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The effect on stockholder wealth of product recalls and government action: The case of Toyota's accelerator pedal recall

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ABSTRACT

We analyze the effect of Toyota's faulty accelerator pedal on stockholder wealth. Using the event study methodology, we show that a major recall in January of 2010 is associated with a 19% fall in the company's cumulative abnormal returns. Continued concerns that Toyota was unable to identify and adequately fix the problem prompted the National Highway Traffic Safety Administration to conduct its own investigation in March, 2010. The results of this government investigation exonerated the company and Toyota's cumulative abnormal returns rose by almost 9%. The Toyota case provides an opportunity to study a product recall with both company error and a government action that addressed concerns about the safety of the product.

1. Introduction

Conventional wisdom supports the idea that in business if a company loses its resources but retains its reputation, it can rebuild (Apple), but money alone cannot bring back a company that loses its reputation (Enron). To build consumer loyalty, a company must offer reliable products at a reasonable price. The process of building a reputation for reliability and value can take decades, and a major misstep can tarnish a company's reputation for many years. Product recalls are potential reputation harming events.

Large cross-sectional studies on product recalls (for example see Kini, Shenoy, & Subramaniam 2013) suggest that firms experience significant declines in sales, often increase advertising to counter the lost reputation, and can use their brand loyalty to offset some of the adverse consequences. But the problem with large cross-sectional studies is that the number of incidents is so high that the market may be insensitive to many of these frequent events. In fact, the market may believe it is just part of the normal business cycle. The sample used by Kini, Shenoy, and Subramaniam had 816 events over a five year period, or approximately one recall every two and a half days. Others have elected to review a specific industry for more insight. Auto industry recalls have been examined by Jarrell and Peltzman (1985), Hoffer, Pruitt, and Reilly (1988), and Barber and Darrough (1996). Drug industry recalls have been examined by Ahmed, Gardella, and Nanda (2002). Food industry recalls have been examined by Thomsen and McKenzie (2001). All find that, in general, recalls are value destroying events. But clearly, with an event every two days or so, not all recalls are value destroying events. What does it take for a recall to rise to the level that it harms the firm?

When looking at a firm specific case, an individual recall might not have a negative impact on the company or one that is short-lived. A classic example is Johnson and Johnson's recall of its non-aspirin pain reliever, Tylenol (Dowdell, Govindaraj, & Jain, 1992; Mitchell, 1989). During a three day period beginning September 29, 1982, seven Chicago area residents died from taking Extra-Strength Tylenol capsules that had been laced with cyanide. This caused the market share of all Tylenol brands to immediately fall from 37 to 7 percent. What is interesting is that this event had little long-term effect on Tylenol's reputation and on stockholder wealth. One reason for this is that cyanide was added to the capsules at retail outlets, not at Tylenol production facilities. Thus, the poisoning was an exogenous event that was not the fault of Johnson and Johnson. Another reason is that the company's response to the poisonings quickly renewed consumer confidence in the Tylenol brand. Once the source of the poison became apparent, Johnson and Johnson immediately withdrew all Tylenol capsules from the market. In addition, the company repackaged Tylenol capsules with

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a triple safety seal, a first in the industry. As a result, Tylenol's market share reached 30 percent within six months, and the brand returned to its pre-event position by August of 1983.

In this paper, we investigate the financial effect of a major product recall on the stock returns of the Toyota Motor Corporation. We select this case because unlike the Tylenol case with Johnson and Johnson, the recall was based on internal issues with manufacturing and not external issues outside the control of the company. From January 2000 to January 2010, there were reports of 52 deaths linked to Toyota vehicles with uncontrolled acceleration (Manning & Raum, 2010). This led to recalls in 2007 and in 2010 involving approximately 7.5 million Toyota vehicles. At first, there was uncertainty regarding the cause of the problem. Later, NASA engineers determined that the problem was corrected by Toyota and that there were no electronic flaws in the pedal design.

Toyota initially announced that the defect was minor in nature, but engineers at the National Highway Traffic Safety Administration (NHTSA) were concerned that the problem was due to a major design flaw. It was not until early 2011 that a 10-month government study concluded that Toyota had appropriately corrected the defect. Thus, the Toyota case provides an opportunity to study the effect of four distinct events around the product recall. The initial event is a minor recall concerning all-weather floor mats suspected of shifting and trapping the accelerator pedal. The second event is a news event surrounding a highway fatality linked to the acceleration problem. The third event is the company announcement of a design flaw in the accelerator and major recall of over 4.8 million vehicles. The NHTSA announced an investigation following the recall, Congress hearings and consumer complaints. The fourth and final event is a study completed by NASA engineers for NHTSA that absolved Toyota. By studying these four events in a case study format we can provide additional insight into when a recall incident may have a negative, long lasting impact and when a recall incident may have no impact.

