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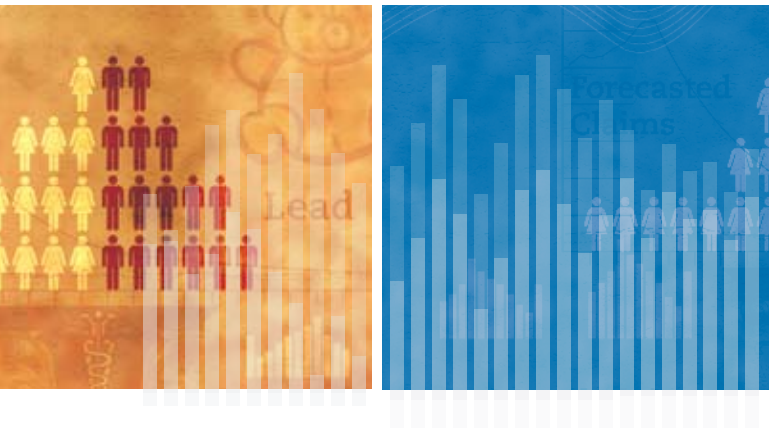

February 2008

China Product Recalls:

What's at Stake and What's Next

Lucy P. Allen
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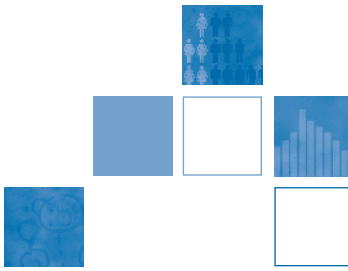
Dr. Simona Heumann

How Markets Work℠

China's share of US toy recalls increased dramatically in the last two decades, from 10% of total toy recalls in 1988 to 98% in 2007.



China Product Recalls: What's at Stake and What's Next

Lucy P. Allen and Dr. Renzo Comolli with Dr. Simona Heumann*

February 2008

2007: THE YEAR OF THE CHINA RECALL

Throughout 2007, the front pages of newspapers were filled with stories of toys contaminated with lead, tainted pet food, and toothpaste laced with antifreeze. According to the press, a large number of these recalled products were connected to Chinese manufacturers, and 2007 was dubbed "the year of China recalls." These stories raised numerous questions about the present and future magnitude of the "China recall" problem.

To evaluate the assertions made in the popular press, it is useful to consider the recent recall activity in light of history. Although 2007 saw more consumer product recalls than previous years, consumer product recalls had been on the rise for the past several years. In 2007, it appears this trend accelerated.

The trend within the toy industry, however, appears to be different. Although the number of toy recalls had been relatively stable over the last two decades, there was a sharp spike in toy recalls in 2007. China's share of US toy recalls also rose significantly—in fact, China-related toy recalls accounted for nearly all toy recalls in 2007.

During 2007, the presence of potentially hazardous levels of lead was the leading cause of recalled consumer products manufactured in China. The number of consumer product recalls related to potentially hazardous levels of lead has grown exponentially since 2000.

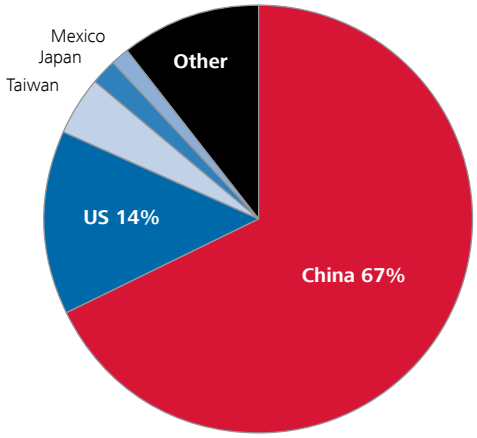
Below, we investigate these trends in greater detail, providing statistics on recall types, magnitudes, and countries of origin. All figures refer to US recalls. We also report data on recalls by regulatory agency. Lastly, we outline techniques that may be used in estimating the wide-ranging costs associated with such recalls. Using Mattel as an example, we perform a simplified application of one such technique to obtain a preliminary understanding of the market's estimate of such costs. Mattel issued several recalls of Chinese-made toys in 2007, several of which were highly publicized in the press. However, our analysis indicates that the market's estimate of the economic impact of Mattel's recalls on the company was negligible, and not statistically different from zero.

IN 2007, PRODUCTS FROM CHINA DOMINATED RECALLS

Throughout 2007, China was in the spotlight of the news about product recalls, with a particular focus on the toy and pet food industries. Tire recalls and warnings about toothpaste laced with an antifreeze ingredient also commanded attention. (See the timeline on pages 14 and 15 for a list of recall-related press coverage.)

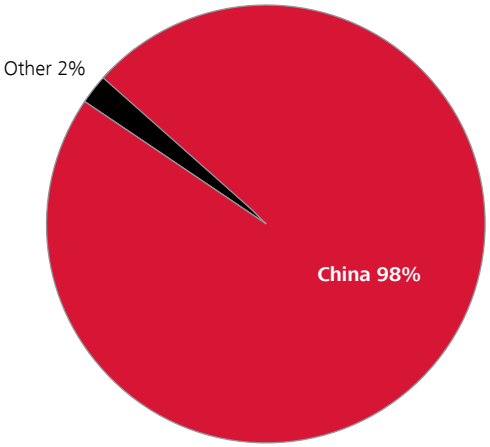
Products manufactured in China accounted for 67% of consumer product recalls announced in 2007.

Figure 1: **2007 US Consumer Product Recalls**
(% of recalls by country of manufacture)[1]



In 2007, the share of recalls related to Chinese-made products was even larger for toys than for consumer products in general. Toys from China accounted for 98% of US toy recalls in 2007.

Figure 2: **2007 US Toy Recalls**
(% of recalls by country of manufacture)[2]



