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Offering price clusters and underpricing in the US primary market

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Abstract

This study extends the microstructure literature by examining the offering prices in the United States Initial Public Offering (IPO) market for the presence of clusters. It is found that the use of whole prices is more frequent in the IPO market than in secondary stock markets. Offering prices in the IPO market exhibit a dominant clustering at whole fives and tens (5s and 0s) that cannot be adequately explained by existing hypotheses. Unlike other studies on IPO underpricing, this study examines the impact of offering price clusters on the degree of underpricing. It is documented that whole-priced IPOs are underpriced more relative to fractional-priced IPOs. It is found that the negotiations hypothesis and the implicit collusion hypothesis are not adequate explanations and leave this puzzle to be resolved by future research.

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Notes

A biological rationale for this pricing practice is that consumers have limited memory and tend to store the first digit of a price into memory (Brenner and Brenner, 1982). Thus, costs tend to be priced at odd prices, such as US$4.99 and US$99.99, and benefits, e.g., yields and salaries, tend to be priced at whole prices, such as 5.00% and US$100 000, in retail markets.

The well-documented price clustering in US secondary markets for securities is a result of a variety of economic reasons, including the reduction of negotiation costs (Harris, 1991), implicit collusion among market makers (Dutta and Madhavan, 1997), and explicit collusion among dealers (Christie and Schultz, 1994).

Furthermore, there are differences between the primary and secondary market microstructure in the USA Unlike in the secondary market where minimum tick sizes and spreads are almost always mandated, there are no mandated tick sizes or bid–ask spreads for the offering price in the IPO market. Underwriters and/or issuers are free to use odd prices, such as US$9.99 or US$12.88.

Consider IPOs with intrinsic values of US$2.5, US$7.5, US$12.5, US$17.5, US$22.5, US$27.5, and US$32.5. Rounding of these prices towards whole 5s and 0s can potentially affect up to 100%, 33.33%, 20%, 14.29%, 11.11%, 9.09%, and 7.69% of wealth in these IPOs!

Giammarino and Lewis (1989) model such a situation where the issuing firm negotiates with the underwriter in determining the price of an equity issue.

Arising out of the study by Christie and Schultz (1994), several hypotheses and models of price clustering have been proposed to explain price clustering in the NASDAQ stock market. For instance, NASDAQ market makers may use even-eighth quotes as a defence against NASDAQ momentum traders (Kandel and Marx, 1999). Microstructural features, such as preferencing and internalization, reduce market makers' incentives to

compete on price (Godek, 1996; Huang and Stoll, 1996). As these explanations are tailored to the NASDAQ market, they are not applicable to the IPO market.

In their study of gold price clustering, Ball et al. (1985) hypothesize that prices tend to cluster if the underlying value of the security is not well known (price resolution hypothesis). Harris (1991) adapts the price resolution hypothesis to the clustering in the secondary stock market and suggests that traders will use a fine set of prices when the underlying security values are well known, thereby leading to little price clustering. The competition theiry of Grossman et al. (1997) is largely an extension of the negotiation hypothesis.

Although there is currently no theiry predicting the shape of the distribution of IPO intrinsic values, except for the truncated component, the distribution of IPO intrinsic values should be somewhat smooth. In other words, a priori, there is no economic reason why a relative high frequency of intrinsic values at US$X with two relatively low frequencies of intrinsic values at US$X − 1 and US$X + 1. Harris (1991, Fig. 2) supports this presumption, in which the distribution of market prices is a rather smooth, χ^2-like one.

Harry (1991) documents clusters at whole 5s and 0s in secondary stock markets. These clusters, however, are far less intense than in IPO market.

The Kolmogorov–Smirnov test is one of the most widely used tests for comparing two distributions.

To ensure that these significant results are due to changes in shape, not to changes in location, of IPO offering prices is shifted. It is found that the results are insensitive to how the location is changed. Therefore, these statistical rejections are the results of the disappearance of premarket clustering.

When PROCEEDS and SIZE are both included, the regression produces an abnormal high adjusted R^2 of 66.34%.

The findings in the previous section show that fractional offering prices result in less underpricing compared to whole prices. This is consistent with the notion that investors need to be compensated for incurring pre-bid information production costs (Booth and Chua, 1996), thereby implying that fractional prices seems to indicate a higher level of precision in valuation than whole prices.

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