

The Effects of Corporate Amnesty on Price-Fixing

by: Alex Pederson

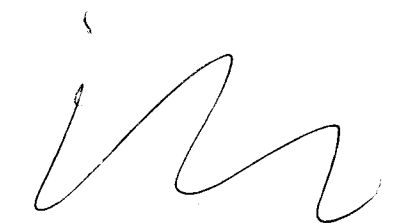
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1. Introduction

The Department of Justice and the Federal Trade Commission are two government agencies that vigorously enforce U.S. antitrust legislation. The artificial restraint of prices in a competitive market is regarded as price-fixing and is illegal because of the Sherman Antitrust Act of 1890. The DOJ has the responsibility of deterring price-fixing and issues more indictments for price-fixing than any other type of antitrust violation. A conviction of price-fixing can result in fines, imprisonment, or some combination thereof.

Since 1978, the DOJ has offered a program regarded as corporate amnesty. That year Assistant Attorney General John H. Shenefield announced that the DOJ would not prosecute a company that reported its illegal conduct before any investigation was initiated and cooperated fully to achieve the prosecution of others in the industry.¹ In 1993, the DOJ revised its policy. They began to offer amnesty to those members of a cartel willing to offer information even after the investigation started. This policy revision resulted in a dramatic increase in the number of price-fixing convictions.

The courts have found that the DOJ must simply prove that a firm or collection of firms agree on the prices that they will set for a conviction to be upheld. Price-fixing is regarded as illegal per se. No proof of detrimental effects from this behavior must be shown. This creates the possibility that the DOJ may punish firms that cause little or no harm to society. In such a case, the resources used for the investigation would not be used efficiently. Additionally, such action from the DOJ could destabilize prices and cause a net harm for society.

The effectiveness of the new amnesty policy is a topic on which little has been written. This thesis addresses whether this new policy has been a benefit to society or if the DOJ is targeting firms that pose little harm to general welfare. Specifically, I analyze the change in the stock valuation of a firm that has been indicted. I regard the stock valuation as a reflection of societies expectation of the future success of the firms and a reflection of whether the indictment targeted a firm for whom price-fixing was important to its profit margin.

I do this by first surveying past research and theory on the effectiveness of the DOJ. Also, I review general economic theory, giving both the objections and possible reasons to support firm collaboration. Next I provide the history of the Sherman Antitrust Act and the state of price-fixing in contemporary antitrust policy. Then I describe the methods that I used to evaluate the indictments and give the results of this evaluation. My results indicate that the reaction to a price-fixing indictment has less of an effect after the 1993 policy change. And finally, I explain the implications of these results by concluding the policy change may cause the DOJ to pursue firms that cause a minimal amount of damage to society.

2. Background

A goal of the DOJ is to develop policies that ensure competitive market activity. “American consumers have the right to expect the benefits of free and open competition, i.e., the best goods and services at the lowest prices,” states the Department of Justice’s Antitrust Primer. The DOJ justifies fulfilling the mandates of the Sherman Act by

stating, “When competitors collude, prices are inflated and the customer is cheated.”²

This implies that when the DOJ gives incentive to firms to choose not to participate in a cartel, then this is good for society at large. The DOJ introduced the amnesty program in an attempt to reduce collusion.

Some economic theorists suggest that when a cartel, or agreement among firms to increase profits, is broken up, their profits will decrease because they will no longer receive the artificially high rents gained from the collusive agreement. In addition, the firm can take a hit directly from potential fines imposed by the judicial body. Both of these will naturally cause the valuation of a firm to drop. It is on this result that any empirical work focuses.

Beyond these two effects of a price-fixing indictment lies the chance that key administrators in the firm will leave. Either because of explicit order or an individual desire to break the association with a tainted firm, the flight of these administrators will also damage the firm. The loss of a key administrator can necessitate the training of a sufficient replacement and the experience lost will cause a decrease in the firm efficiency. Furthermore, if the stockholders learn that a trusted member of the firm’s organizational structure will leave, their faith in the future productivity of the firm will likely decrease. All of these will result in a lower valuation of the firm.