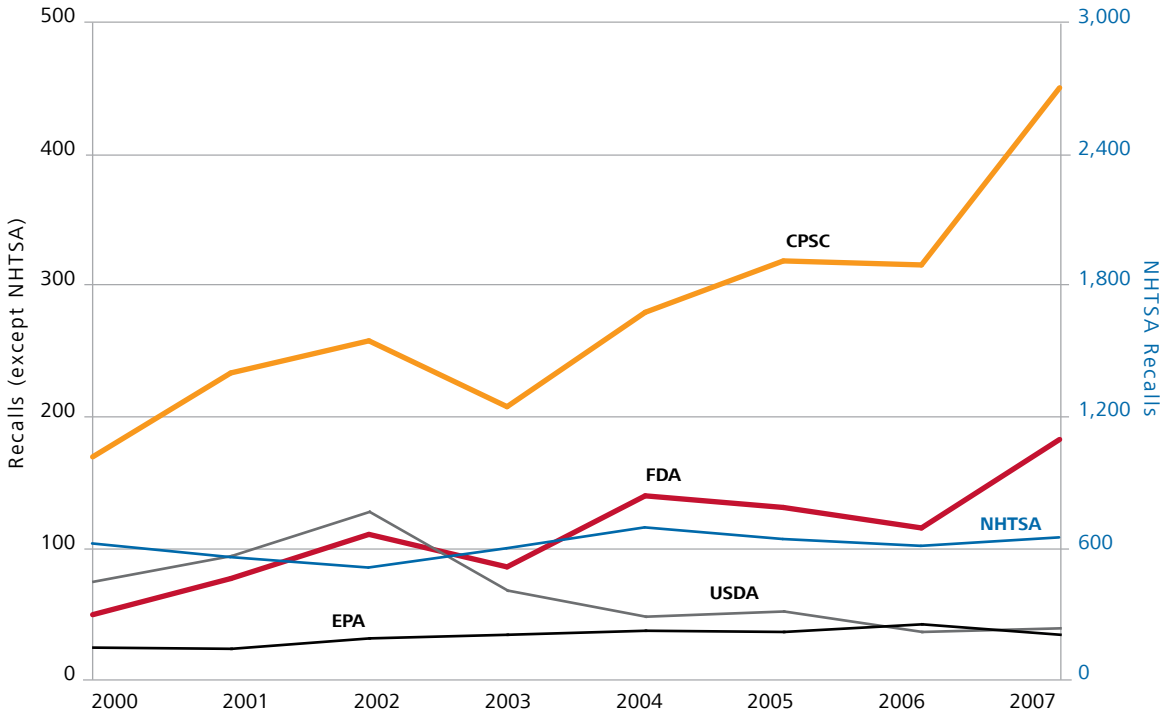
CPSC and FDA Recalls Were on an Upward Trend Prior to 2007

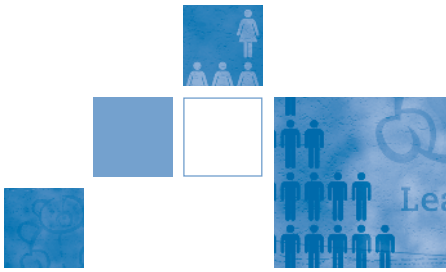
Most of the newsworthy 2007 recalls fell under the oversight of two regulatory agencies: the US Consumer Product Safety Commission (CPSC) and the Food and Drug Administration (FDA). For example, the toy recalls fell under the oversight of the CPSC, and the pet food and toothpaste recalls under that of the FDA.[3] In addition, four other agencies oversee recalls in the US: the Environmental Protection Agency (EPA), the US Department of Agriculture's Food Safety and Inspection Service (USDA), the National Highway and Traffic Safety Administration (NHTSA), and the US Coast Guard.[4]

Recalls administered by the CPSC and the FDA have been on an upward trend since 2000, and 2007 is an acceleration of this trend.

Figure 3: **Number of US Recalls by Governmental Agency**[5]

2000 Through 2007



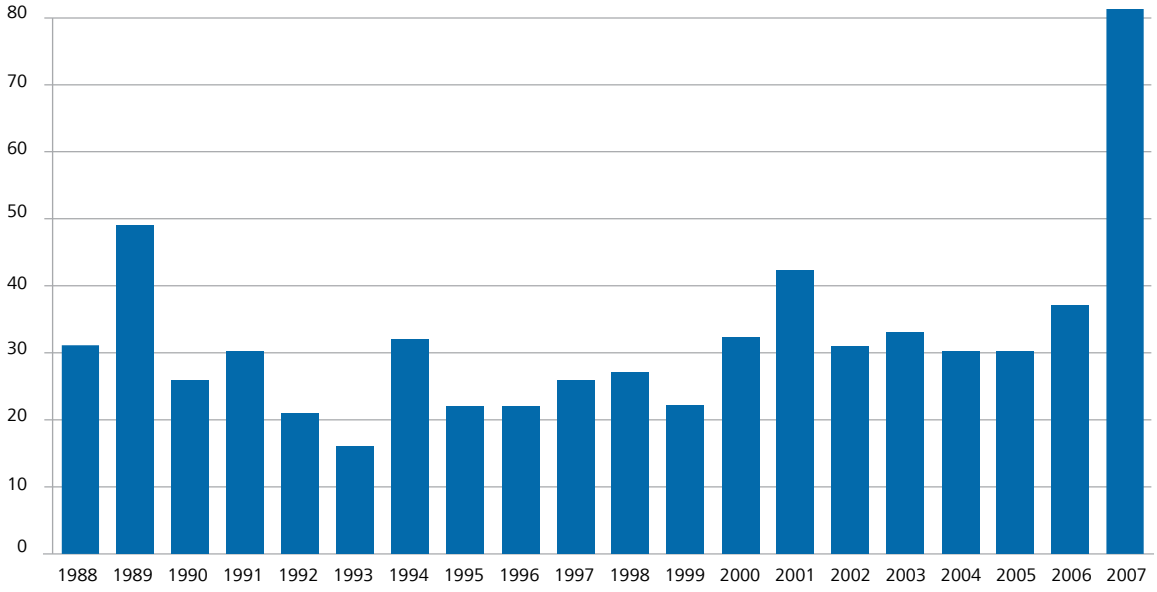


2007 Sets New Record for Toy Recalls

For one segment of consumer products—the toy industry—2007 recalls represented a marked change from historical trends. The number of toy recalls was essentially flat over the last two decades. In 2007, however, toy recalls more than doubled from the previous year.

Figure 4: **Number of Toy Recalls in US**[6]

