

Does Payment for Order Flow to Your Broker Help or Hurt You?

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Abstract: The presumption is that a broker executing a stock trade for a retail investor will get the investor the best possible price execution for the transaction. In fact, the broker often sells the retail investor's trade to an intermediary for a cash payment. The broker's motivation to generate dealer profits seems to overcome the broker's fiduciary responsibility to obtain the best execution price for the customer, raising ethical questions. Purchasers and internalizers of order flow in the market may cause prices quoted on the NYSE to deteriorate, making all investors worse off.

Key words: Payment for Order Flow, Madoff, Broker Execution, Internalization

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One-sentence bio: University of Notre Dame Finance Professor Robert Battalio received a Bachelor of Science from Texas A&M University and a Ph.D. from the Indiana University. University of Notre Dame Finance Professor Tim Loughran received a Bachelor of Arts and a Bachelor of Science from the University of Illinois (Urbana), an MBA from Indiana University, and a Ph.D. from the University of Illinois (Urbana).

Does Payment for Order Flow to Your Broker Help or Hurt You?

The core of this paper attempts to analyze four different ethical issues relating to payment for order flow. Briefly, payment for order flow occurs when a broker sells his or her client's stock trade order to an intermediary for a cash payment. The four main questions addressed in the paper are: is it unethical to "cherry pick" customers; is it always 'buyer' beware; is there such a thing as too much profit; and is the assumption that competition and transparency will resolve ethical issues erroneous?

Stock brokers provide retail investors with access to trading venues like the New York Stock Exchange (NYSE). Retail investors seeking to buy or sell shares of a stock listed and traded on the NYSE pay the broker a commission for completing the trade. Beyond providing access to a trading venue, brokers have a fiduciary responsibility to help their customers get the best possible execution prices. Best execution price simply means the highest possible price if the customer is selling shares or the lowest possible price if the client is purchasing shares. Macey and O'Hara (1997) note that "the obligation to give customers the benefits of best execution of orders is one of the most well-established principles of securities law."

Before 1983, the broker's job was pretty easy – she would route orders to trade shares of NYSE-listed stock to the floor of the NYSE, where the stock's specialist would announce to members of the trading crowd that an order to trade shares had arrived. After announcing the arrival of a buy order, the specialist would then compete with the members of the trading crowd and with other pending orders to sell shares to the incoming order. The party offering to sell shares at the lowest price was allowed to complete the trade.

In 1975, Congress directed the Securities and Exchange Commission (the regulator of stock exchanges in the United States) to “amend any restrictions which imposed an unnecessary or inappropriate burden on competition” between venues seeking to facilitate trades in NYSE-listed securities. In response, the Securities and Exchange Commission (SEC) required trading venues to broadcast real-time quote and trade information to the public, and in 1983, retail investors and competitors of the NYSE were for the first time able to see that information. The availability of this information made it possible for specialists on regional stock exchanges (like the Chicago Stock Exchange) and dealers competing in the Nasdaq Stock Market (like Bernard L. Madoff Investment Securities) to guarantee that orders to trade NYSE-listed securities would be executed at prices that were at least as good as those broadcast by the NYSE.

For example, suppose that at 10:00 am, the NYSE broadcasts that its specialist is willing to buy up to 10,000 shares of IBM stock at a price of \$50.00 (the bid price) and she is willing to sell up to 50,000 shares of IBM stock at a price of \$50.125 (the ask price). With these real-time quotes, the specialist on the Chicago Stock Exchange could guarantee to brokers that it would execute a retail market order to buy 500 shares of IBM at a price of \$50.125 or sell 500 shares at a price of \$50.00. It is important to note that the specialist on the Chicago Stock Exchange is simply free riding on the NYSE quoted prices. The Chicago specialist is not providing any assistance in the price discovery process for IBM stock.

