Journal of Economics and Public Finance
ISSN 2377-1038 (Print) ISSN 2377-1046 (Online)
Vol. 4, No. 1, 2018
www.scholink.org/ojs/index.php/jepf

Original Paper

Ultimatum Game, Loss Aversion, and Status Quo Bias in Action: The Case of Privatization of PCCW

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Received: February 5, 2018 Accepted: February 9, 2018 Online Published: February 25, 2018

doi:10.22158/jepf.v4n1p93 URL: http://dx.doi.org/10.22158/jepf.v4n1p93

Abstract

In 2008, Pacific Century Regional Development and China Netcom Corporation, two major shareholders of Pacific Century Cyber Works (PCCW, 00008.hk), proposed privatization of the firm listed in Hong Kong Stock Exchange. Minority shareholders opposed fiercely. The proposal, although endorsed in special shareholders meeting in February 2009, was challenged in Court and overturned, due to allegations of vote-rigging in the shareholders meeting. One interesting aspect of this episode is that, while the offer by major shareholders was very attractive compare to the current share price, it is hard to understand why relatively large percentage of shareholders voted against the offer. The percentage deviates from what often found in ultimatum game experiments, as the offer proposed by the major shareholders was comparable to the median offers in a lot of ultimatum game experiments. This could be understood through loss aversion, which predict a bias towards status quo.

Keywords

Corporate Governance, Game Theory, Loss Aversion

1. Introduction

Merger, acquisition, and privatisation are part of everyday life in capital markets. However, the proposal to privatize Pacific Century Cyber Works (PCCW) by two major shareholders in 2008 has something special. Not because PCCW (formerly Hong Kong Telecom) has long been favoured by individual investors in town as a vehicle to derive passive income through dividends, but because the proposal itself resembles an ultimatum game. Unlike laboratory studies, which usually consisted of repeated trials, the battle of privatization is a one-off game. Nevertheless, the voting results by large

number of shareholders could be seen as a variation of repeated trials. In such a way, we can compare the voting results to typical ultimatum game experiments. There comes a surprise. Though the offer was far from unfavourable to minority shareholders, the percentage accepting the proposal was less than predicted by previous ultimatum game experiments. One way to explain this anomaly is to look at the recent history of the firm, its share prices, and from the point of view of loss aversion.

2. The Firm

Hong Kong Telecom (former stock code 8.hk), the predecessor of PCCW, was a wholly owned subsidiary of the UK-based telecommunication company Cable & Wireless. In 1925, Cable & Wireless took over the business of Hong Kong telephone service of China and Japan Telephone and Electric Company. Since then, Cable & Wireless was operating an essentially monopolistic business in both local and international telephone services in Hong Kong. In 1988, Hong Kong Telecom was listed in Hong Kong Stock Exchange. In 1995, the franchise of local telephone service expired. New service providers were allowed in the market.

In 2000, Cable & Wireless was receiving a bid from Singapore Telecommunication Limited (a.k.a. Singtel) to acquire Hong Kong Telecom. This triggered fears that the largest Hong Kong communication conglomerate would end up controlled by its regional competitor. PCCW (stock code at that time 1186.hk) joined the bidding. Several banks support the PCCW by providing syndicated loan at the level US$11 billion (BBC Business, 2001). In the end, PCCW won the bid and Hong Kong Telecom was merged into PCCW. The newly merged company took over the stock code 00008.hk since then, still widely but confusingly known as PCCW. That period was also the time of dot com frenzy. The share price of PCCW soared to historical high. In February 2000, it was as high as HK$28 per share, equivalent to HK$140 after 5 to 1 merging in 2003. However, since the takeover was finance by debt, PCCW became a highly leveraged firm. Interest expenses increased substantially and became a burden.

Previously, Hong Kong Telecom, now PCCW, used to be one of the favourite stocks of relatively well-to-do retirees for its relatively generous and regular dividends payout. After the merger it was not the same firm anymore. Interest was a heavy burden. At the same time, business performance was deteriorating due to expiry of local telephone service franchise. Pressure was mounting and PCCW share price plummeted, following the burst of dot com bubble in early 2000s. In 2003, the share price of PCCW was only 4% of its historical high. In 2003, too low share price led to the decision of merging of PCCW shares at the ratio of 5 to 1. In 2005, China Netcom acquired 20% stake of PCCW and became the second largest shareholder.