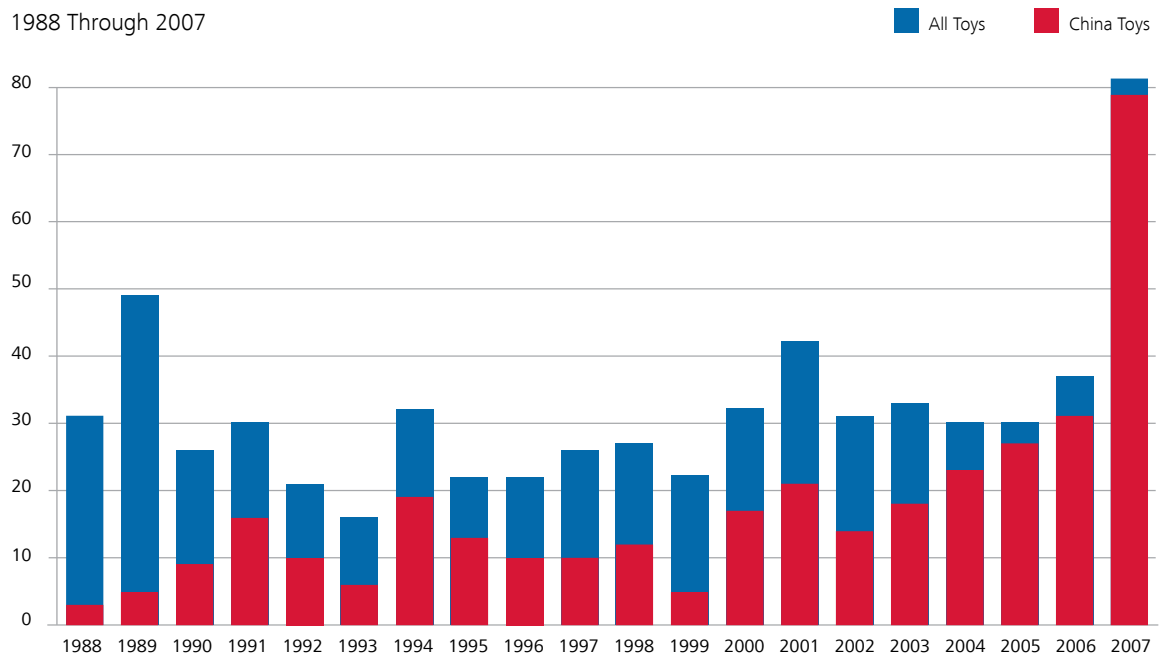
1988 Through 2007



The marked increase in the number of toy recalls in 2007 was driven primarily by the recalls of toys made in China. Based on data on toy recalls, China's share of toy recalls was generally increasing since the early 2000s, and appears to have peaked in 2007, having accounted for virtually all toy recalls last year.

Figure 5: **Number of Toy Recalls in US**[7]

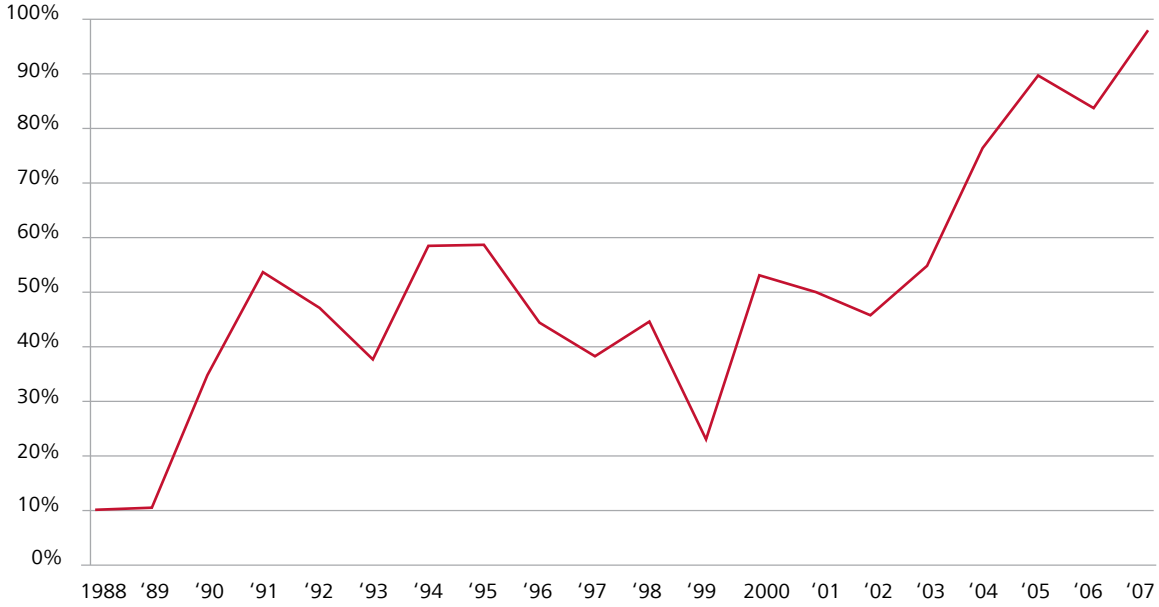
1988 Through 2007



China's share of US toy recalls increased dramatically in the last two decades, from 10% of total toy recalls in 1988 to 98% in 2007.

Figure 6: **China's Share of US Toy Recalls**[8]

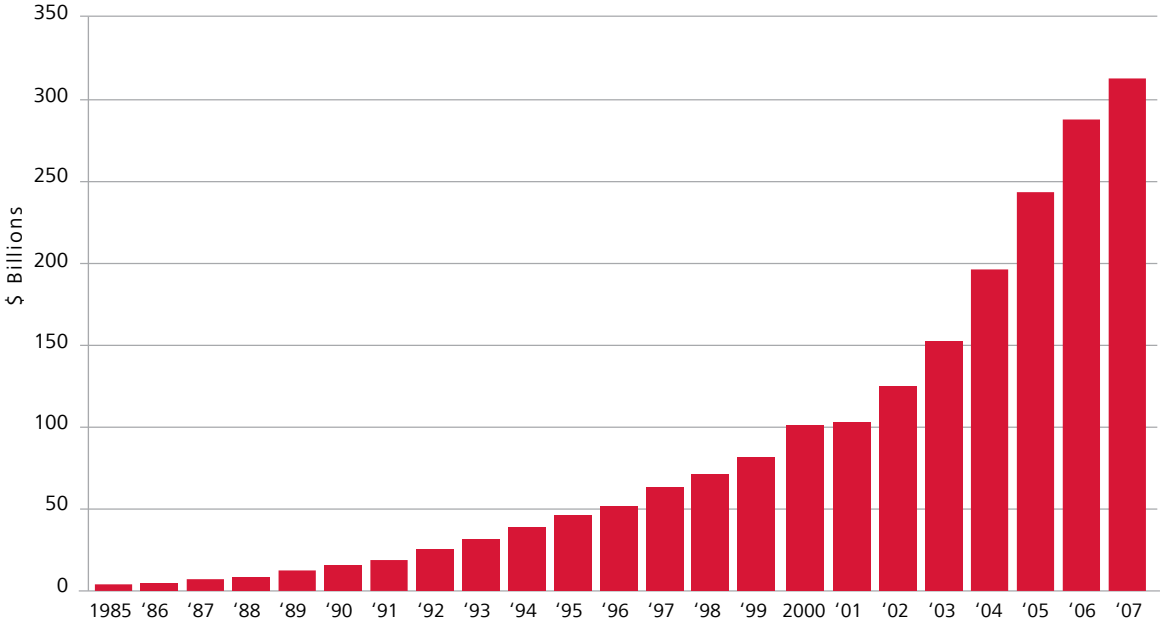
1988 Through 2007



However, US imports from China have also increased dramatically over the same period.

