

SPRING 2015

SEE FAR



EXECUTIVE SUMMARIES

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mission

To develop a learning laboratory at Olin Business School that identifies real-world business problems related to finance and accounting—and that facilitates the interaction of Olin faculty and students with business partners to develop practical, effective solutions.

In May 2012, Wells Fargo Advisors awarded a gift to Washington University in St. Louis to support Olin Business School. Olin’s newly named Wells Fargo Advisors Center for Finance and Accounting Research (WFA-CFAR) will be a catalyst for enhancing finance and accounting research and education, which benefits faculty members, students, and businesses. To that end, initiatives housed under the WFA-CFAR umbrella include:

Specialized Masters degree programs in finance (MSF) and accounting (MACC), which provide rigorous curricula and industry-specific knowledge to students through a 10- or 17-month format;

The Corporate Finance and Investments Platform, which realigns our MBA curricula to provide students with industry-specific knowledge and experiential learning opportunities, while also ensuring that these students receive a broad business education;

Sponsored research, which includes company-specific projects as well as research on broader topics, to ensure that Olin faculty remain at the forefront of research excellence; and conferences and seminars, which bring together scholars from all over the world to share the latest ideas in finance and accounting.

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To obtain copies of the original research papers summarized here or recommend your company for a future research project, please contact Marcianne Gagliardi, Wells Fargo Advisors Center for Finance and Accounting Research program manager, at mgagliardi@wustl.edu or 314-935-2943.



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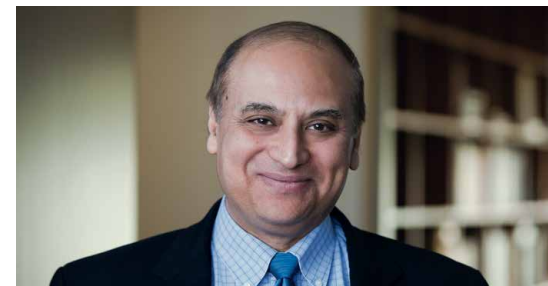
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BUSINESS
IMPACT



A Message from the Director

I would like to introduce you to the inaugural issue of our new magazine, *SEE FAR*. Apart from the obvious attempt to “capitalize” on the WFA-CFAR name, the name also captures the essence of our research: looking to the future rather than concentrating exclusively on current events and thinking, and focusing on big-picture issues that have far-reaching consequences.

All the articles in *SEE FAR* are based on finance and accounting research that has been previously published in an academic journal, or as a monograph, or is currently a working paper that will be published in the future. The original papers have been rewritten as executive summaries for *SEE FAR* so that they are accessible to a broad audience, rather than solely to those in academia. This is no small task. Taking a paper originally written for a highly technical academic audience and converting it into something more accessible takes a great deal of skill and hard work, as we discovered while putting together this first issue. But perhaps that is why the task is so worthwhile. I firmly believe that this will help us not only build a bridge between the research of Olin Business School faculty and those in the world of practice, but also it will add to the knowledge people use on a daily basis. The intellectual capital generated by our faculty members’ research is quite impressive—Olin consistently ranks among the top ten schools in terms of our research output. For this reason, it is important that WFA-CFAR research is made available to as many of our stakeholders as possible.

I hope that you enjoy reading the summaries in this inaugural issue. I would like to thank my faculty colleagues who participated in helping us create this issue by providing their papers and working with us to convert them into what you will read on the following pages. I would also like to thank Rosit Rosenboim, Leah Costantino, and Jennifer Schmich for their hard work in helping bring this issue to fruition.

I look forward to any feedback you have to help us improve this magazine. Please contact WFA-CFAR Program Manager Marcianne Gagliardi at mgagliardi@wustl.edu with your insights.

Sincerely yours,

Anjan Thakor

John E. Simon Professor of Finance, Director of Doctoral Programs, Director of the WFA Center for Finance and Accounting Research, Olin School of Business, Washington University in St. Louis



The Dark Side of Performance Goal Setting in Executive Compensation

Recent research shines a light on the dark side of the popular trend of linking rewards to targeted performance goals. These incentives can provide powerful motivation to managers and align their interests with investors. It can also invite accounting subterfuge and manipulation. Researchers at Washington University in St. Louis and Arizona State University investigated the prevalence of this trend.

The relationship between firm performance and managerial pay has recently been an area of significant public interest and academic research. Companies use performance targets as a way to motivate managers to achieve maximum shareholder value by aligning the interests of managers with those of shareholders. Typically, a stock or cash grant payout is linked to an explicit performance goal, and managers receive the payout once they reach or exceed this goal. In a recent study by the consulting firm Hay Group, more than half of CEOs surveyed have compensation tied to explicit goals, up from around 35% just four years earlier. Warren Buffett agrees with the need for such targets, stating, “Lacking such [goals], managements are tempted to shoot the arrows of performance and then paint the bull’s eye around wherever it lands.” There is a dark side, however, to this seemingly beneficial trend. When compensation is dependent on explicit goals, a tendency emerges for management to influence targets and their outcomes.

Although goals can motivate and encourage managers to excel, if managers realize that actual performance is likely to be short of the goal, they may be tempted to take actions that push the performance past the target goal. For example, managers may trim investments or R&D to achieve an earnings target. Executives can also influence the goal-setting process to ensure easy goals, known as “sandbagging.” They can change real activities, or even manipulate reported performance.

Comparing firms that meet versus just miss performance targets

Radhakrishnan Gopalan and Todd Milbourn from Washington University in St. Louis and Benjamin Bennett and Carr Bettis from Arizona State University investigated the extent to which reported financial performance is “managed” to achieve compensation performance goals. They used a unique and comprehensive data set containing information on the performance goals employed in pay contracts for large, public US listed firms over the period 1998–2012. In a sample of 13,895 grants awarded by 653 firms to 4,534 executives, cash and stock were found to be the most popular modes of payout. Earnings per share (EPS) is the most popular metric, with more than 40% of the grants in the sample (5,640 out of 13,895) linking some of the payout to an EPS goal. This is followed by sales, with about 28.5% of the grants (3,963 out of 13,895) partially tied to a sales goal.



Paper: “Costs of Including Accounting Performance Goals in Executive Compensation”

Authors: Benjamin Bennett, Air Force Institute of Technology; Carr Bettis, W.P. Carey School of Business, Arizona State University; Radhakrishnan Gopalan, Olin Business School, Washington University in St. Louis; Todd Milbourn, Olin Business School, Washington University in St. Louis.

Publication: Working paper, May 2014

Shoot the arrows of performance and then paint the bull's eye around wherever it lands.

The researchers analyzed the distribution of reported performance around the compensation targets for EPS, sales, and profit. They compared the frequency of firms that barely met their performance targets to those who just missed targets. A difference of zero implied the manager just met his or her performance targets. Normally we would expect there to be an equally likely chance that firms either just beat or just missed targets. But if the accounting performance is managed, then we would expect a disproportionate number of cases where targets were just exactly met. The research findings show a larger number where targets are just met. Looking at the figure to the right, there is a noticeable gap in the number of firms that report just beating the EPS metric to those that just miss. This clustering of outcomes just to the right of zero is indicative of a manager's ability to influence reported numbers to just meet targets. The results are similar for sales and profit target measures.

Single metric versus multiple metrics

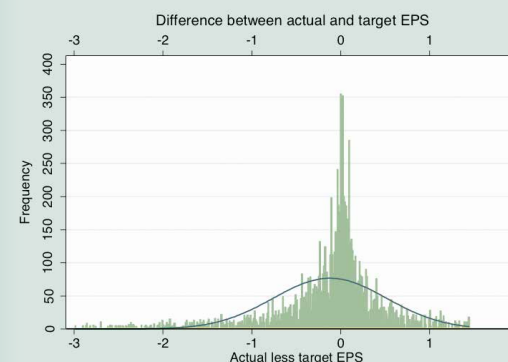
Since manipulating a single metric is easier than manipulating multiple metrics, researchers expected a larger discontinuity in the underlying performance for grants dependent on a single metric, compared to grants contingent on multiple metrics. Consistent with this hypothesis, when researchers divided the sample into single versus multiple metric grants, they found the discontinuity at the performance target larger for grants contingent on a single metric.

