong Kong market Chinese culture and superstition help explain the increased avoidance of the number 4 during the auspicious Chinese New Year, Dragon Boat and Mid-Autumn festivals. © 2002 Elsevier Science B.V. All rights reserved.

1. Introduction

Price clustering is the tendency of prices to be observed more frequently at some numbers than others. We take the view, as others have done, that clustering results from

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human bias and from "haziness", or imprecision, about underlying value. For whatever reason, some numbers are more salient than others within the range of possible values, such that market agents settle on these numbers when quoting prices. Most research on price clustering have been conducted in Western asset markets and have found a marked predisposition towards trading at "round" and "even" numbers.

No study to date has examined the influence on price clustering of culture per se. We focus on Chinese culture. Each number has special meaning and significance to the Chinese. Under "feng shui" and Chinese superstition, some numbers are "unlucky" and should be avoided. The number 4 is particularly inauspicious because the Cantonese pronunciation of 4 is very similar to the phrase "to die". Thus, it is not uncommon for the Chinese to avoid buying houses or apartments with the number 4 in their address (Lip, 1992). Given that Chinese culture is known to influence property prices (Bita, 1997), it is possible that prices observed on Asian financial markets are also influenced by feng shui and Chinese superstition. The focus of our study is the cultural bias aspect of price clustering. Accordingly, we take previous research findings as given and rely on them to identify appropriate control variables; hence, we can isolate any cultural influence.

We begin by documenting price clustering in six Asia–Pacific stock markets, using daily closing stock prices over the period from 1994 to 1998. Analysis of the frequency distributions of the final digit of price in each market shows that stock price clustering is prevalent in all six.[1] Consistent with previous studies, prices are found to cluster at 0, 5, and the even integers.

Next, we examine whether structural and economic factors help explain differences in the degree of price clustering within these markets. We find that the degree of clustering is typically higher for higher priced stocks and decreases with firm size and trading frequency. There is evidence that Chinese culture and superstition influence the number preferences of traders, but the evidence is largely confined to Hong Kong. For other countries, including those with a high proportion of ethnic Chinese, the evidence is weak. Specifically, Chinese culture and superstition appear to be significant in Hong Kong during the auspicious Chinese festivals of Chinese New Year and the Dragon Boat and Mid-Autumn festivals.

2. Theory and previous evidence

2.1. Why prices cluster-human bias, haziness and bounded rationality

Individuals prefer some numbers to others. Yule (1927) found evidence of number preferences when he analysed the frequency distribution of the final digits 0 to 9 in a set of scale measurement readings made by four observers. Similarly, Kendall and Smith (1939a,b) observed human bias in the selection of numbers. Their experiment involved the use of a "randomising" machine, designed to yield equally likely fleeting observations of the digits 0 to 9. Subjects revealed a preference for reporting they had glimpsed an even

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[1] Due to the minimum tick sizes imposed on each market, clustering is examined in the final digit of price for some stocks, and in the penultimate digit of others.