Figure 7: **Annual US Imports from China**[9]

1985 Through 2007

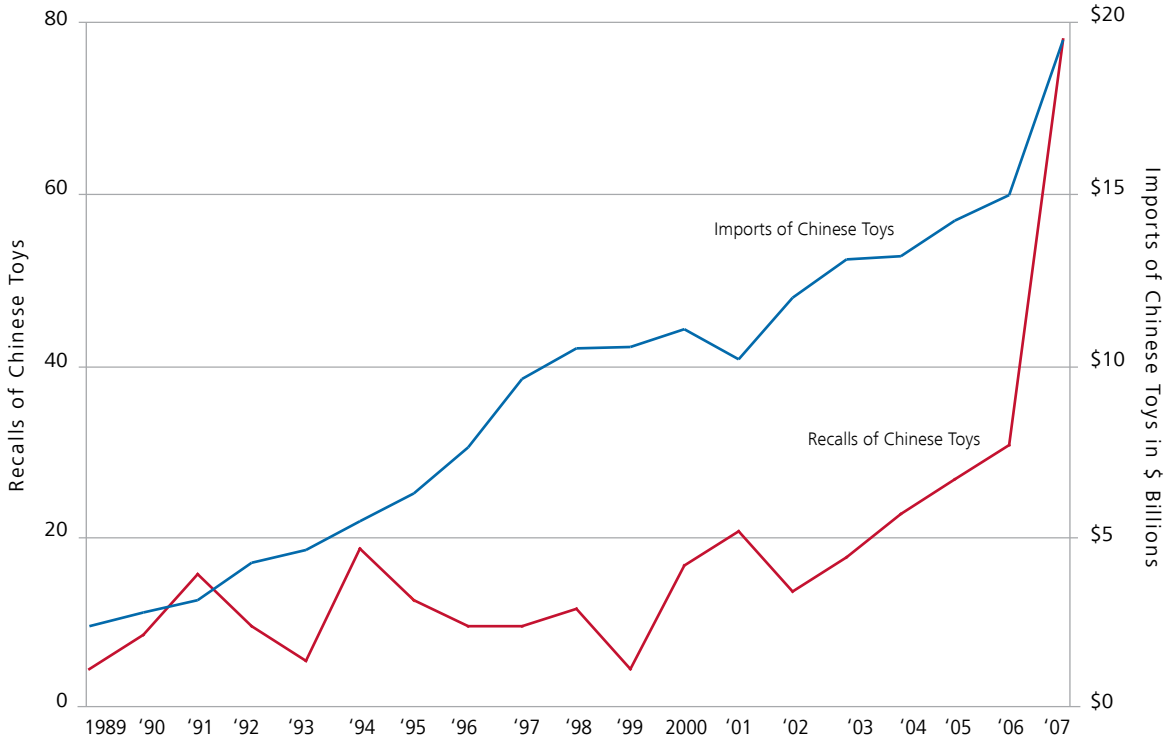


It is natural to ask whether the increase in recalls of Chinese-made toys over time is merely due to the increase in imports from China.

We examined US imports of Chinese-made toys (in dollars, adjusted for inflation) to see whether they could explain the increase in China-related toy recalls. Recently, the increase in recalls of Chinese-made toys has dramatically outpaced the increase in imports of toys from China. Yet, the overall increase between 1989 and 2007 in the number of recalls of Chinese-made toys has been approximately the same as the increase in toy imports from China over the same period.

Figure 8: **Imports of Chinese-Made Toys vs. Recalls of Chinese-Made Toys**[10]

1989 Through 2007



While recalls of Chinese-made toys have been rising in recent years, the reason for the recalls often originates outside of China. According to one academic study published in September 2007, most of the recalls of toys manufactured in China during 2007 were not due to manufacturing problems originating in China, but rather design problems originating outside of China.[11]

Lead-Related Recalls Have Increased Dramatically

Lead was the most common hazard among China-related consumer products recalled in 2007. Lead hazard accounted for 30% of the Chinese-made products recalled in 2007 (Figure 9). In 2007, a large number of the consumer product recalls for lead hazards were initiated because of lead in paint (used on toys, other children's products, etc.) and lead in jewelry. The recalls were due to fear of the potential toxicity of lead, especially to children, if ingested.

There has been a recent and dramatic increase in consumer product recalls in which the recalled product presented a lead hazard. Indeed, lead-related recalls have grown exponentially in the period from 2000-2007 (Figure 10).

Figure 9:
Breakdown by Hazard of Chinese-Made Products Recalled in US in 2007[12]

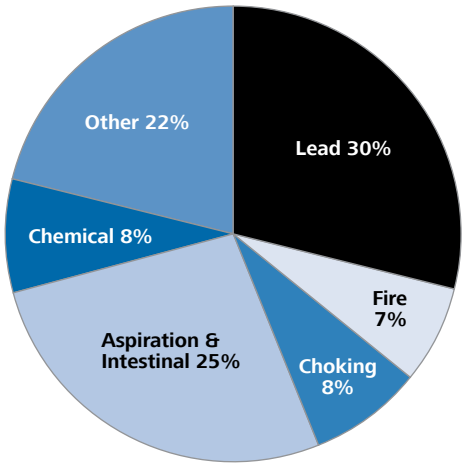
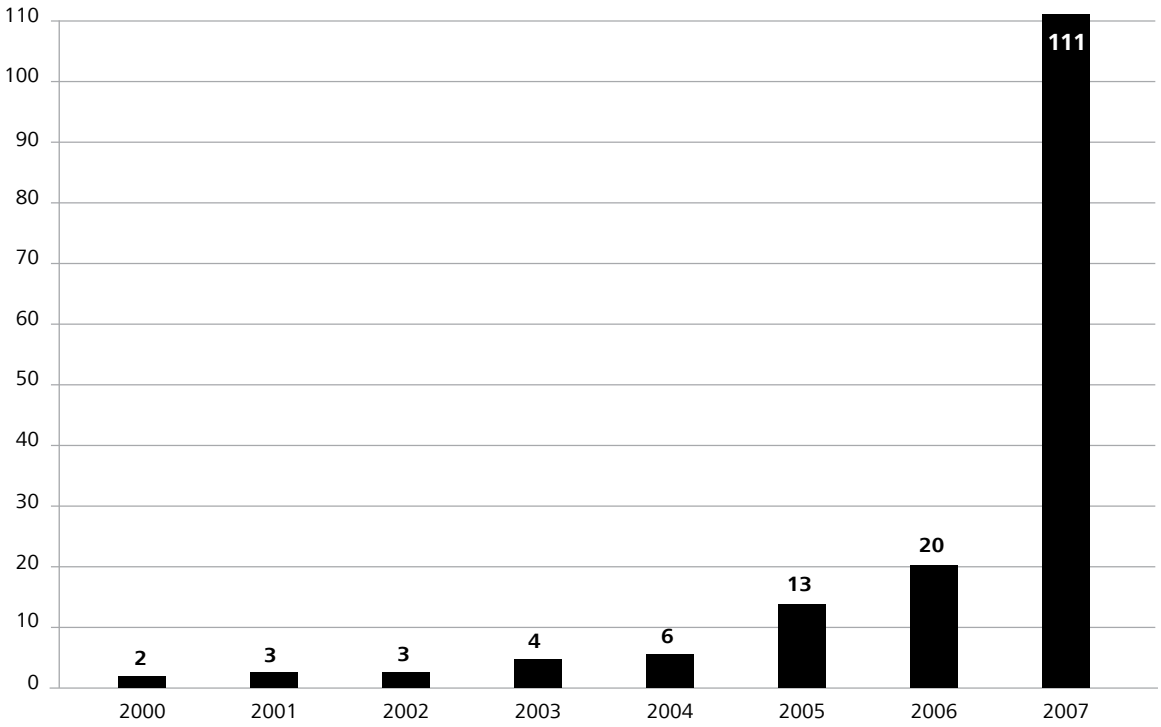


Figure 10: **Number of US Recalls of Products Containing Lead**[13]
2000 Through 2007



Lead was the most common hazard among China-related consumer products recalled in 2007.