3. The Privatization Proposal

In 14th October 2008, before trading time, PCCW applied suspension of trading. The previous closing price was HK$2.9. Three weeks later, before resuming trading, the two major shareholders, Pacific

Century Regional Development and China Netcom, proposed to privatize PCCW at HK$4.2 per share. The major shareholders need to seek approval from regulatory body (Office of Telecommunication Authority, a.k.a. OFTA), endorsement by other shareholders and the Court of Hong Kong. After that PCCW will be delisted and wholly owned by the two shareholders.

OFTA approved the privatization proposal in December 2008. On 30th December 2008, trading of PCCW shares was suspended to pave way for the special shareholders meeting on the same day. The closing price on previous trading day was HK$3.45. Right before the meeting, the two major shareholders decided to raise the offer price to HK$4.5. The special shareholders meeting was then adjourned and rescheduled to February 2009 such that proposal documents could be revised (South China Morning Post, 2008).

To pass the proposal in special shareholders meeting, not just the number of shares counted, but also the number of persons (including proxy) in the meeting. At least 75% of shares and more than 50% of shareholders voting in favour of the offer were required. In other words, there was also a "head count rule", which meant to protect the interest of minority shareholders (South China Morning Post, 2009a).

Before the meeting, it was widely reported in media that suspected vote-rig was underway. It was later found that a gentleman from Fortis Asia, an insurance company formerly owned by a mother company of PCCW, purchased 500,000 shares and given them out for free to 500 insurance agents in return for their favourable vote for the privatization. The Securities and Futures Commission of Hong Kong (SFC) interfered and investigated the vote-rigging allegation (South China Morning Post, 2009a).

Albeit SFC investigation, the shareholders meeting was held on schedule on 4th February 2009. In the end, 1,403 shareholders, representing 1.3 billion shares, vote in favour of the proposal. 854 shareholders, representing 280 million shares, vote against it. That satisfied both 75% shares and 50% shareholders rules. The proposal was accepted, pending the hearing at High Court scheduled at late February 2009 (Hong Kong Legislative Council Secretariat, 2009). Although the High Court ruled in 6th April 2009 that in favour of the privatization, SFC appealed and the Court of Appeal overruled the decision and rejected the privatization on 22nd April 2009 (South China Morning Post, 2009b). After that, the two major shareholders gave up on this privatization proposal.

4. Privatization of PCCW as an Ultimatum Game

In a typical experiment of ultimatum game, there are two subjects. The experimenter gives them a sum of money to split, for example $100. One of the subject (the proposer) will decide how much out of the $100 to give to the other subject (the responder). Who to play which role is usually decided at random. Obviously the offer could range from nothing ($0) to all ($100). If the other subject accepts the offer, they will split the money accordingly and the experiment is over. If the other subject does not accept the offer, both will get nothing and the experiment ends. The problem is: what is the smallest share the proposer can offer and at the same time will not be rejected?

In analytical game theory, the players are assumed to be fully rational. In a one-off game, the responder

will accept the smallest possible positive offer (say 1 cent, which is 0.01% of $100). It is because this tiny amount is better than none. Expecting that the rational responder will accept the smallest possible positive offer, the proposer will offer, reasonably, the smallest amount possible. The set of strategy {offer smallest possible positive amount, accept offer} is Nash equilibrium strategies, because these are the best response to other player's strategy and, once adopted, there is no incentive for both side to deviate from it (Nash, 1951).

In case of finite repeated games, the equilibrium strategies will still be {offer smallest possible positive amount, accept offer}. Suppose it is a two-round game. Each player takes turn to be proposer and responder. Each will desire to take the whole sum of money but it is not possible. It is because the other player will retaliate in the next round by refusing the proposal, and no one gets even a cent. Meanwhile, rational players understand that a cent is better than none. So, by backward deduction, in the second round, one player will propose smallest possible positive amount and the other party will accept the offer. One round backward, in the first round, the role reverses but the combination of strategies will be the same, plays by the other player. It is easy to extend the example from two-round to n-round, provided that n is finite. The combination of strategies {offer smallest possible amount, accept offer} is a sub-game perfect equilibrium. No one in the game has incentive to deviate from it (Selten, 1975).