Short-term versus long-term goals

Another way managers can meet performance goals is to lower the ex-ante goal. That is, set a goal below and close to anticipated performance, better known as sandbagging. This makes it much easier to achieve the goal. Since the future is more difficult to predict, it is safe to assume that managers can better predict short-term performance than long-term performance. Therefore, researchers predicted that if discontinuities are present for long-term grants, those differences are more likely from ex-post performance management as opposed to ex-ante goal management.

When the grants are divided into short- and long-term categories, there is a significant discontinuity for both sets. This is interpreted as evidence that at least a part of the discontinuity is due to the management of reported accounting performance, and not solely from sandbagging.

Executive Compensation Performance Metrics



Using a unique data set of 653 firms and 4,534 executives, this paper finds the most popular performance metrics for determining executive compensation to be EPS and sales. The researchers analyzed the distribution of reported performance around the compensation targets for EPS, sales, and profit. They compared the frequency of firms that barely met their performance targets to those who just missed targets. A difference of zero implied the manager just met his or her performance targets. Normally we would expect there to be an equally likely chance that firms either just beat or just missed targets. But if the accounting performance is managed, then we would expect a disproportionate number of cases where targets were just exactly met. The research findings show a larger number where targets are just met. Looking at the figure above, there is a noticeable gap in the number of firms that report just beating the EPS metric to those that just miss. This clustering of outcomes just to the right of zero is indicative of a manager's ability to influence reported numbers to just meet targets. The results are similar for sales and profit target measures.

Additionally, the evidence indicates that while the discontinuity is more pronounced for short-term grants, especially if they are based on an earnings or profit metric, there is some discontinuity at zero, even for long-term grants.

Interpolated versus noninterpolated grants

Typically, a grant has a target goal and a threshold performance goal. If the firm performance falls between the two, some grants interpolate the payout. But for firms that do not, the pay will jump discontinuously when the firm performance exceeds the target. For grants that involved interpolation, there is no discontinuous increase in pay when the performance exceeds the target. This would indicate that there's more incentive to manage reported performance when goals are fixed than when subject to interpolation. The evidence consistently shows a bigger discontinuity at zero for grants that do not involve interpolation.

Comparing just met versus just missed goals

Comparing firms that just exceed a goal to those that just miss a goal, researchers analyzed the data on a number of dimensions, because, depending on the metric involved, firms can employ a variety of means to meet a goal. For example, to meet a particular EPS mark, firms can increase their use of accounting accruals and reduce discretionary expenditures such as R&D and SG&A, as well as repurchase shares. Accruals, which include noncash-based earnings factors like accounts receivables, are part of an earnings management tactic that allows firms to shift future earnings to the current period. Sales goals can be met by increasing SG&A and accounts receivables, while profit goals can be met by cutting discretionary spending.

When comparing the data against these metrics, researchers found firms that exceed the EPS goal by a small margin had much higher abnormal accruals than firms that miss the goal by a small margin. They also saw a decrease in R&D and SG&A in firms that just met their targets.



Firms that exceed EPS goals by a small margin have much higher abnormal accruals than those that miss by a small margin. Firms just meeting or exceeding EPS goals by a small margin do it by reducing R&D and SG&A expenses.

New considerations for compensation committees and advisors

The growing trend of explicit pay for meeting performance goals has some positive aspects in terms of encouraging more effort, but may have subtle costs that should be taken into consideration when designing contracts. This research indicates that the effective use of specific performance goals requires greater board oversight on firm performance to minimize executives' management of reported performance to meet goals. The new research highlights the effects of different features of these contracts, and provides new considerations for compensation committees and advisors. At a minimum, the results demonstrate that it is better to include performance provisions in pay contracts in such a way that they provide a more continuous link between pay and performance.

"To avoid this problem, boards can do several things," says Gopalan. "First, have a smooth link between pay and performance. Make the

executive's reward increase linearly with performance. Avoid having hard targets and linking rewards to achieving those targets. This would significantly reduce the incentives to aim for a specific performance target. Second, pick a performance metric that can be measured reasonably independent of the executive. For example, if an executive is measured on division profitability, then the board should design a system that reports actual profitability to the board's compensation committee before the data is available to the executive. And finally, try to keep it simple. Don't involve multiple metrics, any one of which, if exceeded, can enable a reward."

Gopalan also points out, "A broad interpretation of our results would indicate that sales-based metrics are more difficult to manipulate as compared to profit- and earnings-based metrics. One reason for this could be that sales is an order of magnitude larger than profits, and making up shortfalls by manipulating performance may be more difficult, given that even a small percentage shortfall may mean millions of dollars."

New considerations for investors

This research uncovered two considerations for investors. According to Gopalan, "First, if you are interested in predicting firm performance, a good place to look should be the targets in executive compensation contracts. Our analysis indicates that firm performance is likely to fall very close to, and just above, the targeted performance. The second consideration is that if firm performance does beat the compensation

target by a small amount, then it is more than likely some performance management occurred, which may have an adverse effect on future performance."

Overall, it is important to note that a majority of performance metrics used in compensation contracts are accounting based. This means in industries where accounting-based performance metrics are used, it is easier to manipulate reported performance. In industries in which accounting-based performance metrics are less informative about the true performance of the executive, it is necessary to be more concerned about implementing such pay systems.

Investors should look at what target firms have set to determine bonuses for executives and note that when a target has just been met or exceeded by a small margin, it could mean trouble ahead.

Save the Date

12th ANNUAL CORPORATE FINANCE CONFERENCE

November 6–7, 2015

- Debate and discuss ideas
- Explore real-world issues with corporate executives
- Attend PhD poster session

Save the Date



28th Annual Nick Dopuch Accounting Conference

November 12–13, 2015

Examine topics such as firm volatility, accounting conservatism, and pricing/mispricing.

A close-up photograph of two hands shaking in a firm grip. The hands are wearing dark suit sleeves with white cuffs. A small red flag with a black fist symbol is attached to the left hand. The background is a dark, textured surface.

Corporate Socialism Fuels the Design of Managerial Compensation Contracts at Multi-Division Firms

The efficiency of capital allocation within a conglomerate as compared to a focused firm is interesting to those in the corporate and academic worlds. Much is known about how compensation contracts help align the interests of CEOs toward value maximization or improving capital allocation in focused firms. Less is known about how incentive contracts for divisional managers in a conglomerate can mitigate possible distortions in capital allocation. Using a unique, hand-collected data set, researchers at Washington University's Olin Business School explored how divisional managers' compensation contracts are designed in large US conglomerates.

The popularity of conglomerates flourished in the 1960s when corporations realized the advantages of diversification and united many unrelated companies under a single umbrella. However, the anticipated efficiency gains didn't pan out in many cases and led to the breakup of many large conglomerates a decade later. Rockefeller's Standard Oil, a conglomerate that was forced by the Supreme Court to dismantle into 34 independent companies in 1911, became the most famous example of dissolution. Interestingly, John D. Rockefeller's wealth grew exponentially as a result of the decision to dismantle his firm. Another example in the late 1980s, described in the novel and film *Barbarians at the Gate*, was the \$25 billion takeover, sale, and fall of RJR Nabisco, which highlighted the idea that annexation of multiple firms within a conglomerate can potentially create shareholder value. Soon after the deal was signed, the firm Kohlberg Kravis Roberts, despite its promises, quickly began dismantling and selling pieces of RJR Nabisco to meet the crushing interest payments. And recently, this tendency to break up versus make up continues as iconic conglomerates like ITT and Motorola have elected to separate in an effort to maximize efficiency.

Internal capital systems

Unlike single-division firms that depend on the external financial markets for capital,

divisions within a conglomerate look to the headquarters or the firm's CEO for capital. These large conglomerates oversee and allocate funds to their divisions through an internal capital system. The investment efficiency of conglomerates that have multiple divisions has been of significant research interest. Capital allocation within a conglomerate can get distorted due to divergence in objectives between the division manager—who wants to maximize capital allocation to her or his division—and the CEO, who wishes to maximize shareholder value. Furthermore, because the division manager might have better insight into her or his division's performance than the CEO, asymmetric information problems can also arise and exacerbate the inefficiency of capital allocation. Divisions within a conglomerate may also vary on the extent of investment opportunities. In such situations, it may be optimal for the CEO to transfer capital from a division with low growth opportunities into a division with better growth opportunities.