Several authors have supported these notions through research on the issue of the effectiveness of price-fixing prosecution. The concentration of this research has been on the lower valuation of the firms resulting from the efforts of the DOJ. Specifically in relation to the value placed on a firm by society, there have been a number of studies, but none include data after the 1993 change in the DOJ policy. George Stigler and James

Kindahl found that in nine industries indicted for price fixing between 1959 and 1964 the average stock reaction reflected a drop of between 0.7 percent and 4.4 percent.³ In 1991, Jean-Claude Boshe and Woodrow Eckard found that between 1962 and 1980 the average loss to a firm's value was 1.08 percent.⁴ While these findings imply that the DOJ is effective in its mission because society, in the form of the market reaction to an indictment, punishes those who fix prices, this data fails to shed light on the effectiveness of the DOJ under the variation on the 1993 amnesty policy.

Despite some authors' belief that the DOJ provides a benefit to society, others postulate that this department is an inefficient use of tax money. And that the DOJ may even indict efficient members of the market. Robert Bork has been an outspoken critic of the DOJ. Bork writes, "Though the preservation of competition was often cited as the aim of the law, there seemed no agreed definition of what, for the purposes of antitrust, competition is."⁵ This illustrates a fear that because of a lack of focus, the DOJ is not appropriately targeting firms. If firms that pose no significant threat to society are targeted, then the DOJ could be doing a disservice to both the market and consumers.

Bork is further willing to suggest that the per se standard should be evaluated because it might be too broad. He suggests a rule similar to that of Australia or Britain when he writes, "Many price-fixing and market-division agreements make cooperative and productive activity more efficient, and these should be judged, according to the circumstances, by the standards applicable to internal growth of firms or by horizontal merger rules."⁶ While drastic measures such as these are not fully addressed in this paper, the concept that the DOJ may be applying its authority in too broad a fashion is an

implication that research regarding the effectiveness of indictments can help to determine.

Some research regarding the market reaction to a price-fixing indictment implies that the DOJ not targeting firms effectively. Craig Newmark produced a study in 1988 that extensively examined the bread market in Seattle.⁷ He found that after a price-fixing case had been brought by the DOJ that there was virtually no effect on the market. Michael Sproul produced a 1993 paper that came to a very interesting conclusion: that prices gradually rose by 7 percent after a price fixing indictment in the cases that he studied.⁸ This would imply that the firms targeted did little or no damage to the market and that the indictment served to hurt consumers through the price increase following the indictment.

In, “Market Reaction to the Filing of Antitrust Suits: an Aggregate and Cross-Sectional Analysis” Garbade et al. explain that the market should be aware of the activity of the DOJ.⁹ The market is a mechanism that reacts to both positive and negative information regarding firms and that reaction is seen in the stock valuation. This valuation is a reflection of the market’s expectations of a firm’s future. When a price-fixing indictment is issued, the expectations of the future value of a firm rely on (A) the probability of the government winning the case (B) the possible loss of profits due to a change in business practices and (C) the legal cost of the defense.

The issue of the extent to which a firm is hurt by a price-fixing indictment in terms of the results of an indictment is still unknown. If this is ascertained, a more full understanding of the severity of an indictment can be rendered. Along with this, an understanding of the deterrent strength of a price-fixing assessment can be gained.

In an efficient market with a cartel that fixes prices well above the normal level, a significant drop in stock price to accompanies an indictment. The market would anticipate that the price was artificially high, and, thus, react powerfully. If only a minimal change in stock price occurs, that would imply that the price-fixing had little effect on the market.

The question that this paper addresses is how does the market react to a price fixing indictment. This question helps to further enlighten an issue that is still in the height of controversy. Additionally, it addresses whether the 1993 amnesty provision has effected significant change in the effects of a price fixing indictment or if minimally damaging firms continue to be targeted. This is of key importance because of the implication that improper indictments can create volatility in the market.