To induce brokers to consider execution of their retail market orders away from the NYSE, competing venues had to do more than simply guarantee that orders to trade shares of NYSE-listed stocks would be executed at the ask and bid prices posted by the NYSE. Rather than post more aggressive bid and ask prices (which would assist in the price discovery process for

financial markets), the NYSE's competitors decided to target certain clienteles and charge them lower fees to execute their orders.

While the NYSE *charged* anywhere from \$0.01 to \$0.03 per share to execute retail market orders, Bernard L. Madoff Investment Securities (Madoff) entered the market in the early 1980s by offering to *pay* brokers \$0.01 per share to execute retail market orders under 5,000 shares that were not submitted by professional traders at prices not worse than the NYSE's bid and ask prices.

To understand how firms like Madoff could offer to pay brokers to execute their retail market orders, one must understand the economics of market making. Imagine a world where investors are buying and selling shares of Acme stock. Assume first that everyone agrees Acme stock is worth \$10.05 per share; that investors trade Acme stock only for liquidity reasons; and that it is very costly for a retail investor seeking to buy Acme stock to locate a retail investor seeking to sell Acme stock. Trading for liquidity reasons simply means selling when you need money and buying when you have extra money.

If we then introduce a single market maker (to resemble the time before real-time trades and quotes were broadcast to the world), and allow her to buy and sell shares of stock for retail investors, what bid and ask prices would she quote? That is, at what price would she be willing to buy or sell shares of Acme stock? Before 1997, market makers could post only quotes that were multiples of \$0.125 (an eighth of a dollar).

The pricing of U.S. equities in eighths of a dollar traces its root to the Spanish dollar minted centuries ago. The Spanish dollar, in the late 18th century, effectively served as the world's currency. One interesting aspect of the Spanish dollar was that it was often physically cut

into eights to make change (i.e., “pieces of eight”). Hence, the pricing of all NYSE stocks was due to the ability to cut a Spanish coin into eight different pieces. On June 24, 1997, the NYSE started pricing stocks in terms of sixteens (one sixteenth of a dollar). Starting January 29, 2001, all NYSE stocks were priced in terms of decimals (i.e., pennies) instead of fractional prices (i.e., $1/8$ or $1/16$ of a dollar).

Continuing with the example, if it cost market makers \$0.10 per share to execute a trade, the most competitive market that the market maker could quote (and stay in business) would be \$9.875 bid and \$10.25 ask. If it cost the market maker nothing to execute a trade, the most competitive market she could quote would be \$10.00 bid and \$10.125 ask. At these quotes, the market maker would earn \$12.50 on a round-trip trade of 100 shares (i.e., sell 100 shares at \$10.125 and purchase 100 shares at \$10.00).

While \$12.50 for a round-trip trade of 100 shares may not sound like much, it eventually adds up. The average daily trading volume in IBM stock in January 1983 was 990,804 shares. If the market maker bought 495,400 shares at the bid and sold 495,400 shares at the offer, she could earn \$61,925 in one day ($= 495,400 \times \0.125). In addition to these “liquidity costs,” the NYSE also charged a fee of approximately \$0.03 per share for every transaction it processed.

Things in the real world are not quite as simple, of course. Perhaps most important, in the real world market makers face adverse selection risk – the risk of trading with people who know more than they do.

To understand the implications of adverse selection for the prices at which retail investors transact, let us now assume that in one week there is a 50% chance that Acme stock will be worth \$12.05 per share and a 50% chance that it will be worth \$8.05 per share. Think of it as the

company will announce its earnings in one week. There is a 50% chance of seeing a huge increase in earnings and a 50% chance of very poor reported earnings. Hence, the expected value of the stock is \$10.05 ($= 0.5 \times \$12.05 + 0.5 \times \8.05). Further assume that 20% of the investing population knows for sure where the stock price will be in one week (i.e., they know whether the company will report high or low earnings), while the other 80% continue to trade for liquidity reasons (i.e., they have excess cash or need cash).