Incentive contracts can mitigate internal capital system challenges

A properly designed incentive contract for divisional managers can avoid corporate socialism and provide more effective solutions. In the paper "Managerial Compensation in Multi-Division Firms," Radhakrishnan Gopalan and Shashwat Alok, from Washington University

Paper: "Managerial Compensation in Multi-Division Firms"

Authors: Radhakrishnan Gopalan, Olin Business School, Washington University in St. Louis;
Shashwat Alok, Olin Business School, Washington University in St. Louis.

Publication: Working paper, May 2013

4,080
division-year
observations
from S&P
1500 firms
between 1992 and 2009

Properly designed
incentive contracts
for divisional
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socialism and
provide more
effective solutions.

One way to link the
manager's performance
to divisional performance
is to have a bonus award.
One way to link the
manager's pay to the
firm's performance is to
give stock awards.

in St. Louis, study divisional manager (DM) pay contracts and their role in solving the problems that arise in multi-division firms. Using hand-collected data on DM pay contracts, researchers found relationships between a DM's pay and performance in that DM's division, along with other divisions in the firms.

According to Gopalan, "In the late 1990s, there were a series of hostile takeovers motivated to break up conglomerates. The idea was that these multidivision firms, that allocated capital internally, were very inefficiently managed. Because they were part of a large conglomerate, these companies had very valuable divisions, which were undervalued by the market and were not getting the capital they would if they were in the capital market. So a number of private investors came in, took over these firms, split them apart, and made each of these firms separate parts. So why are these conglomerates inefficient? One of the chief reasons is what is called corporate socialism. The idea is that I have multiple divisions and the managers are looking at one another in terms of who's doing better. To keep divisions motivated, I don't want to have too much disparity between them. So if I give capital to a division that is doing very well, the manager of the division that isn't doing well is going to be demotivated, which might affect the division even more. So to keep them motivated, I would continue to give them more capital. And this is one way in which capital allocation may become inefficient within a conglomerate."

Research structure and findings

To frame their tests, the researchers identified three hypotheses that have predictions for the structure of DM pay. They tested these predictions using pay data for DMs who are among top five highest-paid executives in their firms. Their sample contained 4,080 division-year observations from S&P 1500 firms between 1992 and 2009.

The Risk Hypothesis

The first prediction postulates that the DM should be compensated only for her or his true contribution to division performance. The sensitivity of that pay should be higher if the performance measure is more informative—more reflective of DM effort. Furthermore, a division's performance may be affected by both DM effort and exogenous factors outside the DM's control. To the extent the divisions of a firm are related and subject to common factors outside the DM's control, her or his performance should be evaluated relative to the performance of the other divisions. To undo the overlap of common performance, there should be a negative relationship between DM pay and the performance of other related divisions.

Researchers found that there is a strong and positive relationship between a DM's pay and the performance of her or his division. Specifically, when the division ROA increases by 1%, the DM's total compensation increases by 0.311%. For the average division in the sample, this translates into a \$0.832 increase in DM pay for every \$1,000 increase in annual divisional profits. Additionally, in industries where accounting numbers are more informative, the sensitivity of DM pay for a division's performance is twice as much as in industries with less informative accounting profits. The link between DM pay and performance was weaker in industries where accounting measures of performance were not good signals of true long-term performance. There was no sign of a negative relationship between DM pay and the performance of other divisions, highlighting the lack of relative performance evaluation.

Divisional manager (DM) pay is positively related to divisional performance. When the division ROA increases by 1%, the DM's total compensation increases by 0.311%. For the average division in the sample, this translates into a \$0.832 increase in DM pay for every \$1,000 increase in annual divisional profits. Sensitivity between division performance and DM compensation decreases in times of economic downturn.

The Externality Hypothesis

If the divisions of a conglomerate are related through a common customer base or because they share a common capital pool, the action of a DM can affect the performance of both her or his division and other divisions in the firm. Thus, there is a hypothesized positive link between DM pay and the performance of her or his division and other divisions. The pay also varies with the strength of the relatedness of the divisions. Consistent with the externality hypothesis, a DM's pay is positively related to the performance of other divisions. Specifically, for the entire sample, a 1% increase in the ROA of divisions outside the control of the DM increases the DM's pay by 0.22%, as compared to the 0.31% sensitivity of their own division. When they look only at DMs where other divisions are highly related, the sensitivity to outside divisions goes to 0.60%.

A DM's pay is more sensitive to her or his division's performance compared to the performance of other divisions. One reason may be the idea that the division manager has greater influence over her or his division's performance. Interestingly, CEO pay is equally sensitive to the performance of all the divisions in the firm.

Sensitivity of pay to divisional performance increases when accounting numbers are more informative about performance.



The Time Series Hypothesis

The time series hypothesis states that there is a time variation in DM pay for performance, since the need for conglomerates to share capital may vary with economic conditions. For example, pay for a DM of a division with poor investment opportunities should be linked to the performance of other divisions so as to encourage the DM to share capital with the other divisions. After differentiating between periods of industry distress and normal times, researchers found that a DM's pay is less sensitive to the performance of her or his division during periods of industry distress. In addition, DM pay in the distressed division is more sensitive to the performance of the nondistressed divisions, whereas DM pay in the nondistressed divisions is less sensitive to the performance of the distressed division. Consistent with the literature on CEO compensation, DMs obtain lower pay for performance during economic downturns. These pay arrangements can be helpful in facilitating the transfer of capital out of the distressed division and into the nondistressed divisions.

There isn't much evidence that divisional managers are compared to one another. If anything, a DM's compensation is positively related to that of other DMs in the firm.

When designing compensation, one can decide when the division manager should focus on improving the division's performance and when to focus on improving overall firm performance.



Impact on shareholders

There are possibilities that DMs have the ability to extract rent through weak corporate governance or their social ties to the CEO. The researchers first investigated whether firms with better governance overpay DMs when paying them for the performance of other divisions. Interestingly, the findings show that when there is good corporate governance, the pay for performance for other divisions is high. This highlights the fact that conglomerates use incentive contracts to minimize possible distortions in capital allocation and that this sensitivity is in the best interest of shareholders.

An alternative mechanism for DMs to obtain higher pay is through social ties with their CEO. Researchers define social ties as attending the same educational institution or being associated with the same nonprofit as the CEO. On one hand, a social connection could elicit favoritism, while on the other hand, social ties could allow for better transmission of information. There is no evidence that social ties increase the pay of DMs, yet there is weak evidence for higher pay for performance sensitivity when DMs and CEOs are socially connected. Overall, the evidence is inconsistent with social ties having a negative impact for shareholders.

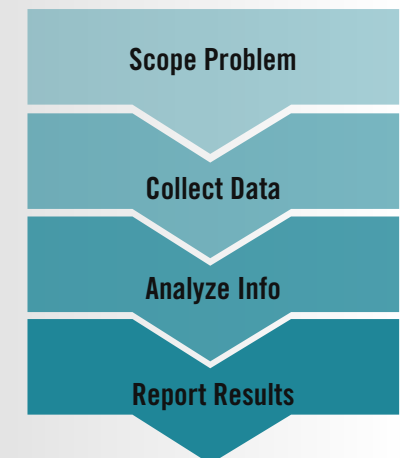
Considerations when designing compensation

To utilize this information, Gopalan recommends, "Compensation managers should consider how the divisions are doing, what kind of cooperation is needed between the divisions, and how to work incentives to make a manager focus on her or his division as opposed to the rest of the firm. One way to link manager performance to division performance is to have a bonus award. One way to link the manager's pay to the firm performance is to give stock awards. If you give stock awards, the value of the award depends on overall firm performance. What we argue is that by designing this compensation, we can decide when we want the division manager to really focus on improving her or his division's performance and when we want DMs to cooperate with the rest of the firm to improve overall firm performance."



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Interconnected and Diverse Markets Drive US Competitiveness and Facilitate Economic Growth

A well-developed financial system is critical to promoting economic growth. Before considering any regulation, it is important to understand that the system is highly interconnected. Much like the legendary butterfly effect, reforming one financial component creates changes that can reverberate through the entire system in ways that are difficult to predict. The impact of regulation of the US financial system over the past decade is therefore worthy of our study and understanding.