Perfect competition is “an economic model that assumes each firm in a market recognizes that its effect on the overall market is insignificant.”¹⁰ The long-run characteristics of such a market include large numbers of buyers and sellers, homogeneous products, perfect information, no transaction costs, and free entry and exit to the market. Once these conditions are met, the firms in the market become price takers. This means that any firm that raises its price above the market price cannot sell any output.¹¹ Additionally, this ensures that price equals marginal cost. In the long-run, perfectly competitive firms will earn zero economic profit.

If any of the assumptions of the perfectly competitive market are violated, then firms within the market can gain market power, the ability to raise prices above the marginal cost of the firm. If there is a single firm in the market this situation is called a monopoly. Once a firm is able to raise their price above their marginal cost while

maintaining the ability to sell a substantial amount of their product, they increase their profits. Another consequence is that society is damaged by this increase in profits because they pay more per unit and they buy fewer units. The loss to society, as measured by the difference in quantity sold in the situation where market power exists, is entitled dead weight loss.¹²

A single-firm market is not the only situation in which market power can exist. If there are few firms or if a small number of firms control a large share of the market, they can easily gain market power. A cartel will be a situation in which, by contract, agreement, or other method of concurrence, a business enterprise mutually decides with other competing business enterprises on prices for merchandise or services in order to restrain trade.

Despite the fear that cartels will create dead weight loss, there are a number of legitimate reasons that inspire the formation of cartels. The first is that, “(w)henver firms collude to fix prices, the objective is the same: to . . . increase or stabilize prices.”¹³ As this statement implies, the market can become more stable if prices are normalized and this decreases the harms resulting from price fluctuation such as inflation and deflation. Additionally, a stable market encourages investment because the firms will have a solid grasp of their expected profits. Moreover, cooperative firms can decrease their advertising expenditures and combine research and development efforts, which would lead to an increase in innovation.¹⁴

There are a number of characteristics that impede the formation of a cartel in the United States. These include the number of firms in the market, concentration of firms in the market, rate of technological growth, demand growth and elasticity within the market,

and the frequency of sales.¹⁵ These barriers, besides acting as natural characteristics that deter collusion, also act as a measure by which cartels can be anticipated and located by the regulatory agency vested with the duty of maintaining competitive markets by punishing those that fix prices, the Department of Justice.

3. The Birth of Antitrust

During an era of big business and powerful executives, Senator John Sherman of Ohio proposed the Sherman Antitrust Act of 1890 as a response to the growth of business at the expense of consumers. The first article of the amended act that is currently in place states,

“Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine not exceeding \$10,000,000 if a corporation, or, if any other person, \$350,000, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court.”¹⁶

While it took 10 years for the Sherman Act to break up any industrial monopoly, once it was utilized it became an often-used tool by the DOJ.¹⁷

Employed by President Theodore Roosevelt in his “trust-busting” campaigns, the Sherman Act became a key to supporting the rights of consumers and was used in the dissolution of Northern Securities Company in 1904. Standard Oil and American Tobacco Company were businesses targeted by President Taft and later these cases became landmarks in antitrust history.

Section 1 of the Sherman Act provides the basis for the DOJ to prosecute price-fixers. The formation of a contract or conspiracy to hold prices above marginal cost is an activity prohibited by this act. The condemnation of price-fixing has led to very strict rules in regards to it. Justice William O. Douglas proclaimed, in the opinion for the Madison Oil case, that the Supreme Court, “for over forty years. . . has consistently and without deviation adhered to the principle that price-fixing agreements are unlawful per se under the Sherman Act.”¹⁸ He further elaborated that, “per se. . . is applicable regardless of conditions of ‘ruinous competition, financial disaster, evils of price-cutting and the like.’” Currently, per se is the price-fixing rule in the U.S.

Regardless, per se is not the only rule available. Example of varying rules regarding price-fixing are those in effect in Australia and Britain. These rules employ “public benefit” and “presumption of anticompetitive detriment” tests.¹⁹ This variety illustrates that, while the Sherman Act has evolved into the body that it is today, the U.S. version of price-fixing is not the only option available.