ESTIMATING THE ECONOMIC IMPACT OF PRODUCT RECALLS

Companies facing a product recall typically incur a number of costs. For expository purposes, these costs may be classified into direct and indirect. Direct costs often include refunds and repair costs, notification costs, additional labor costs, disposal costs, and lost inventory value. Indirect costs may include damage to reputation, loss of future sales, future testing to prevent similar problems, costs associated with the altering of the production process and restructuring, use of management time and diversion from business, legal and regulatory costs, exposure to future liability for personal injury, medical monitoring costs, punitive damages, increases in future insurance costs, and the impact of uncertainty. Uncertainty can, for example, reduce a company's value because it can increase the discount that the market applies to the future cash flows generated by the company.

Below we describe two methods that can be used to estimate the economic impact of product recalls.

- The "ground-up" approach begins with company and product-specific data to estimate the various direct and indirect cost components. To estimate personal injury liability, for example, the number of people potentially exposed to the hazard is first estimated. Models of injury/disease and propensity to claim are applied to determine the number of consumers who will have a compensable claim and the value of those claims. Other recall-related costs can also be estimated by this approach.

- The "event study" approach examines the company's stock price reactions to news of its product recalls to estimate the total cost of the recalls based on the change in the company's market value. Under this approach, it is not necessary to estimate the cost components individually as they are all captured collectively.

Both methods can be used to estimate the entire economic impact of a product recall (i.e., all direct and indirect costs).

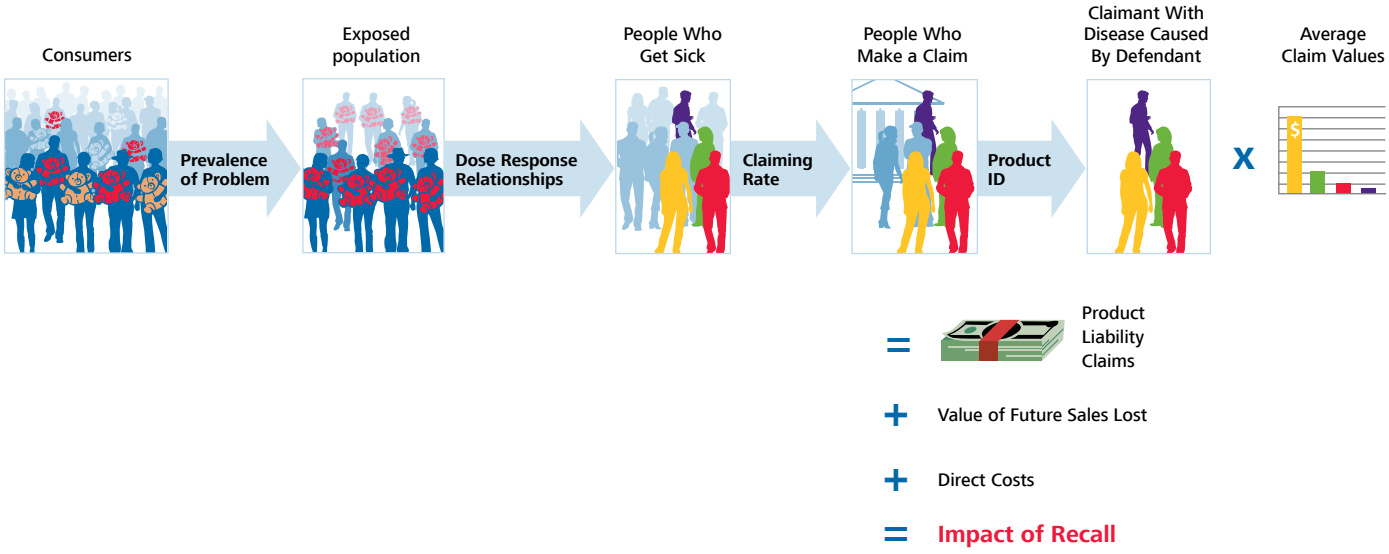
The Ground-Up Approach

The economic impact of the recall of a potentially harmful product can be estimated using a ground-up approach. To estimate the costs of refunds, for example, the ground-up approach can begin by considering the universe of manufactured units. It then considers what portion of the manufactured units was sold to retailers and what portion was subsequently sold to individuals. Then, the number of units returned (or an estimate of the number of units that will be returned), together with the average unit cost of each type of product recalled, may be used to estimate the cost of the refunds.

Figure 11: **Economic Impact: Ground-Up Approach**

To estimate the indirect costs associated with product liability for future claims of personal injury, for example, the ground-up approach may start with the population of consumers that purchased the product. This group of consumers could then be segmented into an exposed population by applying estimates of the proportion of the products that may pose a problem. Next, an estimate of the population that is expected to develop a disease or other condition can be calculated by applying a dose-response function or a hazard rate to the exposed population. Dose-response functions can describe the development of disease in an exposed population and are often obtained from epidemiological studies. Hazard rates can describe the likelihood of an event occurring (for example, swallowing a part of a defective toy that may result in choking).

Figure 12: **Economic Impact: Ground-Up Approach**

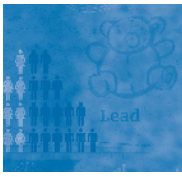


Once the population expected to develop a disease or other condition is obtained, the number of people expected to file a claim can be determined. Not all individuals who develop a disease typically file a claim. Certain individual characteristics, as well as characteristics of the injury itself, can be taken into account to forecast the company's liability. NERA's research has shown that perceptions of the cause of injury significantly affect the claiming rate, as do other factors, such as the claimants' age, income, and education.[14]

Additionally, not all individuals that file a claim against the company will actually have developed the disease or condition as a result of exposure to the company's product. The likelihood that the cause of a claimant's condition was the company's product may depend on the characteristics of the product, the time elapsed between the exposure to the company's product and the appearance of the disease, and other sources of exposure to the same hazard that the claimant may have had.