The US Chamber of Commerce invited Anjan Thakor of Washington University in St. Louis to write a paper on this topic. The Chamber wanted the paper to inform a broad group of constituents—including politicians and lawmakers—about how financial systems function and interact with the real economy. In the paper, he discusses the role of the financial system in promoting economic growth, provides an overview of the financial services available to companies and consumers, and explains how the diversity and interconnectedness of financial markets facilitate economic growth. In this brief summary of that review, we will concentrate on how the financial system promotes economic growth, how its diversity deepens US economic markets, and the implications of its interconnectedness.

The bigger they are, the harder they fall

When we take a proactive management attitude, we can often avoid negative outcomes. Understanding repercussions from changes or regulation is a step toward that goal. This is true for running a business as well as running an economy. There are many examples of this, like the shocking collapse of Enron in the winter of 2001. The Texas-based energy company had been one of America's biggest and best, making its crash all the more stunning. In what would become the largest bankruptcy to date, Enron's name became synonymous with fraud, greed, and arrogance. Enron's faulty management, in part endorsed by CEO Jeff Skilling, recorded projected profits from investments through accounting gimmicks, regardless of the actual proceeds. This allowed the company to augment revenue and hide losses.

The cost of regulation

Thanks in part to the Enron collapse, Congress passed the Sarbanes-Oxley Act of 2002 (SOX) to prevent future scandals. SOX tightens standards of disclosure, establishes penalties for company fraud, and increases corporate governance. But legislation can be a double-edged sword—perhaps something Congress could not foresee. Firms soon found the cost of compliance increasing, which affected the volume of initial public offerings (IPOs), initial sales of stock to the public. Since 2004, the total volume of IPOs in America has decreased, due in part to those more strict and stringent guidelines outlined in SOX. The bottom line is that there is a delicate balance between regulation and confidence. Our markets need just enough regulation to protect and ensure confidence—but not too much, or the cost of that confidence skyrockets. This illustrates the unintended consequences of regulation because of the interconnectedness of the financial system.

Thakor points out that “New York isn’t the only game in town, and the regulation caused a lot of companies considering IPOs to go where it was least costly. So for the first time, London overtook New York in terms of total IPO volume. We do this all the time: we see a problem, we attack the problem, but we don’t look at the ripple effects. In some sense, this is not something that requires deep introspection. In any interconnected financial system, anything you do in one part of the financial system, you’ll have ripple effects in other parts of the system.”

The financial system's role in economic health, wealth, and growth

There is no doubt that a thriving financial system makes for favorable economic effects. Just as exercising facilitates muscle growth, a working financial system paves the way for economic expansion. Even in hard times, the pattern is clear: Healthy financial systems stimulate economic productivity, and feeble financial systems stifle it.

To illustrate this point, imagine a small farming community. It has no financial system. No banks. No investors. Three types of people live in this community. The first are those who have money on hand. Producers, such as farmers, are the second type. And the third are the people holding goods and services, such as owners of tractors, fertilizers, and so on.

Here's where limitations arise. Say a certain farmer grows corn for a living and can't buy a tractor without cash on hand. But the tractor seller won't sell his tractor unless he receives payment in cash, money the farmer does not have on hand. What about the average villagers who do have money? They could possibly lend to the farmer, but can they trust the farmer?

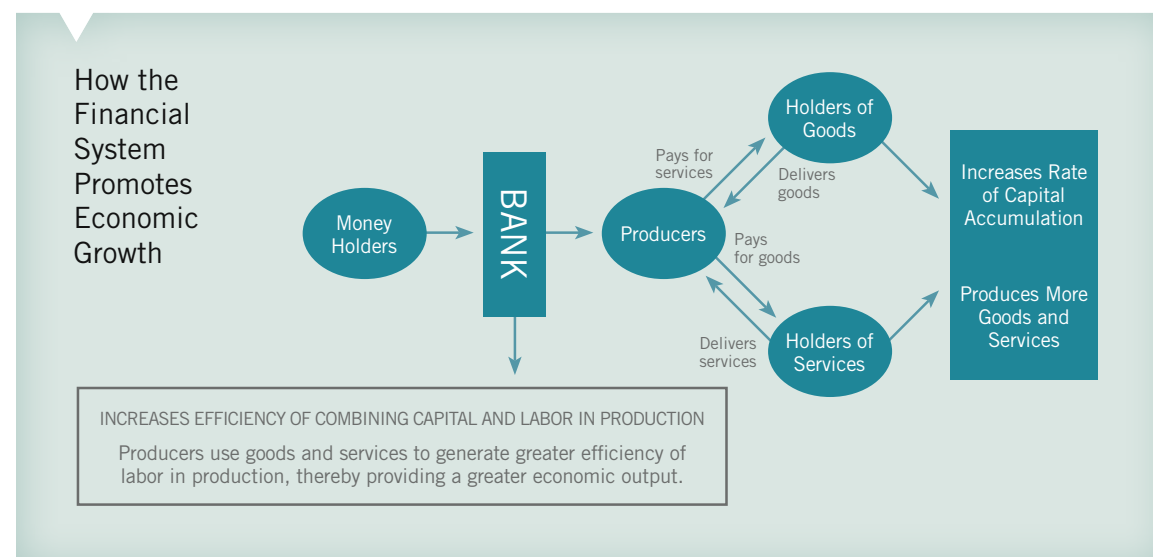
Thanks to these limitations, producers' economic output—what they produce on hand—is finite. Miscommunication, lack of trust, and finally, immobility of resources means stifled economic production. Without a financial system to grease the community's gears, its economy can't expand and doesn't grow.

Now take the aforementioned community and add a financial system. Those farmers with little cash on hand can go to a bank and take out a loan. They receive money now and pay it back in the future. But the bank must be able to provide a loan. That means it needs money. This comes in the form of deposits from villagers with money on hand. In return, the bank provides a safe option for interest on the investment and trustworthy handling. The farmer can now take out a loan to buy the tractor. With all things held constant, the farmer will produce more corn with his tractor.

And his economic output increases. Now he has money to repay the bank loan. A further increase in economic output occurs as the tractor seller may choose to take the money owed to him or her by the farmer and produce additional farming equipment. Thus we have augmented output, heightened mobilization of capital, and economic growth. These effects produce benefits in the real economic sector.

Key capital market services that support economic growth

In America's capital market, four services stand out. Their workings are simple and their presence indispensable. Thanks to these services, investment capital moves smoothly from the providers to the users of capital—from large-scale companies like John Deere to the modest farmer. Thanks to these services, the economy prospers and employment increases.



01 The financial system facilitates trade: Trade is the transfer of money from one party to another. Banks provide a crucial link in this exchange. With no financial backbone, money cannot switch hands easily. And with no financial backbone, producers cannot get goods and services; the connection between the two is virtually nonexistent. Put simply, financial systems facilitate interactions between moneymaking enterprises.

02 The financial system facilitates risk management: This is crucial for economic growth because more risk means less investment. There are many types of risk that the financial system helps individuals and businesses manage. Liquidity risks occur when people who loan money receive payment for that loan only after resources are produced. But what if the lender needs money before that time? The risk of not being able to get the money when needed is called liquidity risk. Banks provide a way to limit this risk by giving individuals access to interest-bearing demand deposit accounts. Accordingly, investment increases as liquidity increases. Additionally, individuals and businesses also need various forms of insurance, without which investments would be a gamble. For instance, the farmer could purchase insurance to protect against a failed corn harvest. So various types of insurance help farmers hedge price risks in the futures market. All of these risk management services facilitate economic growth.

03 The financial system mobilizes resources: The financial system allows people to have dynamic versus static assets. People invest money, they produce goods, and they take out loans. As a result, economic output increases in all sectors, which stimulates better technologies, and the cycle continues.

04 The financial system obtains and processes information and allocates capital: It is no secret that individual investors lack the financial know-how to evaluate firms, projects, and managers before investing in them. But banks have a leg up in this, in both cost and expertise in collecting and processing information. A bank's seasoned business skill set provides an incentive to deposit money. The bank takes this loan and augments the capital-allocation process.