The Department of Justice defines price-fixing as, “an agreement among competitors to raise, fix, or otherwise maintain the price at which goods or services are sold.”²⁰ The DOJ explains that the detection of price-fixing is not dictated by rigid standards. They assert that prices can be at different levels and the firms can have different characteristics, but that a restriction of price is a violation of law. They state that examples of price-fixing agreements include those to:

- 1) establish or adhere to price discounts
- 2) hold prices firm
- 3) eliminate or reduce discounts
- 4) adopt a standard formula for computing prices
- 5) maintain certain price differentials between different types, sizes, or quantities of products

- 6) adhere to a minimum fee or price schedule
- 7) fix credit terms; or
- 8) fail to advertise prices²¹

This list illustrates that the DOJ scans a wide variety of behavior. This would imply that because of the breadth of this list it is possible for the DOJ to, at times, indict firms that are not damaging the market.

Price-fixing is a behavior that receives a great deal of attention from the DOJ. The DOJ Antitrust Primer reports, “(m)ost criminal antitrust prosecutions involve price fixing, bid rigging, or market division or allocation schemes.”²² In order to deter price-fixing, the DOJ uses fines, imprisonment, and restitution. Fines for violation of the Sherman Act can reach \$10 million for corporations and \$350,000 for individuals. Additionally, individuals can face 3 years imprisonment. This is combined with the prospect that “collusion among competitors may constitute violations of the mail or wire fraud statute, the false statements statute, or other federal felony statutes.”²³ Retribution for victims of price-fixing is offered in civil recovery in amounts of up to three times the amount of damages suffered. This retribution is paid for by those who are found guilty of bid-rigging and price fixing conspiracies.

In “Making Companies an Offer they Shouldn’t Refuse,” Gary Spratling explains that in 1978 a program of offering corporate leniency, or amnesty, was created by the DOJ to offer aid and protection to those who are willing to offer inside information regarding cartel behavior.²⁴ Those willing to inform the DOJ about price-fixing prior to an investigation were not implicated in the proceedings. In 1993 this program was updated to enlarge its reach by offering amnesty even during the course of the investigation. Spratling light-heartedly states,

If someone in your company has been conspiring with competitors to fix prices, here's some sound advice. Get to the Justice Department before your co-conspirators do. Confess and the U.S. Department of Justice will let you off the hook. But hurry! Only one conspirator per cartel.²⁵

This remark illustrates a line of logic inherent the amnesty program: that business people should promote their self interests above their loyalties to their co-conspirators.

The major change between the two programs is that the 1993 edition offers amnesty to individuals after the investigation has commenced.²⁶ This change has had a remarkable influence in the volume and severity of price-fixing penalties. Spratling reports that, "the total fines imposed on corporate defendants in the *past two years* is virtually identical to the total fines imposed in all of the Division's prosecutions during the *20 years* from 1976 to 1996."²⁷ This illustrates that offering amnesty to defendants in a price-fixing cases has extended the reach of the DOJ dramatically. Regardless, when amnesty is granted by the DOJ, the prosecution generally does not continue to proceed. This means that the burden of proving a prima facie case against a firm, that is normally born by the DOJ, periodically shifted to those firms directly damaged by the price-fixing.

4. Methodology

In order to evaluate this information, I followed the procedures presented by Jean-Claude Bosch and Woodrow Eckard in "The Profitability of Price Fixing: Evidence From Stock Market Reaction to Federal Indictments."²⁸ This procedure consisted of four steps. I first regressed the change in daily stock price (RET) for each firm (i) as the dependent variable for day (t) on the change in the value weighted return (VWR) of the stock to obtain an estimate of the stock's natural correlation to the market:

$$RET_{it} = \hat{\alpha}_i + \hat{\beta}_i VWR_t + \varepsilon_{it}$$

I did this over a 150-day period that began 171 days prior to the indictment of the firm. With this estimate, I then calculated the predicted error (PE) of stock during three windows, (-5,10) (-1,0) and (+1,+10) with 0 as the day of the indictment, using the formula:

$$PE_{it}=R_{it}-(\hat{\alpha}_i+\hat{\beta}_i R_{mt})$$

For this formula, R_{it} is the actual change in the VWR of the stock and R_{mt} is the market change.