Assuming for the moment that the NYSE is the only place to get a retail order executed, can the NYSE market maker continue to make a profit by posting quotes of \$10.00 to \$10.125? Suppose that she sells 100 shares to an investor at \$10.125. If she sells the shares to an investor trading for liquidity purposes, she expects to earn $100 \times (\$10.125 - \$10.05 \text{ expected value})$ or \$7.5. If she sells the shares to an informed investor who knows where the stock price is headed, however, she expects to lose $100 \times (\$10.125 - \$12.05)$ or \$192.5. Assuming that liquidity investors are equally likely to buy and sell stock, this implies that the market maker's expected profit from selling 100 shares at an ask price of \$10.125 is $(0.8 \times \$7.50 - 0.2 \times 192.5)$ or -\$32.50.

In other words, the market maker will have to increase the ask price just to break even; she must raise her ask price to \$10.50 to avoid generating expected losses when selling shares. Similarly, she must reduce her bid to \$9.625 to avoid expected losses when buying shares at her bid price. Importantly, the widening of the spreads makes trading costs higher for all investors.

These two examples suggest that the bid-ask spread is a tool market makers use to cover both adverse selection risk and order processing costs. The examples also suggest that even when a market maker bears no adverse selection risk and has minimal order processing costs, there will be a positive bid-ask spread (and hence positive market making profits) when market makers are

required to post quotes on a coarse pricing grid (like eighths of a dollar). Finally, the examples suggest that market makers and other liquidity providers on the NYSE may have been making monopolistic profits before the requirement to provide real-time trade and quote information.

The presence of economic rents coupled with the ability to guarantee execution of orders at prices no worse than those prevailing at the NYSE attracted the interest of Bernard L. Madoff Investment Securities, which began paying brokers \$0.01 per share for their retail market orders. Madoff was very selective in the types of orders that it purchased – only orders thought to have been placed by uninformed investors trading for liquidity reasons. Madoff would pay for only small market orders (orders for under 5,000 shares), reasoning that anyone with value-relevant information would trade more shares.

Madoff also monitored the profitability of executing orders from particular brokers. If a broker began sending Madoff unprofitable orders, Madoff would stop taking orders from that broker. Hence, Madoff would take all the orders of Charles Schwab & Company (a major discount broker) while avoiding all orders from Brown and Company (a deep-discount broker with a high proportion of professional traders).

Madoff's success attracted other firms to enter the market making arena. The large brokers that sold Madoff orders even opened up market making operations on regional stock exchanges and began trading selectively against their own retail orders (see Battalio, Greene, and Jennings, 1998). Large brokers quickly realized that they could make even more money if they internalized the trades instead of sending the orders to either Madoff or the floor of the NYSE.

Here is how Lehman Brothers decided whether to operate both as broker and as dealer, executing the order against its own account, or to operate simply as broker and route the order to the market with the best quote to be executed:

When a customer buys or sells a Big Board [NYSE] listed stock through Lehman Brothers, the order is sent to Lehman Brothers' computer, which decides whether the firm can trade the order against its own account for a profit or not. If yes, then Lehman Brothers takes the order and trades with itself in Cincinnati, where Lehman Brothers is a dealer. If the computer decides it is not a profitable trade for Lehman Brothers, the customer's order is sent to the Big Board or to some other exchange. ("How Street Turns Trades into Gold, 1993")

Even though equity markets began quoting stock prices in pennies in 2001, reducing the potential profitability of paying for order flow, selling order flow and selectively internalizing it by acting as both broker and dealer persist. Indeed, the eleven brokers receiving 4 or 4.5 stars (the highest rating) in the 2004 *Barron's* online broker survey all receive some type of payment for their customer orders (see Table 1). This suggests that the coarse one-eighth (and later, one-sixteenth) pricing grid is not the sole explanation for these practices.

Today, payment for order flow and internalization survives on the ability to avoid trading with those who know where the stock price is headed (i.e., informed traders). Purchasers and internalizers of order flow profit by executing presumably uninformed orders at quotes posted by market makers seeking to protect themselves against trading with better-informed parties.