Once the estimate of the number of claimants who can demonstrably link their condition to the company's product is obtained, an estimate of the average settlement value can be used to derive the value of product liability claims.

Estimating the value of future sales potentially lost as a result of a recall is often an important aspect of measuring the economic cost of the recall. The value of lost future sales may include sales lost as a result of the suspension in production to remedy the defects in the product and also the value of sales potentially lost due to damage to the company's reputation. The duration and magnitude of the reputational effect can be estimated based on data and studies on other events affecting reputation, including that of other companies.



The other recall-related cost components mentioned above (e.g., medical monitoring costs, punitive damages, etc.) can also be estimated based on their underlying economics, and on either company-specific or other data sets.

While a ground-up approach is generally relevant for all recalls, certain steps described above may not apply to some recalls, or other steps may be required. The actual estimation approach may be implemented by surveying and sampling the product recalled or the population exposed, or by analyzing databases of products and their potential defects. These methods can be applied to data specific to the company and product in question, or adapted to data on similar companies and products. In addition, data and studies, including medical and economic, which may not be related to the product in question (or even recalls) can aid in the estimation process by helping to model the underlying forces. For example, the claiming rate can be modeled based on the factors driving individuals' propensity to claim and the economic incentives of plaintiffs' lawyers.

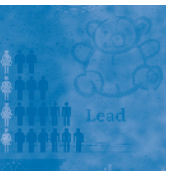
The Event Study Approach

A second approach to estimating the economic impact of a recall is the event study approach. This approach provides an estimate of the market's valuation of the net economic impact of the recall based on all public information available to the market. It does not distinguish between cost components; rather it provides the market's estimate of all cost components as a whole, net of all possible benefits (if any), and net of any expected recovery from insurance.

More specifically, the event study approach estimates the net economic impact of a recall based on the movement of that company's stock price and, therefore, the change in the market capitalization of the company following the announcement of the recall. This approach is based on the financial principle that, in an efficient market, the price of a stock is the market's estimate of the present discounted value of the future cash flows expected to be generated by the company, based on all publicly available information.

To isolate the stock price impact of the recall in question from price changes associated with general market and industry movements, the event study approach uses a statistical model of the company's stock price returns.

This estimated statistical model is then used to predict how the company's stock price would have performed absent any recall announcement. The difference between the actual stock performance following the announcement and the predicted stock performance based on the statistical model is often called a (market-adjusted) price reaction. If the price reaction is statistically significant (i.e., large relative to the usual day-to-day fluctuation of the stock), it may be interpreted as an indication of the stock price impact of the recall.



According to our simplified event study, the market's estimate of the economic impact of the 2007 Mattel recalls and related events as a whole was not statistically different from zero.

Simplified Event Study Approach Applied to Selected 2007 Recall Announcements

In this section, we perform simplified event studies to determine the stock price reactions of four toy companies (Mattel, Hasbro, RC2, and The Character Group) and one pet food company (Menu Foods) to several announcements of China-related product recalls and other related news.

Mattel: On August 1, 2007, Mattel announced the recall of 1.5 million Fisher-Price toys, with an estimated retail value of $34 million. Mattel's price reaction to that announcement was a 2% decline, according to the simplified event study. This decline in Mattel's stock price corresponds to a $182 million decline in Mattel's market capitalization.

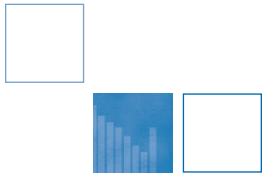
According to the simplified event study, Mattel's stock price reaction to the August 1, 2007 announcement is within the normal range of daily variation in Mattel's stock at the 95% confidence level; that is, Mattel's price reaction was not statistically significant. Therefore, based on this event study, the market's estimate of the economic impact of the August 1 recall on Mattel was not statistically different from zero.

Estimated Impact on Mattel[15] ($ in millions)

		Simplified Event Study			
Date	Event	Price Reaction	Market Cap Effect	Statistically Significant	Approx Retail Value of Recalls
1-Aug	Fisher-Price recalls 1.5 million toys	-2 %	$ -182	No	$ 34
14-Aug	Mattel recalls 18.6 million play sets	-1	-83	No	263
4-Sep	Recalls 848,000 Barbie accessories and toy trains	1	78	No	8
12-Sep	Mattel addresses Congress	2	124	No	
21-Sep	Mattel apologizes to China	1	101	No	
25-Oct	Recalls 55,500 toy boats	-1	-46	No	1
	Total (21 million units)	**0 %**	**$ -9**	**No**	**$ 306**
				Percentage of Revenue	**5.6%**

Similarly insignificant stock price movements followed other announcements related to Mattel's recalls. On August 14, 2007 Mattel recalled 18.6 million play sets with an estimated retail value of $263 million. The company issued smaller recalls on September 4 and October 25. On September 12, 2007, Mattel addressed Congress about these recalls and, on September 21, issued an apology to the Chinese government over its recalls of Chinese-made toys, accepting full responsibility for the recalls. Our simplified event study yielded no statistically significant price reactions following any of these announcements. Thus, the market's estimate of the economic impact of any of these events was not statistically different from zero.

Overall, Mattel recalled approximately 21 million units in 2007, with a retail value of approximately $306 million. The retail value of the recalled goods corresponds to approximately 5.6% of Mattel's annual revenue. According to our simplified event study, the market's estimate of the economic impact of the 2007 Mattel recalls and related events as a whole was not statistically different from zero.



Hasbro: Hasbro recalled approximately 2 million units during 2007, with an estimated retail value of approximately $50 million. A simplified event study found that Hasbro's stock price reactions following the company's recalls were not statistically significant and, therefore, that the market's estimate of the economic impact of the recalls and related events as a whole was not statistically different from zero.

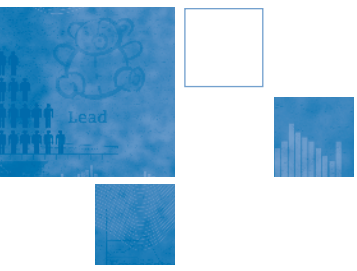
Estimated Impact on Hasbro[16] ($ in millions)

		Simplified Event Study			Approx Retail
		Price	Market Cap	Statistically	Value
Date	Event	Reaction	Effect	Significant	of Recalls
6-Feb	Recalls 985,000 Easy-Bake ovens	-1%	$ -45	No	$ 25
19-Jul	Recalls 1 million additional Easy-Bake ovens	0	-21	No	25
	Total (2 million units)	**-1%**	**$ -65**	**No**	**$ 50**
					Percentage of Revenue 1.6%

RC2: Another toy company, RC2, announced recalls on June 13 and September 26, 2007. While RC2's stock price reaction following the June 13 recall was not statistically significant, the stock price reaction following the September 26 recall was statistically significant according to the simplified event study.