New York isn't the only game in town and the [Sarbanes-Oxley] regulation caused a lot of companies to go where it was least costly ... for the first time, London overtook New York in terms of total IPO volume.

Markets need just enough regulation to protect and ensure confidence, but not too much or the cost of that confidence skyrockets.

London overtook New York in terms of total IPO volume. We do this all the time: We see a problem, we attack the problem, but we don't look at the ripple effects.

The US financial system provides four key services. It expedites trade, facilitates risk management, mobilizes resources, and acquires information that helps in the allocation of capital. By working together, these forces increase the flow of goods and services, enhance capital accumulation, and increase the efficiency of capital and labor in production. The end result is more economic growth that benefits everyone.

The value of financial services diversity

The amount of options that the US capital market provides for individuals and companies is extraordinary. "Without a doubt," Thakor writes, "there is no other financial system in the world that provides such a rich diversity of financial services." To some extent, the success of our markets and this rich diversity go hand in hand because it gives investors more precise ways to use the market to meet their needs.

Mortgages, for instance, come in many forms. But what if there were only one type of mortgage? That would be restrictive, and would not serve the interests of individuals and banks. Each investor's financial situation is unique. Businesses' financial situations are unique as well. Their financing plans are an amalgam of various elements peculiar to each company. Hence, businesses, too, benefit from a diverse capital market. Some businesses, like Microsoft, finance through equity to limit bankruptcy risk. And in a similar vein, companies like Merck & Co.—companies with a lot of R&D investment and intellectual property holdings—limit debt financing. In our capital market, managers enjoy the freedom to choose a finance strategy that best suits their business footprint. This degree of freedom is unique to American markets. Comparing our markets to Europe's, Thakor confirms that while "Europe may have everything America has on paper, their markets are not as deep."

However, when left to decide, most businesses will finance in one of two ways: equity or debt.

Businesses that choose the first option do so privately or publicly. Firms that raise private equity may do so to protect proprietary technology information because they are not required to disclose sensitive information. Alternatively, through initial public offerings (IPOs) of stocks and secondary equity offerings (SEOs), firms raise public equity. IPOs are first-time sales of company stock to the public market. SEOs raise additional capital after companies have already gone public. IPOs and SEOs both allow publicly traded companies to grow and raise capital, typically at a lower cost than private. Companies can also use publicly traded equity as an incentive to motivate their employees. Businesses may also opt to finance through debt. There are two ways to do this: short-term and long-term borrowing. Firms aptly finance long-term investments with long-term debt and short-term investments with short-term debt.

The financial system network: interconnection and components

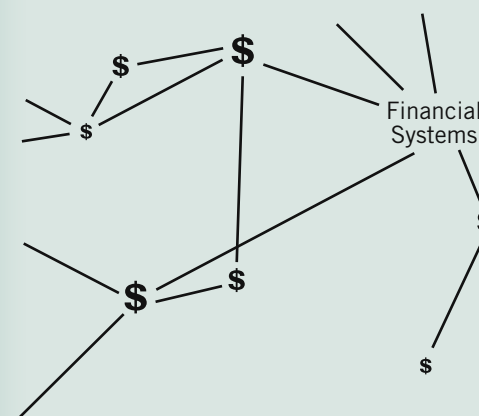
Markets and banks, savers and borrowers, farmers and companies are all connections in the financial network. The network is a result of the complex and simple interactions of these connections. It is not hard to imagine the effect of one disappearing or changing. The other connections adjust, and the network composition changes. That is all it takes—one financing source to disappear or change and the effects can be drastic. Developing countries and emerging markets offer prime examples of this. Take Romania in the 1990s. Its financial system

lacked securitization for mortgages. When banks could not securitize home mortgages, they did not readily give loans for home purchases. This stunted growth in an already anemic housing market. All of this occurred because Romania's financial system lacked securitization. When a financial system lacks a vital component, each connection suffers. Translation: The economy underperforms.

When you view the financial system as a network, it is easy to see how the disappearance of one service affects another. It is also not hard to see how changing one part of the system can generate undesirable consequences in other parts. Look, once again, to the Sarbanes-Oxley Act (SOX). Corporate fraud and governance malfunction necessitated action, so SOX created new guidelines to fix past failures and restore confidence in securities markets. It increased reporting requirements and other regulations on firms. When regulations increased, firms moved elsewhere. They moved from New York to London, Amsterdam, Paris, and Hong Kong. London's IPO volume eclipsed New York's. None of this was what legislators wanted, but it is sometimes an outcome of regulation. However, it is not a question of regulation or no regulation. It is a question of how much. Regulation is beneficial so that investors have confidence that the stock exchange is not listing lemons, but as with all things, regulation can go too far.



Interconnected Diverse Markets



The bottom line is that firms invest more when there are more ways to finance. Fortunately, our financial system affords many options. With more ways to finance, individuals and the economy both benefit from improved risk management and increased investment.





A New Anomaly: The Cross-Sectional Profitability of Technical Analysis

Technical analysis uses past prices to identify tradeable patterns in order to predict future market movements. In research published in the *Journal of Financial and Quantitative Analysis* (2013), researchers used the moving average timing investment strategy on portfolios and showed that it substantially outperforms the buy-and-hold strategy.

Every trader dreams of finding a trading strategy to get rich. Traders are inspired by stories about people like Peter Lynch, who ran the Magellan Fund between 1977 and 1990, and earned a return of over 2700%, making it the best 20-year return of any mutual fund over the period. They read about Warren Buffett, who has a reported net worth of over \$67 billion as of October 2014, despite giving away billions to charity, making him the most successful investor of the 20th century.

Technical and fundamental analyses tools

In an effort to be successful in the market, traders often use fundamental and/or technical analyses. Fundamental analysis refers to an attempt to measure the intrinsic value of a security by examining relevant economic, financial, and other qualitative and quantitative factors. Technical analysis uses historical data embedded in past stock prices to identify patterns that may be useful to predict future prices. Technical analysis is quite popular, and practitioners include many large traders and hedge fund managers. For example, studies find that currency traders typically view technical analysis as important as fundamental analysis. Although there are also many skeptics and standard technical analysis seems incapable of producing exceptional risk-adjusted returns, the use of technical analysis is quite widespread.

In this article, Professor Guofu Zhou of Washington University's Olin Business School and two coauthors, from the University of Colorado and Reinsurance Group of America (RGA) respectively, undertake a rigorous analysis of the profit potential of technical analysis. They show that their approach can identify persistent short-term trends in the movements of stock prices, and that investors can profit from these

trends. As Professor Zhou says, "The results of our research should be of great interest to both small and large investors. Utilizing the trends we identify can help investors potentially beat a buy-and-hold investment strategy."

Moving Average Timing Strategy (MATS)

The key to this research is the development of the MATS. A moving average (MA) is the sum of all past closing prices over the time period, divided by the number of prices used in the calculation. For example, in a 10-day moving average, the last 10 closing prices are added together and then divided by 10. By plotting a security's average price, the price movement is smoothed out. Once the day-to-day fluctuations are removed, traders can better identify the true trend and increase the probability that it will work in their favor.

For each portfolio under study, this research computes daily its 10-day average prices and uses the MA of the technical analysis to determine an investment timing strategy. When yesterday's price is above its 10-day MA price, an investor will buy or continue to hold the portfolio today. Otherwise, he will invest the money in the risk-free asset (the 30-day Treasury bill). Similar to existing studies on market indices, the paper compares the returns of such MA timing portfolios with the returns on the buy-and-hold strategy.