The test statistic used to determine the statistical significance of this data is calculated as a ratio of the PE to the standard deviation of the data set. As Bosch and Eckard noted,

“two problems specific to our data require adjustments to avoid likely biases in the standard deviation estimates and significance measures. First, the simultaneous indictment of all firms in each conspiracy results in announcement date clustering. Second, the firms in each conspiracy are at least partially in the same product market, although other parts of the same firms may be in different markets. Either type of clustering may induce cross-sectional dependence among the excess returns, a condition that violates OLS assumptions.”²⁹

To account for these conditions, I used the same procedure employed by Bosch and Eckard, outlined below. The predicted error on day t for firm i is PE_{it} . With N observations in the sample, the average prediction error on day t is,

$$\overline{PE}_t=(1/N)\sum PE_{it}$$

On the interval (T_1, T_2) , the test statistic is ratio of the cumulative mean excess return to its estimated standard deviation,

$$t=(\sum_{\tau=T_1}^{T_2} PE_{it})/(\sum_{\tau=T_1}^{T_2} \hat{S}_t^2)^{1/2}$$

where

$$\hat{S}_t^2=[\sum_{\tau=T_1}^{T_2} (\overline{PE}_t - \overline{PE})^2]/(d_2-d_1)$$

$$\overline{PE} = (\sum_{t=d_1}^{d_2} PE_t) / (d_2 - d_1 + 1)$$

The variables d_1 and d_2 are the beginning and end days of the estimation period. With the Pet's assumed independent, identically distributed and normal, the test statistic is distributed as student-t under the null hypothesis. In this approach, "the standard deviation of the mean and cumulative mean daily excess returns for the sample are estimated from the time-series of the sample's mean excess return."³⁰

For these tests, the null hypothesis is that there was no difference between the estimated regression from the 150-day period and the window surrounding the indictment. I compared my results to those gathered by Bosch and Eckard in order to examine the effect of the 1993 amnesty rule. I did this running a paired t-test on the two sets of results.

To gather data, I used three sources. The Wall Street Journal and the Trade Regulations Reporter were used to locate the firms indicted and the dates of the indictments. This information was used to target a reaction point. I relied on the data available through the Center for Research in Securities Prices to find the valuation of the firms and the market level for the appropriate days. I used the S&P 500 to measure the market level. I located nine firms from this data.

Results

The effects of an indictment in this sample registered in a similar fashion to those in the Bosch sample. In this sample there, was a negative decrease in the value of the stock for the three days prior to and the day of the indictment. The growing fear and possible leaks regarding the event no doubt contributed to this effect. No individual day has a significant t-statistic, indicating that while some negative effects may have been

materialized, the null hypothesis of the indictment having a minimal effect cannot be rejected. The period (-1,0) has a negative impact of -0.06% and $t=-2.19$ indicating that this is significant at the 5% significance level. The positive impact of (1,10) was not significant.

I compared the data from the Bosch study to that which I gathered using a paired t-test. These results indicated that there was a significant difference between the two sets of data for all but two days (-4 and -3). Days -5, -1, and 2 showed that the null hypothesis of Pederson=Bosch could be rejected at the 20% significance level. Days -2, 0, 1, 3, and 4 were significant at a level of 10%. Day 5 was significant at 2%. The period of (-1,0) was significant at 2% and (1,10) was significant at a level of 5%. Overall, while the direction of the sign generally corresponded with Bosch, the results from the post-amnesty period were less dramatic indicating that an indictment had less of an impact on a firm's stock valuation.

Table 1 provides the relevant data for individual days (-5,10). The average excess return (AER= average PE), sum of the each days AER with all preceding days values (cum AER), standard deviation among returns (STDEV), t-statistic for the deviation of the excess returns from their estimated values (T-Stat), the percentage of firms recording negative values for any day t (%neg), the results from the Bosch study (Bosch AER), the compared t-statistic between the Bosch data and my data (Compared T-Stat), and the significance level for these tests (Sig. Level) are included in this table. Table 2 contains much of the same indicators, but for periods (-1,0) and (1,10).