Estimated Impact on RC2[17] ($ in millions)

		Simplified Event Study			Approx Retail
		Price	Market Cap	Statistically	Value
Date	Event	Reaction	Effect	Significant	of Recalls
13-Jun	Recalls 1.5 million wooden toy cars	-2 %	$ -20	No	$ 60
26-Sep	Recalls 270 thousand toy trains	-5	-27	Yes	7
	Total (1.8 million units)	**-7 %**	**$ -47**	**Yes**	**$ 67**
					Percentage of Revenue 12.9%



Character Group: Character Group is the UK distributor for Bindeez toys (known in the US as Aqua Dots). Based on the simplified event study, Character Group's stock price reacted in a statistically significant manner to the news surrounding the recall of its Bindeez products over concerns about a drug-like substance contained in them. Based on the simplified event study, following the announcement of a recall by Bindeez's Australian developer on November 7, 2007, Character Group's stock price declined 23%. The stock rebounded 17% the following day, when Character Group announced that it was removing Bindeez from sales and that it expected these events to have a negligible impact of its financial results. The stock declined another 6% on a market-adjusted basis on November 9, 2007, when Character Group's recall began. Based on the simplified event study, the market's estimate of the economic impact of these events on Character Group was $27 million.

Estimated Impact on Character Group[18] ($ in millions)

		Simplified Event Study			
Date	Event	Price Reaction	Market Cap Effect	Statistically Significant	Approx Retail Value of Recalls
7-Nov	Australian distributor recalls Bindeez	-23%	$ -40	Yes	
8-Nov	Character Group removes Bindeez from sale; states financial impact expected negligible	17	23	Yes	
9-Nov	Character Group recalls Bindeez	-6	-9	Yes	$ 15
	Total (2 million units)	**-15%**	**$ -27**	**Yes**	**$ 15**
					Percentage of Revenue 7.6%

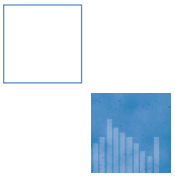
Menu Foods: Menu Foods, a pet food manufacturer, announced product recalls beginning in March 2007. The recalls were expanded to include additional products several times over the next few months. After these recalls, Menu Foods lost several customers and contracts. Our simplified event study found that the earliest (March 2007) recalls had a significant impact on Menu Foods' stock price, and that the declines following the company's announcements of some lost contracts were also statistically significant. According to the simplified event study, by October 2007, Menu Foods had experienced an 82% market-adjusted price decline, which corresponded to a $178 million decline in the company's market capitalization.[19]

Estimated Impact on Menu Foods[20] ($ in millions)

		Simplified Event Study		
Date	Event	Price Reaction	Market Cap Effect	Statistically Significant
16-Mar	Pet food recalled	-44 %	$ -81	Yes
24-Mar	Recall expanded	-16	-20	Yes
5-Apr	Recall expanded	-2	-3	No
10-Apr	Recall expanded	-3	-4	No
17-Apr	Recall expanded	2	3	No
3-May	Recall expanded	0	0	No
22-May	Recall expanded	-2	-2	No
31-May	Loses two contracts	-2	-2	No
12-Jun	Large customer cancels contract	-44	-49	Yes
10-Aug	Recall hurts Menu Foods results	-3	-3	No
14-Aug	Large customer partially cancels order	-27	-22	Yes
11-Oct	Cuts staff by 10-15%	6	4	Yes
	Total (60 million units)	**-82 %**	**$ -178**	**Yes**
				Percentage of Revenue 33.2%

2007 News Excerpts Regarding China Product Recalls[21]

JANUARY 2007	FEBRUARY 2007	MARCH 2007	APRIL 2007	MAY 2007	JUNE 2007
	6 February Hasbro recalls 985,000 toy ovens.	**16 March** Menu Foods recalls 60 million units due to melamine contamination. Expects cost of recall to be $30–40 million. **16 March** Hill's Pet Nutrition recalls pet food product line. **16 March** Nestle Purina recalls dog food products. **16 March** P&G recalls a variety of pet food products. **24 March** Menu Foods expands recall to include all wet foods. **30 March** Hill's Pet Nutrition recalls prescription cat food products. **30 March** Nestlé Purina recalls wet dog food. **31 March** Del Monte recalls a variety of pet food products.	**5 April** Menu Foods recalls some brands of pet food products. **5 April** Sunshine Mills recalls a variety of pet food products. **6 April** Del Monte recalls a variety of pet food products. **10 April** Menu Foods expands recall to other pet food products. **10 April** Royal Canin recalls cat food products. **17 April** Menu Foods adds selected vegetarian pet food products to the list of recalled products. **19 April** Royal Canin recalls a variety of pet food products.	**3 May** Menu Foods pet food recall further expanded. **11 May** Royal Canin further expands the scope of its pet food recalls. **22 May** Menu Foods expands recall to include other pet food products. **24 May** The FDA blocks all toothpaste imports from China due to reports of toothpaste tainted with diethylene glycol. **31 May** Menu Foods loses two contracts (4.5% of sales) and reports the total cost of recalls, as of May 30, at $42 million.	**1 June** FDA issues an advisory to avoid all toothpaste produced in China, listing over 10 brands. **6 June** CPSC issues advisory on ATVs made in China. **12 June** Menu Foods' largest customer (11% of sales) cancels contract. **13 June** RC2 recalls approximately 1.5 million toy trains due to lead paint. Recalls lead to a $4 million charge to earnings. **14 June** Colgate-Palmolive issues a warning over toxic counterfeit toothpaste. **26 June** Foreign Tire Sales announces potential recall of 450,000 tires lacking layer of rubber.



2007 News Excerpts Regarding China Product Recalls (continued)

JULY 2007

5 July
Future Industries recalls Chinese-imported jewelry set due to high levels of lead.

5 July
Kipp Brothers recalls Chinese-made building sets due to a choking hazard.

5 July
Infantino of San Diego recalls a Chinese-made counting toy due to choking hazard.

19 July
Hasbro recalls an additional one million toy ovens.

29 July
California officials announce a recall and warning against ginger imported from China by Christopher Ranch food company.

30 July
The Sierra Club threatens lawsuit against 10 US companies that imported products containing lead paint.

AUGUST 2007

1 August
Mattel recalls 1.5 million toys (967,000 in the US) due to a choking hazard; estimates charge to second quarter earnings at $30 million.