There are at least four ethical issues with regard to payment for order flow and internalization. The first involves the broker's decision to participate in these practices by cherry picking the best customers for themselves instead of passing the order to the NYSE. How can a broker that either directly or indirectly takes the other side of its customers' orders provide best execution?

For example, suppose the market for Acme stock is currently 1,000 shares bid for at \$14.00 and 1,000 shares offered at \$14.25. The quoted depth is 1,000 shares. The specialist agrees to sell up to 1,000 shares of Acme to investors at the higher price of \$14.25. The same specialist agrees to buy up to 1,000 shares from investors at the lower price of \$14.00. It is important to notice that the ask price (i.e., the selling price) is higher than the bid price (i.e., the buying price). Effectively, the specialist is buying low (the bid price) and selling high (the ask price) with each trade that is transacted.

Assume an internalizing broker receiving a market order to buy 100 shares of Acme stock and a market order to sell 100 shares of Acme stock earns \$25.00 if it executes the market buy order at a price of \$14.25 and the market sell order at a price of \$14.00. That is, the internalizing broker will buy 100 shares at \$14.00 for a cost of \$1,400 ($= 100 \times \$14.00$) while simultaneously selling the same 100 shares at \$14.25 for \$1,425 ($= 100 \times \$14.25$). In this example, the selling proceeds is \$25 higher than the purchase cost ($\$25 = \$1,425 - \$1,400$). Yet is this the best possible price the broker could have given its customers?

Why not simply allow the two orders to interact with each other, at a price of \$14.12? This would give each order price improvement of approximately 12 cents per share. That is, the cost to purchase the shares will be lower for the buyer and the proceeds will be higher for the investor

choosing to sell the shares. So both sets of investors (the buyer and the seller) will be better off if the broker simply allowed the shares to interact with each other. But note this also would reduce the broker's dealer profit (excluding commission) on the transactions to \$0.00.

Clearly, the broker's motivation to generate dealer profits is at odds with its fiduciary responsibility to obtain the best execution price for the customer. When brokers internalize orders, they profit twice: They receive cash commissions from the customer, and they generate profit when crossing the buy order with an offsetting sell order.

Another ethical issue comes out of using prices established elsewhere to execute purchased or internalized trades. When they free-ride on prices established by primary markets like the NYSE, purchasers and internalizers of order flow may aggravate the adverse selection problem faced by those responsible for posting quotes on the NYSE. Recall that our market maker was forced to widen her quotes when there was a chance she might buy stock from an investor who knew the stock was overvalued or sell to a trader who knew the stock was undervalued.

The introduction of market makers that can selectively execute orders placed by uninformed investors only increases the odds that the executor of last resort (i.e., the NYSE specialist that is required to post reasonable quotes) will trade with a better-informed investor. That is, by cherry picking the best trades for themselves while sending toxic trades (i.e., informed trades) to the NYSE, investors may be made worse off. In theory, this forces the NYSE market maker to lower the bid price and raise the ask price even more. Thus, the introduction of purchasers and internalizers of order flow may cause the prices quoted in the primary market (i.e., the NYSE) to deteriorate, making all investors worse off.

Clearly, Madoff is picking only the best customers to trade with. As noted earlier, Madoff agreed to purchase only uninformed trades of less than 5,000 shares. One core question is whether or not it is ethical to “cherry pick” customers. At the outset, the immediate answer would seem to be no. After all, isn’t finding the right customers at the base of most organizational strategies? However, more in depth thinking reveals that there are ramifications of such a cherry picking strategy.

One example is lending - if my bank only lends to attractive customers (i.e., those with no chance of default) it means that there is a category of people, primarily those who need the money the most, who will not have access to the money or will have fewer, less attractive alternatives available to them. As this happens, current inequities become larger with the rich getting richer and the poor getting poorer.

Given that Madoff and other intermediaries reject all trades that appear to be coming from informed traders (that is, traders that seem to know where the stock price is going), is it discriminatory to select on “smartness”? Imagine if the hotel industry started denying rooms to people who could read the hotel bill and thus would not notice overcharges? Hence, our paper raises the issue of whether “cherry picking” of customers is unethical because it may lead to excessive profits, result in discrimination, and involve preying on the inadequacies of the consumer.