Graph 1 measures the average excess return for the firms over the interval (-5, 10). Graph 2 indicates the percent of the sample that recorded negative excess returns for

each day. Graph 3 illustrates the t-statistic recorded when I compared my data to the Bosch data.

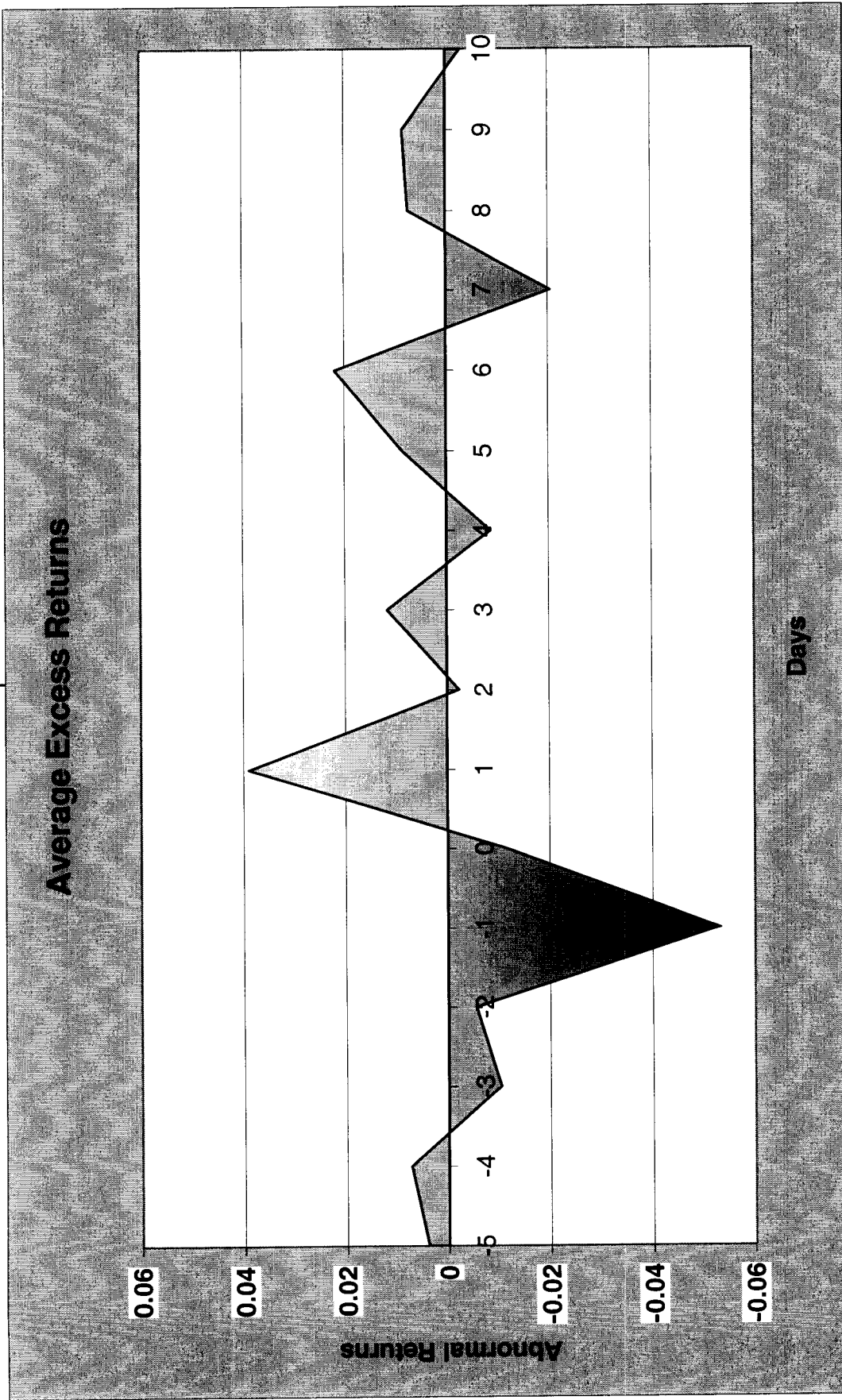
Table 1
Summary of Average Excess Returns for Days Surrounding the Announcement of a Price-Fixing Indictment