MATS beats the buy-and-hold strategy: The case of volatility decile portfolios

In order to implement their strategy, the researchers used data on ten volatility decile portfolios that are readily available from the Center for Research in Security Prices of the University of Chicago. The data set is

Paper: "A New Anomaly: The Cross-Sectional Profitability of Technical Analysis"

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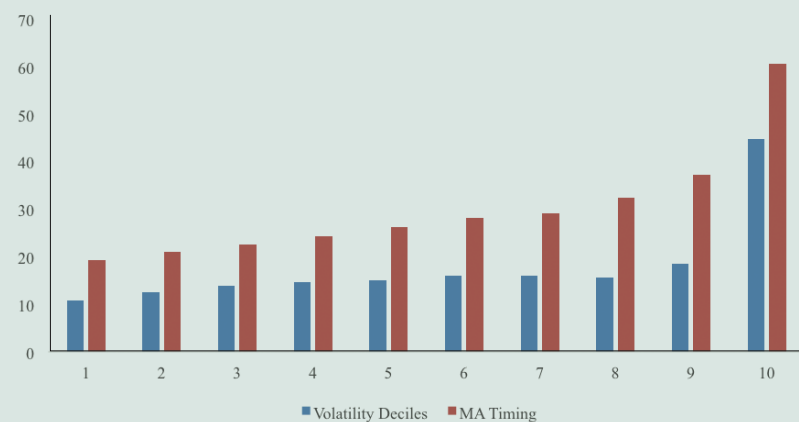
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constructed based on the New York Stock Exchange (NYSE) and Amex stocks sorted into ten groups (deciles) by their annual standard deviations, which are estimated using the daily returns within the year. Once stocks are assigned to portfolios, portfolio index levels (prices) and daily returns are calculated via equal weighting. The portfolios are rebalanced each year at the end of the previous year. The sample period is from July 1, 1963, to December 31, 2009. Researchers found that using the MATS on

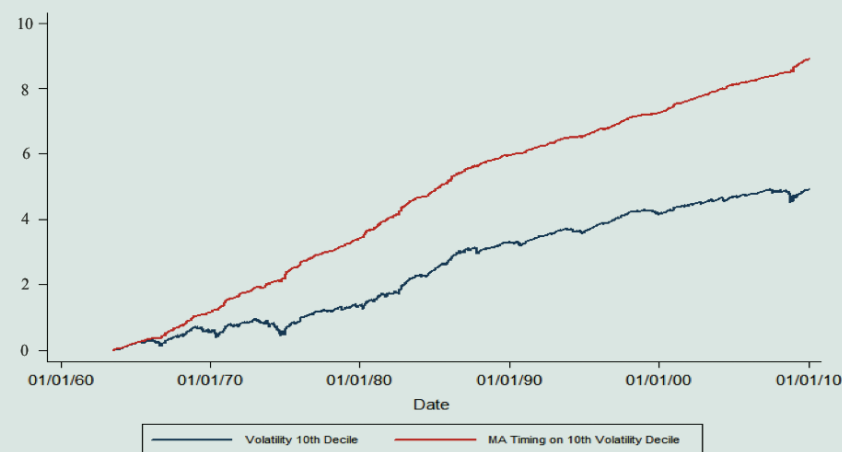
these portfolios often substantially outperforms the buy-and-hold strategy.

The graph below provides the average returns on volatility decile portfolios and their MA timing counterparts, and shows the performance of the MATS relative to the buy-and-hold strategy. The gains from using the MATS are substantial. Returns on the moving average portfolios (MAPs), which measure the performance of the MATS relative to buy-and-hold strategy, are mostly increasing with the volatility deciles, ranging from 8.42% per annum to 18.70% per annum.

Return on Volatility Decile Portfolios



Log of Accumulative Returns



To see the enormous impact on cumulative returns over time, the graph above details the wealth of investing one dollar into the tenth volatility (the largest decile) portfolio and one dollar with volatility timing.

The case of the size decile portfolios

The researchers also implement their strategy on size decile portfolios, which are portfolios sorted by firm size with stocks traded on the NYSE, Amex, and Nasdaq. Similar to the volatility deciles, the size deciles are ranked using the firm size at the end of the previous year and rebalanced each year. Once stocks are assigned to portfolios, portfolio index levels and daily returns are calculated via value weighting. The sample period is similar to the period used for the volatility decile portfolios (from July 1, 1963, to December 31, 2009).

The researchers computed the average returns on size decile portfolios and their MA timing counterparts. Again, the gains are outstandingly larger with these portfolios than with those implementing the buy-and-hold strategy. In this case, the average returns of the MAPs range from 9.82% to 20.11% per annum.

Examining different lag lengths

The paper also examines the robustness of the results using alternative lag lengths, of 20, 50, 100, and 200 days, for the moving averages. The paper finds that the abnormal returns are still highly economically significant, though they appear to be stronger for shorter investment horizons than over longer time horizons. For example, the abnormal returns range from 7.93% to 20.78% per annum across the deciles when $L = 20$, and remain large and over 5% per annum when $L = 200$.

The impact of transaction costs

Since the moving average timing strategy is based on daily signals, the researchers were interested in the frequency of trades and the resulting impact of transaction costs. In order to address this issue, they analyzed the average holding days of the timing portfolios and their break-even trading costs.

The researchers found that longer lag lengths result in longer average holding days because they capture longer trends. For example, the 10-day MA timing strategy has about nine to 10 holding days on average, whereas the 200-day MA timing strategy has average holding days ranging from 60 to 83. In addition, the differences in the holding days across the deciles increase with the lag length. The lowest-volatility deciles often have the longest holding days, whereas the highest-volatility decile often has the shortest holding days.

The results of our research should be of great interest to both small and large investors. Utilizing the trends we identify can help investors potentially beat a buy-and-hold investment strategy.

This approach relies on idiosyncratic information that does not wash away through portfolio aggregation.

The researchers also computed the break-even transaction costs in basis points. A break-even transaction cost is the value of the transaction cost at which the extra returns from the strategy become zero. Thus, the higher this number, the more profitable the strategy. Generally, the break-even transaction costs decrease across the volatility decile, with the lowest deciles having the highest break-even transaction costs, which is consistent with the patterns of the average holding days. Across different MA lag lengths, MA(50) has the highest break-even transaction costs, as high as 111.52 bps, while MA(10) has the lowest break-even transaction costs at about 28.80 bps. Overall, the break-even transaction costs are reasonably high, which suggests that the MAPs should still earn economically highly significant abnormal returns, even after considering actual transaction costs in real-world trading.

The source of the larger profits

Numerous studies have found that technical analysis is profitable, but it is important to understand the source of these large profits. Other studies rely mostly on market indices, which average out both the signals and the returns on various volatility portfolios. As a result, any pattern or profitability that shows up at the portfolio level can be multiplied by the aggregate index. By contrast, this research relies more on individual firms since it is known that individual firms are more volatile and more sensitive to information than the market. In other words, this approach relies more on idiosyncratic information that does not wash away through portfolio aggregation.

Overall, the break-even transaction costs are reasonably high, which suggests that the MAPs should still earn economically highly significant abnormal returns even after considering actual transaction costs in real-world trading.

Economic reasons that make technical analysis profitable

First, technical analysis may serve as one of the signals investors use to make trading decisions. In the real world, no investor has perfect information. By studying the feedback of the market, an investor can learn or verify whether his information or views are consistent with those of the market. When stocks are volatile, fundamental signals are likely imprecise; hence, investors may tend to rely more heavily on technical signals. To the extent that enough investors follow technical signals, they can have an important impact on the market, even in the absence of any fundamental news. Therefore, if technical signals are indeed valuable, this value will likely show up for high-volatility stocks rather than for low-volatility stocks. This explains why this study finds that the higher the volatility, the higher the abnormal returns that can be justified by an asset pricing model.

Second, theoretical models of technical analysis show that rational investors can gain from forming expectations based on historical prices, and the gain is an increasing function of the volatility of the asset. This is clearly in line with the empirical findings of this study.

Third, the MA investment strategy is a trend-following strategy, so its profitability relies on whether there are detectable trends in the cross-section of the stock market.

Studies in behavior finance show that stock price continuation is due to underreaction to public information, which arises from information uncertainty. Since information uncertainty is well approximated by asset volatility, it follows that the higher the volatility, the higher the abnormal returns.

Studies in behavior finance show that stock price continuation is due to underreaction to public information, which arises from information uncertainty. Since information uncertainty is well approximated by asset volatility, it follows that the higher the volatility, the higher the abnormal returns.