10 August
Menu Foods announces disappointing quarterly financial results, citing its recalls as the cause.

14 August
Mattel recalls approximately 18.6 million toys due to lead and choking hazards.

14 August
Menu Foods' largest customer (10.8% of sales) partially cancels order.

23 August
Wal-Mart pulls two brands of dog food from shelves after tests show melamine contamination.

31 August
Toys "R" Us recalls 27,000 crayon and paint sets over a lead paint concern.

SEPTEMBER 2007

4 September
Mattel recalls 848,000 toys due to a lead paint hazard.

12 September
Mattel CEO testifies before Congress regarding the recent recalls.

21 September
Mattel apologizes to China for damaging the country's reputation.

22 September
Simplicity and Graco Children's Products recall one million cribs due to a suffocation hazard.

26 September
RC2 recalls 270,000 toy train sets due to a lead paint hazard.

OCTOBER 2007

5 October
Various companies recall approximately 555,200 products due to a lead paint hazard.

11 October
Menu Foods cuts staff by 10–15% and reports cost of recalls at $56 million as of October 10.

25 October
Mattel recalls 55,500 toy boats due to a lead paint hazard.

30 October
Congress weighs a bill that would substantially increase the oversight and budget of the CPSC.

NOVEMBER 2007

7 November
Australian distributor of Bindeez products announces recall due to a chemical contamination of toy beads that produces effects similar to the "date-rape" drug.

8 November
Character Group announces that it will not take financial hit despite having to remove its Bindeez products from sale.

9 November
Character Group recalls Bindeez products.

19 November
California files suit against Mattel, Toys "R" Us, and 18 other companies over toys with lead paint.

DECEMBER 2007

12 December
New York governor calls for the recall of three Chinese-made toys which pose a lead hazard.

End Notes

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[1] Analysis based on CPSC data under the "manufactured in" category for 2007.

[2] Analysis based on CPSC data under the category "toys" using description "China" in the "manufactured in" category for 2007.

[3] See www.recalls.gov.

[4] See www.recalls.gov.

[5] Analysis based on data from the databases of the respective agencies. The NHTSA, USDA, and EPA 2007 data are annualized based on the January-November data. The CPSC and FDA figures include all of 2007 data. For NHTSA the graph depicts the number of unique campaign numbers per year (according to the year in which the report was received).

[6] Analysis based on CPSC data under the category "toys."

[7] Analysis based on CPSC data under the category "toys" using description "China" in the "manufactured in" category.

[8] Analysis based on CPSC data under the category "toys" using description "China" in the "manufactured in" category.

[9] Data from US Census Foreign Trade Statistics. 2007 data annualized based on the January-October data.

[10] Recalls of Chinese toys are based on CPSC data using description "China" in the "manufactured in" category. Imports of Chinese toys are obtained from the US International Trade Commission Data Web; the word "toy" refers to the following industry classifications: "dolls and stuffed toys" and "games, toys, and children's vehicles"; imports for 2007, on which data were available only through October 2007, were annualized based on historical trends; imports are expressed in 2007 dollars by adjusting for inflation using the Consumer Price Index.

[11] Hari Bapuji and Paul W. Beamish Toy Recalls Is China Really the Problem? *Canada-Asia Commentary*, Number 45, September 2007.

[12] Analysis based on CPSC data using information in the "hazard" category for 2007. Percentages refer to the number of units recalled.

[13] Analysis based on CPSC data using description "lead" in the "hazard" category for 2007.

[14] Frederick Dunbar and Faten Sabry "*The Propensity to Sue: Why Do People Seek Legal Actions?*" NERA Economic Consulting, April 18, 2007.

[15] Stock price data were obtained from FactSet Research Systems, Inc. Price reactions are based on a regression of company returns against the returns of S&P 500 index over the one-year period preceding the company's earliest recall event. Retail value determined using product price information from www.cpsc.gov. Market cap effect determined using shares outstanding from 10-Q for period ending September 30, 2007. Percent of revenue determined using revenue listed in 10-K for the period ending December 31, 2006. Statistical significance is measured at the 95% confidence level. For the August 1 recall, see Reuters News article, August 1, 2007, "China warns of alarmism amid new U.S. toy scare." For August 14 recall, see *New York Times*, August 15, 2007, "Mattel recalls 19 million toys sent from China." For the September 4 recall, see *New York Times*, September 5, 2007, "Mattel in another recall, citing lead in toys from China." For the October 25 recall, see Associated Press, October 25, 2007, "55000 Mattel toys recalled for lead paint."

[16] Stock price data were obtained from FactSet Research Systems, Inc. Price reactions are based on a regression of company returns against the returns of S&P 500 index over the one-year period preceding the company's earliest recall event. Retail value determined using product price information from www.cpsc.gov. Market cap effect determined using shares outstanding from 10-Q for period ending September 30, 2007. Percent of revenue determined using revenue listed in 10-K for the period ending December 31, 2006. Statistical significance is measured at the 95% confidence level. For recall information, see CPSC press releases on dates of recalls.

[17] Stock price data were obtained from FactSet Research Systems, Inc. Price reactions are based on a regression of company returns against the returns of S&P 500 index over the one-year period preceding the company's earliest recall event. Retail value determined using product price information from www.cpsc.gov. Market cap effect determined using shares outstanding from 10-Q for period ending September 30, 2007. Percent of revenue determined using revenue listed in 10-K for the period ending December 31, 2006. Statistical significance is measured at the 95% confidence level. For recall information, see CPSC press releases on dates of recalls and www.recalls.rc2.com.

[18] Stock price data were obtained from Bloomberg. Price reactions are based on a regression of company returns against the returns of S&P 500 index over the one-year period preceding the company's earliest recall event. Retail value determined using product price information from commercial websites and www.cpsc.gov. Market cap effect and percent of revenue determined using shares outstanding and revenue listed in Annual Report for the period ending August 31, 2007. Statistical significance is measured at the 95% confidence level. For recall information, see *The Guardian*, November 10, 2007, "500,000 Chinese-made toys recalled over date-rape drug link."

[19] Menu Food Income Fund owned 65.9% of Menu Foods (see http://www.menufoods.com/about_us/index.html, visited on January 2, 2008). The simplified event study refers to the stock of Menu Food Income Fund.

[20] Stock price data were obtained from FactSet Research Systems, Inc. Price reactions are based on a regression of company returns against the returns of S&P 500 index over the one-year period preceding the company's earliest recall event. Retail value determined using average product price information from www.petco.com. Market cap effect determined using shares outstanding from Quarterly Results for period ending September 30, 2007. Percent of revenue determined using revenue listed in quarterly reports for 1-Q and 2-Q 2007 annualized. Statistical significance is measured at the 95% confidence level. For information on recalls see www.fda.gov and Reuters news, March 30, 2007, "Menu Foods says its pet food is now safe."

[21] News from Factiva and Bloomberg.

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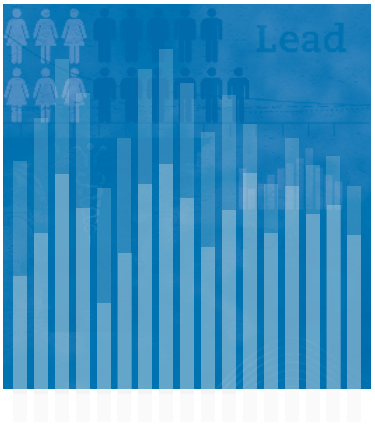

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