	AER	cum AER	STDEV	T-Stat	%neg	Bosch AER	Compared T-Stat	Sig. Level
-5	0.003922608	0.003922608	0.050001073	0.078450483	44.44	0.34	-5.23087807	20
-4	0.00735328	0.011275889	0.024083901	0.305319322	33.33	0.26	1.881726824	100
-3	-0.010445116	0.000830772	0.047997371	-0.217618507	55.55	-0.17	-0.992106577	100
-2	-0.005596828	-0.004766056	0.023999178	-0.233209154	44.44	-0.02	-8.884019018	10
-1	-0.053266581	-0.058032637	0.084762614	-0.628420698	55.55	-0.33	-3.520664188	20
0	-0.011524203	-0.069556839	0.059704525	-0.193020589	77.77	-0.75	9.32893129	10
1	0.03905245	-0.030504389	0.052209269	0.747998398	11.11	0.2	10.49618974	10
2	-0.002444961	-0.03294935	0.024961881	-0.097947792	44.44	-0.21	4.488932884	20
3	0.011757558	-0.021191793	0.048232352	0.243769114	44.44	-0.33	11.89593896	10
4	-0.008743544	-0.029935337	0.028554583	-0.306204577	66.66	0	-10.7234827	10
5	0.008640492	-0.021294845	0.014565696	0.593208333	22.22	-0.06	44.84566632	2
6	0.021993935	0.00069909	0.051397776	0.427916078	22.22			
7	-0.02048291	-0.01978382	0.015207383	-1.346905616	100			
8	0.007429789	-0.012354031	0.011434608	0.64976329	22.22			
9	0.008491704	-0.003862327	0.024768274	0.342846004	33.33			
10	-0.002920509	-0.006782836	0.035011449	-0.08341582	66.66			

Table 2
Summary of Average Excess Returns for Periods (-1,0) and (1,10)

	cum AER	T-stat	% neg	Bosch AER	compare T	Sig. Level
(-1,0)	-0.064790783	-2.19508347	66.66	-1.08	-37.77854139	2
(1,10)	0.062774003	0.160601805	43.33	0.47	-18.69338101	5