2. Toyota and the accelerator pedal recall

In the first decade of the 21st century, Toyota had grown to be a very successful corporation. It became the world's largest car manufacturer, replacing General Motors. From Table 1, one can observe that the operating revenues of Toyota surpassed those of the Ford Motor Company in 2005 and General Motors in 2007. Table 1 also shows that Toyota had the largest U.S. market share in light vehicle sales in 2007 and 2008.[1]

Problems with Toyota vehicles first became public in March 2007 when the National Highway Traffic Safety Administration began an investigation in response to consumer complaints of unintended acceleration in Toyota's Lexus ES 350 model. Concerns with Toyota vehicles escalated because it took so long to identify the source of the problem. The scope of the investigation widened following an accident where a Toyota Camry accelerated out of control, reaching a speed of approximately 120 mph before it hit another car causing the death of the driver in the second car.[2] This event was probably the tipping point that caused the NHTSA to look closely at the accelerator problems with Toyota vehicles. After detailed investigations, Toyota concluded that the accident was caused by unsecured (rubber all-weather) floor mats that could shift forward and trap the accelerator pedal. This led Toyota to recall the all-weather floor mats on 55,000 Lexus and Camry models on September 26, 2007.

On August 28, 2009, Toyota's reputation was tarnished further when another fatal highway accident received a great deal of media attention. Mark Saylor, an off-duty highway patrolman, and his family died in the crash of his Lexus ES350. The heightened media attention over this traffic accident was due to the profession of the driver. As a highway patrolman trained in handling vehicles at high speeds, the crash raised questions about the mechanical issues of the car and potential flaws in the pedal design. In response, on September 29 of 2009 Toyota issued a consumer safety advisory that instructed owners of several Toyota and Lexus models to remove and not replace their floor mats until Toyota found a solution.[3] The NHTSA investigation continued, however, as concerns were raised that unsecure floor mats were not the sole cause of the accelerator problem.

On January 21, 2010, Toyota instituted a major recall. Akio Toyoda, CEO of Toyota, admitted the problem may have been caused by an accelerator pedal design flaw.[4] News of the recall spread quickly, which tarnished Toyota's reputation for engineering excellence. According to the Project for Excellence in Journalism, the Toyota recall was the fifth most reported story in the week of January 25–31 and the second most reported story in the week of February 1–7, 2010.[5]

According to Toyota, the accelerator pedal on certain models suffered from mechanical problems. Wear and environmental conditions caused a nylon friction device to stick and prevent the accelerator pedal from returning to idle. The fix was minor and required only 30 min of mechanic time to complete. Nevertheless, there remained persistent concerns that the problem was electronic rather than mechanical in nature. The U.S. Congress requested that NHTSA continue its investigation of the causes of unintended acceleration of Toyota automobiles in March, 2010.[6] NHTSA enlisted the help of NASA engineers to complete their investigation. Following a 10 month investigation, NHTSA released its study on February 8, 2011, which concluded that (1) there was no evidence of an electronic flaw, (2) most of the accidents were the result of driver error (i.e., drivers stepping on the accelerator instead of the brake, called pedal misapplication), and (3) the remaining accidents resulted from problems corrected by previous recalls (regarding accelerator entrapment and mechanical defects in the accelerator pedal).

Because these events provide investors with different information, each event is expected to have a different effect on Toyota's stock returns. Corporate error led to recall announcements in 2007 and 2010 and would be expected to adversely affect the firm's stock returns. However, recalls are common in the automobile industry. In 2007 alone, NHTSA records indicate that there were

[1] These include cars, sport utility vehicles, and light trucks (pick-up trucks but not heavy trucks). Source: *Financial Times Lexicon* at http://markets.ft.com/research/Lexicon/Term?term=light-vehicle-sales accessed March 29, 2013.

[2] We also investigated the abnormal returns of Toyota following this accident but abnormal returns were small and insignificant.

[3] These are the 2007–2010 Camry, 2005–2010 Avalon, 2004–2009 Prius, 2005–2010 Tacoma, 2007–2010 Tundra, 2007–2010 Lexus ES350, and 2006–2010 Lexus IS250 and Lexus IS350.

[4] "Toyota has, for the past few years, been expanding its business rapidly. Quite frankly, I fear the pace at which we have grown may have been too quick. . .. We pursued growth over the speed at which we were able to develop our people and our organization. . .. I regret that this has resulted in safety issues described in the recalls we face today." This testimony of the Toyota CEO is available at http://www.toyota.com/about/news/corporate/2010/02/24-1-testimony.html, accessed October 2, 2011.

[5] See "On State of the Union Week, It's All About Obama," Journalism.org, http://www.journalism.org/index_report/pej_news_coverage_index_january_2531_2010 and "With Budget as Backdrop, Economy Leads the News," Journalism.org, at http://www.journalism.org/index_report/pej_news_index_report, accessed October 2, 2011.

[6] For a discussion of possible political motives for NHTSA's continued investigation of Toyota, see Ramsey and Mitchell (2010).