Should we outlaw payment for order flow and its close cousin, internalization? Are these practices evidence of a market failure in which greed triumphs at the expense of ethics? In support of their arguments, opponents of these practices note that brokers are getting rich at the expense of their customers by selling or internalizing their orders. As an example, through the

first nine months of 2005, OptionsXpress, a leading broker in the option market, had earnings of \$63,751,000. Payments made to OptionsXpress for order flow accounted for 26.2% of these earnings. Opponents claim that these payments should be passed directly to customers.

Underlying the feeling that “something just isn’t right” with payment of order flow, is the notion of “excess” profits. If these intermediaries, like OptionsXpress, were barely above solvency, would we have the same negative to reaction to their huge profits? Is what the intermediaries doing unethical or is it unethical because they are so successfully profiting from it? The amount of profit being made, or put another way, the inequities in profit, may be one of the boundary conditions that shift the perceived responsibilities to the firm and away from the buyer.

However, are the excess profits eventually finding their way back to the retail customers? In a 1993 *Associated Press* article, Bernard Madoff, head of Madoff Investment Securities, stated that his firm “saved investors \$64 million in 1992 alone.” Clearly, he is mistaken. Doesn’t he mean that his firm enriched brokers by \$64 million in 1992? That is, the \$64 million was passed directly to the brokers by Madoff. And, what about the profit earned by Madoff? Specialists on the NYSE must trade with anyone willing to buy or sell shares at the posted prices; Madoff can choose with whom it trades. This allows Madoff to profit seemingly at the expense of specialists on the NYSE.

Implicit in Madoff’s claim that his firm saved investors \$64 million is the assumption that brokers did not keep the money for themselves. Is Madoff assuming that stock brokers are benevolent? Absolutely not. He is assuming simply that brokers, in an effort to increase or maintain market share, compete with each other for customers.

One way brokers compete for customers is through commission schedules. Madoff's assumption is that the \$64 million his firm paid to brokers ultimately flowed back to consumers in the form of lower brokerage commissions. If this is a valid assumption assuming a competitive brokerage market, we might expect to see lower commissions for brokers that sell or internalize their order flow than for brokers that do not have access to this profit.

Battalio, Jennings, and Selway (2001) ask whether investors who use brokers that sell or internalize orders pay lower net trading costs (brokerage commission plus execution price) than other investors. They conclude that "the net trading cost of the broker refusing order-flow payments does not dominate the net trading cost of all brokers selling order flow" and that "order-flow payments do not unambiguously harm traders" (p. 39). These results hold today even when NYSE stock prices are quoted in decimals. Thus, investors who use brokers who sell or internalize orders do not appear to be harmed.

Recall that all the top eleven online brokers in our Table 1 according to *Barron's* accepted payment for their customers' orders. How can payment for order flow be so bad if the brokers at the top of brokerage surveys are all doing it? A related issue arises in thinking about the above issues. If this is the best that the customer can get, what is wrong with it? That is, shouldn't it be 'buyer' beware? The customers do not have to engage in these stock transactions.

Clearly though, this argument has boundary conditions as well. What if the customers have to engage in these transactions? It would seem that in situations in which people had few or no alternatives (i.e, the women in a Bangladesh village who had to pay intermediaries exorbitant lending fees), this would be unethical behavior.

A similar issue arise when one thinks of the NYSE. The exchange doesn't have any alternative as they cannot cherry pick their customers. Is it unethical for the intermediaries to take advantage of the NYSE's lack of alternatives?

The idea that competition and transparency, our fourth ethical issue, will fix things is consistent with the SEC's approach to dealing with payment for order flow and internalization. On January 30, 2001, the SEC adopted Rules 11Ac1-5 (now Rule 605) and 11Ac1-6 (now Rule 606) to improve public disclosure of order execution and order routing practices. Now clearly the SEC should not get all of the credit for increasing disclosure requirements. Investor outrage and pressure from Congress also assisted in improving disclosure by brokers.

