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MASSEY UNIVERSITY

125.899 Research Thesis

Investor psychological bias towards number preferences in stock price endings:
Rationality Vs Irrationality

A research thesis submitted in fulfillment of the requirement of the Degree of Masters in Business Studies (Fin) at Massey University

Name: Amanda Ling Qian Wang

ID number: 05128978

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Abstract

Consumer reactions towards products that end with \$X.99 have been heavily researched in the marketing literature. My study has found psychological bias towards numbers in finance prices, where there is a positive return for prices ending in \$X.01 and a negative return for prices ending in \$X.99 for the American and Chinese Markets, with the return difference annualised to 22.65% and 54.43% per year, respectively. I find there are more buyer initiated stocks for stocks ending with the digit 9. This is not the same as consumer psychological bias, where consumers consider prices that end with 9 to be much cheaper than those ending in other digits. Rather, the case here is a rationality response to psychological bias. This would also explain why I did not find excessive buys in the Chinese market in relation to *lucky* numbers, as is found in the marketing literature.

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1. INTRODUCTION

Investor rationality has always been a topic explored in behavioural finance, as there are anomalies in the stock market caused by investor irrationality. In traditional finance theory, the efficient market hypothesis asserts that investors cannot make any abnormal returns given the same amount of risk. This is due to the assumption that investors will be rational in choosing those stocks that reflect the fundamental value of the firm. When a stock deviates from this fundamental value, there should instantly be many rational arbitragers that correct this phenomenon. Thus, it would be unrealistic under the efficient market hypothesis to generate excess returns given the same amount of risk.

As can be recalled from advertisements, around 99.99% of the time advertised product pricing is \$X.99. This pricing method is used to stimulate consumer sales, as humans process the stock price from left to right, however, prices ending with \$X.99 can effectively change the left-most digit of the price. In products that are highly priced, this method may even be used to change the digits before the decimal point; for example, \$9,999.99 rather than \$10,000.00. Potential customers will perceive the former price as being much cheaper than the latter one.

In my research, I investigate whether investors show the same irrationality towards stock price endings as is documented in the marketing literature, and whether this influences stock returns. My research is, to my knowledge, the first to document

intraday returns with respect to different cent digit endings and attempt to determine whether there is a connection between investor buying behaviour and return effects. I find this research topic very fascinating, because there may be a psychological bias regarding cent digit variations, which may affect stock prices. Differences in cent digits may generate abnormal returns, which may be due to either investor irrationality, or rationality. While much of the literature in this area documents investor irrationality due to personal beliefs and attitudes, there are still many research gaps in the area of behavioral bias towards numbers. The contribution of my research to this topic is the finding that investors are rational towards stock price purchasing, and that there are differences in return with respect to cent digit endings. It is also found that this effect persists for longer than 24 hours.