Experimental results differ hugely with analytical predictions. After Güth, Schmittberger and Schwarze (1982) sprung a whole field of studies of ultimatum game, varying in experimental settings from number of rounds, proposal methods, cultural settings, etc. Camerer summarized the results of some representative studies. In a nutshell, the modal and median of share proportion range from 40% to 50%, and means from 30% to 40%. Extreme proposal (smallest possible positive amount or 100%) is rare. Proposed offers of 20% or less are rejected about half of the time. The results reviewed are rather consistence in different cultures (Camerer, 2003).

The privatization proposal of PCCW was strikingly similar to the setting of an ultimatum game. A feature of the proposal is that, if the privatization proposal was accepted, the two major shareholders would get special dividends from PCCW amount to HK$ 17.6 billion. The cost of privatizing the firm at HK$ 4.5 per share was around HK$ 15.9 billion (South China Morning Post, 2008). The special dividends were more than enough to cover the cost of buying back shares from minority shareholders. Essentially the major shareholders did not have to pay for the privatization. It was more like the major shareholders proposing splitting the value of the firm with minority shareholders. The 2008 annual report showed that the net asset value of PCCW was HK$ 37.4 billion (PCCW Limited, 2010). If we use NAV as a proxy to the true value of the firm, the privatisation proposal was no different from the major shareholders offering to split HK$ 37.4 billion with the minority shareholders. The offer is HK$15.9 billion, which is 42.5% of net asset value.

On "head count" voting result, the proportion supporting the privatization proposal was 62%, rejecting the proposal 38%. On voting result of shares, the proportion supporting the proposal was 82%, rejecting the proposal 18%. Since major shareholders had distinctive advantage in number of shares, it

was no surprise on the overwhelming result in voting by shares. Voting by "head count" was more intriguing. In studies surveyed by Camerer, rejection ratio of offers in the range of 41% to 50% ranged from 0 (none rejected) to 0.25 (25% of offers rejected) (Camerer, 2003). The voting result (head count) showed that 38% of votes were against the proposal. This is higher than the conditional rejection ratio summarised by Camerer.

In the end, the proposal passed the special shareholders meeting but overturned by High Court of Hong Kong. An interesting question is: what makes a higher than expected percentage of shareholders voted against a favourable offer? The voting result could not be reconciled with the findings in ultimatum game experiments. However, if we look at the privatization proposal from a historical perspective, loss aversion could explain the behaviour of those who vote against the privatization, an obviously favourable offer.

5. Loss Aversion, Reference Dependence, and Risk Taking in Privatization of PCCW

Kahneman and Tversky synthesized their experimental studies of human biases and decision heuristics in a model they dubbed "prospect theory" (Kahneman & Tversky, 1979). Loss aversion, reference dependence, framing effect, etc. were put into places in this model. In standard economic theory, decision making under risk is portraited as a process of comparison of expected utility between difference prospects. Given parameters (probabilities, prospective outcomes, and their utility), expected utility of a prospect could be said as absolute. In prospect theory, however, the merit (or demerit) of the prospects are compared to a reference point, which could be floating with circumstances and influenced by framing of the prospects (e.g., how the prospects are described).

Loss aversion is the experimental findings that could be summarized in the following phrase: loss looms larger than gain. It means, mathematically, the (absolute value of) pain of losing, say, $1,000 is twice as much as the (absolute value of) happiness of gaining $1,000. In experimental settings, it was found that humans, when choosing among risky prospects all with positive expected value, are prone to risk averse. However, when choosing among risky prospects all with negative expected value, they are prone to risk taking. Kahneman and Tversky proposed loss aversion to explain these findings. Because people hate losing, they tend to be conservative and take lesser risk when all possible choices are with positive expected value. In such a way they could preserve their gain. In contrast, when all possible choices are all with negative expected value, they tend to take more risk such that they could regain loss (i.e., lose less). Besides, winning and losing is relative to a reference point. This reference point could be a psychological state/expectation. In experimental settings, the reference point could be primed by experimenters and subjects could arrive at different decisions, even though the expected value of the prospects for consideration remains unchanged (Kahneman & Tversky, 1979; Kahneman, 2011).