Rule 11Ac1-5 requires market centers to make available monthly reports that include "uniform measures of execution quality." Rule 11Ac1-6 requires broker-dealers that route customer orders in equities and options to identify quarterly where they route customer orders for execution and to disclose whether or not the executing venue provides compensation for the orders.

However, is the assumption that competition and transparency will resolve ethical issues erroneous? It seems that the SEC believes that competition and transparency can fix all the problems with payment for order flow.

Boehmer, Jennings, and Wei (2006) explore whether these new disclosure requirements have affected order routing decisions by brokers. They find that stock exchanges reporting low execution costs and fast executions subsequently receive more orders. The intuition is that brokers like Charles Schwab face competitive pressures to route orders to low-cost or fast

execution venues. Thus, the conclusion from the Boehmer, Jennings, and Wei (2006) study is that competitive pressures lead to savings for investors.

One reason brokers appear to pass savings on to investors in the form of lower commission costs is competition. There are many brokers competing for a fixed number of investors who can move from one broker to another at a trivial cost. When there is limited competition or a high cost to moving accounts, (for high-quality investment bankers, see Chen and Ritter (2000) and Loughran (2005), for mutual funds, see Houge and Wellman (2005) and Ackermann and Loughran (2007)), there appears to be more unethical behavior other than payment for order flow.

On the whole, payment for order flow, although it sounds unethical, appears to be beneficial for investors. Since 1975, investors have seen a dramatic decline in commission costs. Part of this decline has occurred because payments for order flow are passed back to investors due to brokerage house competition.

In attempting to make stock prices on the NYSE more transparent to investors not physically standing on the trading floor, the U.S. Congress made a noble attempt to improve investor welfare. Yet, the availability of quoted prices on the NYSE allows intermediaries to skim off the high-value uninformed trades for themselves, leaving the potentially more toxic orders for the NYSE specialist (see Battalio, 1997).

Is it ethical for intermediaries to play by these rules? Our answer to the question is yes. Transparency is an important ingredient in well-functioning financial markets. Although the NYSE specialist since 1983 gets a smaller percentage of the uninformed trades because it is forced to broadcast real-time quotes, investors have gained tremendously through greater

transparency in prices. Further, if this quoted price transparency were really hurting the specialist firms to the point of going out of business, the SEC would probably step in and fix the regulation.

Throughout this paper dealing with the ethical issues related to payment for order flow, we have raised the following four questions: is it unethical to “cherry pick” customers; is it always ‘buyer’ beware; is there such a thing as too much profit; and is the assumption that competition and transparency will resolve ethical issues erroneous? One area of future research is to examine how greater broker competition in the options market may have led to lower option commissions for retail investors and whether it was ethical for Congress in 1975 to force the NYSE to broadcast its prices for free. While it looks now as if payment for order flow is good, at some point will all the uninformed trades be routed away from the NYSE? If all the uninformed trades are sent elsewhere, there is a real possibility that the market will fail to function.

Clearly, we are not at the point where markets will collapse because the specialist is handling only toxic trades. At the same time, there is some possibility that in the pursuit of transparency, Congress may have planted seeds of market failure by allowing intermediaries to free-ride at the expense of the NYSE specialist. These are interesting questions for future research.

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Table 1

List of Top Online Brokers According to *Barron's* in 2004

Broker	Category	2004 Star Rating	Receive Some Type of Payment for Customer Orders
OptionsXpress	Browser	4.5	Yes
E*Trade (Power E*Trade)	Browser	4.5	Yes
TradeStation	Software	4.5	Yes
Terra Nova	Software	4	Yes
E*Trade (Priority)	Browser	4	Yes
Fidelity	Browser	4	Yes
SiebertNet	Browser	4	Yes
E*Trade	Browser	4	Yes
Schwab - CyberTrader	Browser	4	Yes
Harrisdirect	Browser	4	Yes
Scottrade	Browser	4	Yes