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Debunking the Accusations of Short Sellers' Impact on the Market

During the 2008 financial crisis, some regulators and journalists accused short sellers of illegitimate trading practices. In fact, the Securities and Exchange Commission (SEC) suggested that short sellers spread “false rumors” in an effort to manipulate firms “uniquely vulnerable to panic.” In contrast to this manipulation hypothesis, recent academic research suggests that short sellers tend to be informed traders skilled at processing information. Researchers at Washington University in St. Louis, UC San Diego, and the University of North Carolina investigated the source of short sellers’ trading profits and found that, on average, short sellers don’t manipulate price; they help inform and possibly correct overpricing.

There is strong evidence that high levels of short selling (trading for profit when stock prices fall) correlate to lower future stock returns. This return predictability suggests that short sellers, on average, have an information advantage over other traders. While return predictability suggests that short sellers do have an information advantage, it provides little insight into the source of this information advantage. Understanding this source can help us better understand how the capital market functions and also inform regulatory policy that seeks to either restrict or prohibit short selling. Recent academic research suggests that short sellers tend to be well-informed visionaries with a knack for interpreting company news and determining the underlying value of a company’s stock. In that capacity, short sellers may provide a benefit to financial markets because they help ensure that prices reflect information about a firm’s true fundamental value.

Investigating the source of the short seller’s advantage

In this research, Professor Ringgenberg and his coauthors investigated the source of short sellers’ trading advantage by combining a large database of corporate news articles with a large database of daily short selling activity. The resulting database allowed them to comprehensively examine the correlation between short selling and public news articles.

Existing theoretical models provided mixed predictions on the connection between news events and financial markets. A number of papers argue that news reduces information asymmetries in a way that levels the playing field. The premise is simple: News events make it more likely that all investors have access to the same information about a stock. Conversely, several papers suggest that public news events can lead to differential interpretations by traders based on the variation in traders’ skill. Rubinstein (1993) puts it succinctly, “In real life, differences in consumer behavior are often attributed to varying intelligence and ability to process information. Agents reading the same morning newspapers with the same stock price lists will interpret the information differently.” Consistent with the latter view, the authors found that the moments when a business earns publicity are the precise moments when successful short sellers gain an advantage over other traders.

Quantifying the connection between stock news and short selling profits

Existing academic research has shown that high short selling in a stock predicts lower future returns in that stock and higher profits for short sellers. However, Ringgenberg and his coauthors found that much of the profitability from short selling occurs when short sellers take positions soon after news is released about a stock. While

Paper: “How Are Shorts Informed? Short Sellers, News, and Information Processing”

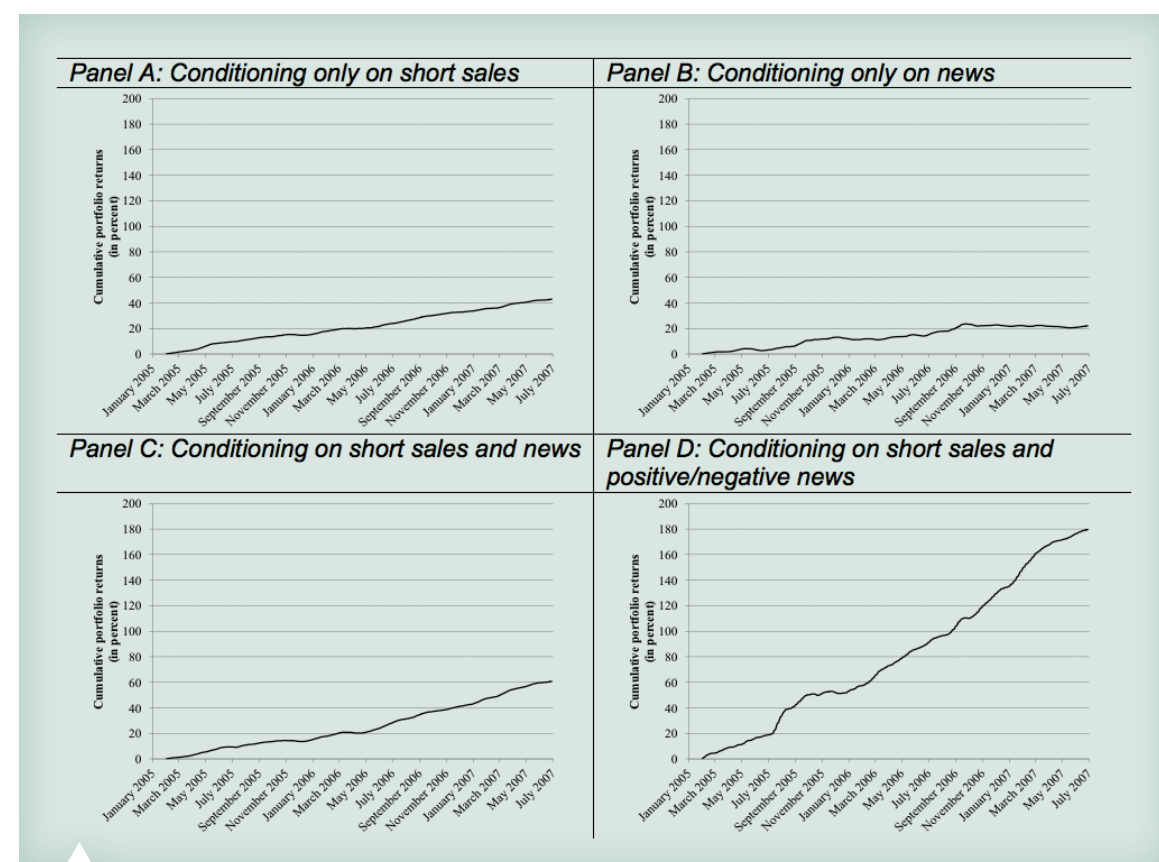
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Short sellers may not be the villains of the 2008 stock market crash after all.

Rubinstein (1993) puts it succinctly, “In real life, differences in consumer behavior are often attributed to varying intelligence and ability to process information. Agents reading the same morning newspapers with the same stock price lists will interpret the information differently.”

news events occurred on only 22% of the days in their data, they found that short positions initiated on these days accounted for more than 45% of the total profitability from short selling. In addition, they found that the connection between short sales and future returns was significantly stronger following the release of negative news. Since short sellers earn a profit when stock prices fall, this suggests that short sellers are skilled at interpreting which news articles contain information that could be damaging to a firm's future prospects. However, when they examined news articles that contained neither positive nor negative information, they found that the connection between short sales and returns was significantly weaker. Ringgenberg explains that news articles appear to provide short sellers with an opportunity to turn their skills into profits, “One of the things we found was that short sellers tend to be really good at processing publicly available information. If a news article comes out about a firm, it usually contains a lot of complex data. We found that short sellers tend to interpret this data correctly, and they do a good job of understanding what its impact is on the value of the firm. In that sense, short sellers actually provide a benefit to the market because they help prices represent the true fundamental value of a firm.”



Each day, portfolios are formed by conditioning on the previous day's level of short sales and/or by conditioning on the previous day's news events. These equal-weighted portfolios are then held for 20 days, and the portfolio formation process is repeated each day so that 1/20 of the portfolio is effectively rebalanced each day. The total daily portfolio return is thus the mean return calculated across the 20 separate positions that are open at each point in time.