For minority shareholders, the privatisation offer could be framed as a choice between a certain prospect (accept the privatization offer) and an uncertain prospect (rejecting the offer and remains in

status quo). The later choice is uncertain because the share price could still have a chance to be higher or lower than its current level if the firm remained listed. Whether the privatization proposal was a good deal or not depends on the perception of reference point.

It is very likely that the reference point for most minority shareholders at that time was HK$140 per share, particularly for those who bought the shares during the frenzy of dot com bubble and the leveraged buyout. Since then the share price had dropped for more than 95%. It follows that both the certain prospect (accept the offer) and the uncertain prospect (remain at the status quo) are bad deals. For those who fail to sell the stock before slumping share price, accepting the offer means realizing a huge capital loss, which could be extremely painful. It is a bad deal. At the other end, rejecting the offer and have the firm remained listed means that there is still a chance to regain the capital loss, no matter how slim the chance is. It is also a bad deal.

We can have a glimpse of the agony of minority shareholders from quotation in news report. “HKT [PCCW’s predecessor] was previously one of the biggest firms in Hong Kong. But the diamond has turned into glass. I hope the board will consider appointing new management. The company cannot get shareholders’ confidence through deal-making”. “As an investor, I want them to boost the valuation of the company, not play tricks and deals. Please don’t bully us”. “I’d rather use the PCCW stock as wallpaper than see the privatisation passed”. These are just a handful of pathetic examples (South China Morning Post, 2008).

Facing two bad deals, as predicted by prospect theory and loss aversion, a high proportion of minority shareholders (38%) voted to remain at status quo, which was essentially voting for an uncertain prospect and take more risk. This explained why the proportion is higher than what was found in ultimatum game experiments.

6. Conclusion

The episode of privatization of PCCW in 2008 is a natural experiment of ultimatum game. The major shareholders offered to buy back shares from minority shareholders. After that the firm will distribute cash dividends to major shareholders and the amount would be more than enough to offset the cost of privatization. In other words, the major shareholders don’t have to spend anything in privatization. The expenditure and cash dividends all come from PCCW. The major shareholders are no different from splitting the value of the firm with minority shareholders in exchange of their shares holding. It is a structure of ultimatum game. The offer is around 42.5% of net asset value. In previous experimental studies, offers from 41% to 50% have a maximum conditional rejection rate of 25% (minimum 0%). Therefore 38% of shareholders (“head count”) voted against the offer deviates from experimental findings and hence an anomaly. This could be explained by prospect theory and loss aversion.

In rational calculation, the lost in share price is historical. Hence, when considering future actions (e.g., accept privatization offer or not), historical cost shall not be taken into account. Those who do so deems to make inferior choice and similar decision making rules shall have been eliminated in

evolutionary history. In the case of PCCW proposed privatization, the choice seems to be realizing the lost (accept the offer) or waiting for an unknown time such that the share price climbs back to its historical high (remain at status quo as a listed firm). But who know it will or not? And if it will, no one knows how long it would take. Suppose the share price of PCCW is HK$3 (not far from the price before announcement of privatization proposal). To go back to its historical high means the share price shall grow by more than 40 times!

The minority shareholders were likely having the reference share price anchored at the historical highest level. The share price of PCCW used to be more than HK$140 per share (adjusted for merging). After stock merge, re-organization, and capital restructuring, in 2008 when the privatization was proposed, the share price has slide by around 95%. To liquidate the position (by accepting the privatization offer) or not, financially it makes very little different. However, the reference point for most minority shareholders, particularly those who took the trouble to attend the special shareholders meeting and vote, were likely at that point. It would not be surprising if they feel the pain of losing money. Accepting the offer would be more painful because it meant to realize a huge capital loss. Technically, if PCCW remains publicly listed, minority shareholders would still have a (albeit very slight) chance to recover their loss by means of capital gain, although it will need roughly forty times increase in share price in order to break even. If privatization was accepted, this hope will be vanished and the loss will be realized. By virtue of the logic of loss aversion, they voted against the privatization. When choosing between two bad options, loss aversion predicted that people will take the riskier one.

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