Graph 1

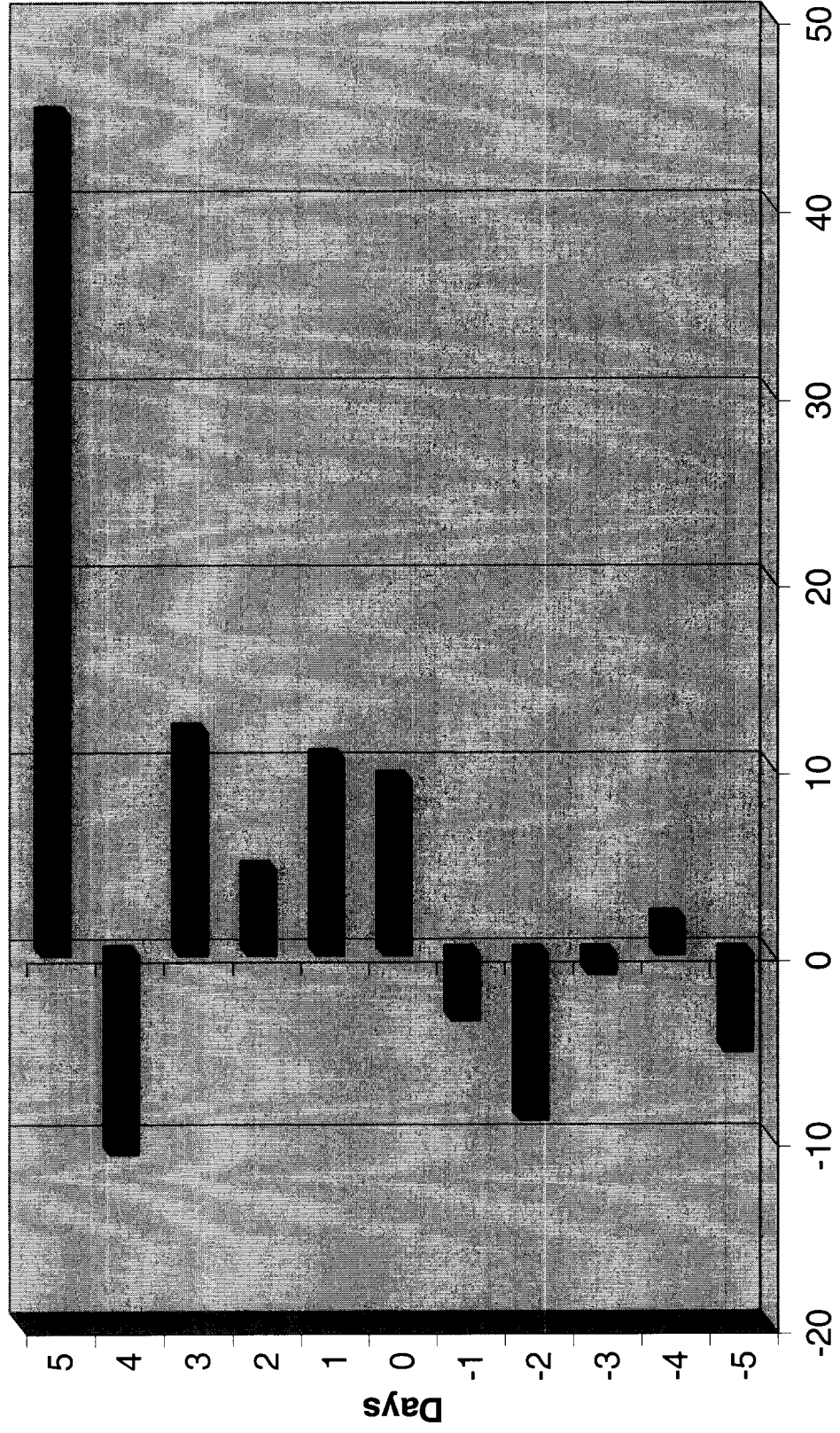


Graph 2

Percent of Average Excess Returns Negative



Graph 3
T-Statistic: Pederson/Bosch



T-Statistic, Null Hypothesis: Pederson=Bosch

Summary and Conclusion

The implications of the data are that a price-fixing indictment has a minimal effect on a firm's valuation and that the effect that does occur has decreased from the time of Bosch's study to the period after the DOJ revised their amnesty policy. The first implication lends itself to the criticism of the DOJ addressed earlier in this paper. Factors such as a lack of focus and the flagrant use of the per se rule may contribute to this. Because the stock price is a reflection of the public's expectation of the firm in the future, this indicates that the public is only minimally concerned that effective cartels are being targeted by the DOJ. If the DOJ indicted effective cartels, their price-fixing would end and thus their profits would decrease a great deal. If the public feared this loss of profits, the stock price would drop.

The second implication is that with the 1993 variation on the amnesty plan, the impact on the stock price of an indictment has decreased. Members of cartels who have gained relatively little from the agreement would require little stimulus to end the cartel. It is possible that the amnesty rules now encourage members of weak cartels to participate with the DOJ. If this is the case, then the DOJ will not be eliminating those cartels that are the largest threat to society but will be adding more attention to nominally damaging cartels. Also, the firms will not be as susceptible to treble damages and civil litigation because the plaintiffs are responsible for proving the damage to the market that the DOJ previously established during the course of their investigations. While the amount of fines and the number of convictions for the DOJ may have increased after the amnesty revision, the effect of this new policy may not have been an increase in welfare for society.

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