The results shown above summarize the potential trading profits that could be earned by mimicking the trades of short sellers. Panel A shows the cumulative trading profits that could be earned by short selling stocks with high levels of short selling activity and buying stocks that have low levels of short selling. The line steadily trends upward, implying that such a strategy earns a small cumulative profit, which is consistent with the idea that short sellers have information about the future of a stock price. Similarly, Panel B shows that buying stocks immediately after good news is released and short selling stocks immediately after negative news also earns a small profit. However, in Panels C and D, the results suggest that short sellers do much better than these simple strategies, consistent with the idea that

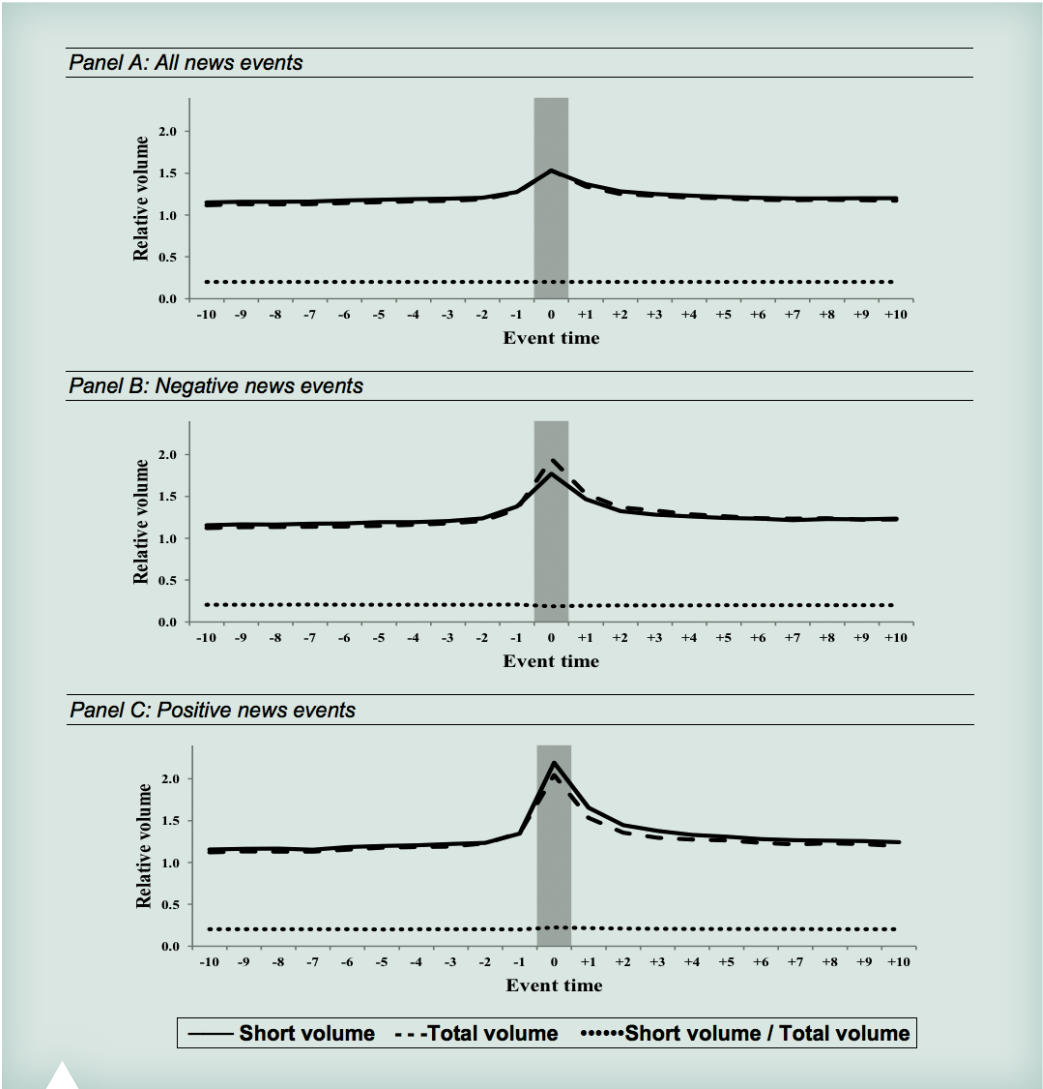
they are skilled at interpreting information. Panel C shows that a strategy of short selling stocks when short sellers have a large position immediately after a news article is released leads to significantly larger cumulative profits. Moreover, Panel D shows that short selling a stock when short sellers have a large position immediately after negative news is released earns even larger cumulative profits. Ringgenberg explains, “High short selling generally predicts that a stock price will fall in the future. Similarly, negative news articles also predict that a stock price will fall in the future. But when both happen, it suggests the stock price drop will be much more dramatic, consistent with the idea that short sellers can interpret negative news articles better than the average trader. Not all negative news articles imply that a stock price will fall, but short sellers

seem to be able to figure out which negative news articles are relevant. Thus, when short sellers choose to take a large position after a negative news article is published, it signals bad news for the future of a stock.”

Do short sellers anticipate news or use insider information?

Ringgenberg and his coauthors also investigated the timing of short sales to see if short sellers anticipated news articles, or perhaps even had access to inside information. While there is evidence that at least some short sellers

trade prior to certain events, the authors found little evidence that short sellers knew about information in upcoming news articles. The authors compared short selling in the days before a news event with trading by other investors, and found that short sales were not abnormally high before news was released. The graph below examines trading patterns around the release of news articles. It plots short trading volume, total trading volume, and the ratio of short volume to total volume in the days before, during, and after a news article. Interestingly, the figure shows that short sellers do not trade more



This displays daily short volume, total volume, and the ratio of short volume to total volume for the 10 days before and after news events. Short volume and total volume are scaled by their mean values over the period t-16 to t-30. Panel A displays volume around all news events (152,595 events), while Panels B and C display volume for negative events (34,780 events) and positive events (37,742 events), respectively.

than other investors prior to a news release. In other words, on average, short sellers do not trade on inside information; they trade *after* news is released.

Ringgenberg argues that short sellers, on average, do not have an unfair advantage, “When you look at what we found, the evidence suggests that short sellers do their homework and get rewarded fairly for doing their homework. And again, I think that suggests they provide a benefit to the market. If you look at the history of short sellers, they were some of the first vocal critics of Enron. Short sellers looked through the financial statements, questioned the accounting practices, and while they may have profited from Enron’s decline, they also helped us learn about the fundamental problems with the firm. Our research suggests that we can gain insight into a firm’s future problems by examining the trading behavior of short sellers today.”

Important implications for academics, investors, and regulators

Overall, the authors’ findings shed light on the evolution of informed traders in financial markets. Although many models of financial markets assume the existence of informed traders who have superior information about asset values, these models often beg the question: Where do these informed traders come from? Since short sellers are thought to be informed traders, the authors argue their study is a laboratory for understanding informed trading in general. From this perspective, the paper addresses a more fundamental question: How do informed traders become informed?

The answer is perhaps surprising. Instead of leveling the information playing field between informed and uninformed traders, news events appear to actually increase information asymmetries. The results suggest that short sellers tend to be skilled information processors who help prices incorporate pertinent information. Accordingly, the findings have important implications for academics, investors, and regulators seeking to understand the role that short sellers play in financial markets.



The most informed short sales are not from market makers, but from clients, and there is only weak evidence that short sellers anticipate news events. Overall, the evidence suggests that public news provides valuable trading opportunities for short sellers who are skilled information processors.

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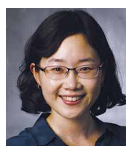
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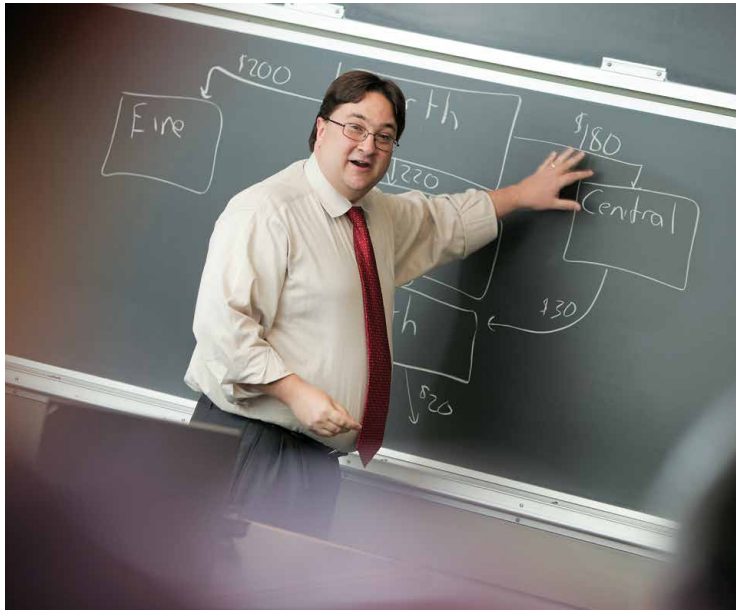
Zawadi Lemayian
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Xiumin Martin
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PhD, University of Missouri—Columbia
Research interests: financial accounting: voluntary disclosure, accounting information in assets valuation



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Research interests: corporate disclosure policy, financial reporting



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