Market proximity varies. Before electronic markets traders on an exchange’s trading floor could respond faster than those located off-site. Electronic markets have reduced the time differences between trading on- and off-site, but relative differences still exist. All else being equal, automatic trading programs that are located closer to an exchange’s matching engine can more quickly react to new information. Exchanges are well aware of this relationship and now sell colocation services: A firm can rent a server located at the exchange and host their trading algorithms on it.

In a new working paper titled Trading Fast and Slow: Colocation and Market Quality, Bjorn Hagstromer, Lars Norden, Ryan Riordan and myself evaluate how colocation effects market participants’ trading behavior and how overall market quality changes when there is a change in the colocation speed hierarchy. We consider the NASDAQ OMX equity market in Stockholm in the fall of 2012. We look to Sweden during this time period to understand colocation since in September 2012 the Stockholm NASDAQ OMX introduced a system enhancement that gave traders the option to upgrade to an even faster colocation connection. Subscribers to the new service reduce their latency by over 20% compared to the next fastest level of colocation. In addition, we are able to observe which firms sign up for and use which type of colocation. That is, we can observe user-level trade and quote data and know which accounts have colocated servers.

Who signs up for colocated servers? Many assume it is a service only used by high frequency traders – firms that are constantly buying and selling stocks with very short holding periods hoping to profit from small price fluctuations. We categorize traders using a standard trade-based definition of high frequency trading established by other academics and find that most high frequency trading firms are colocated and make up a majority of the colocation accounts. However, they are not the only types of firms signing up for the service. Other proprietary firms purchase colocation services but engage in trading activity other than high frequency trading. And a small fraction of firms that trade for their clients use colocation, but these firms are the exception. Colocated firms take and provide liquidity: they use both limit orders as well as marketable orders. About half of all trades on the exchange are generated by the 58 colocated firms.

The participants that upgrade to the fastest colocation option reduce their adverse selection costs and improve their inventory management ability, allowing them to increase their market share in liquidity provision. The non-colocated traders incur

Continued on page 2
higher adverse selection costs after the colocation upgrade. The increase in speed benefits the market making performance of the fastest collocated firms.

We also look at how firms use the new speed hierarchy to engage in active trades. We focus on using speed to trade on hard information, captured by the return process of index futures. We expect the speed advantage associated with colocation is driven by high frequency news such as changes in the limit order depth at different prices and not by occasional macroeconomic or firm fundamental news. We find that after a firm upgrades it uses the high-frequency information from the index futures returns more than others.

While understanding how speed influences firm-specific trading behavior is interesting, for policymaking one wants to understand how overall market quality is affected. We find that after the increase in the speed hierarchy market liquidity improves, both by making bid-ask spreads smaller and by increasing the depth of the limit order book. Volatility is unaffected.

What drives the improvement in liquidity? We find that after the upgrade the fastest trading firms change their inventory management. Beforehand, they provide liquidity on both sides of the order book most of the time, however when their inventory becomes high their trading activity changes. They tend to only offer liquidity on the side of the order book that reduces their inventory position. However, after the upgrade the fastest collocated firms’ inventory has less of an impact on their liquidity providing activity. The quicker pace of information allows the fastest collocated firms to relax their inventory bounds. When their inventory is high, now they continue to provide limit order quotes on both sides of the order book. Our results suggest that the liquidity improvements are related to the fastest traders’ increased market share and enhanced inventory management.

Markets continue to evolve. For the last decade markets have been getting faster and increasingly becoming automated. Generally the empirical academic literature finds that technology enhancements improve market quality. Because of the detailed data required to study the trading dynamics and impact of collocated firms little work has been done on the topic. With the user-level NASDAQ OMX Stockholm quote database we are able to peer into the activities of these firms and how they influence the overall market. A concern about fast traders has been that they impose adverse selection costs on slower traders, causing deteriorations in liquidity. We find that faster traders impose higher adverse selection costs on others, but that their liquidity supply contribution outweighs these costs. Fast traders getting faster appears to improve liquidity for all market participants.

More research is needed to understand the varying aspects of colocation and other recent market developments (high frequency trading, dark pools, etc.). Policymakers have to decide what rules, if any, are necessary to allow markets to more effectively allocate risk and capital. We hope that our analysis sheds light on where regulation may be useful and where it may do more harm than benefit.

Jonathan Brogaard is an assistant professor of finance at the university of Washington. He can be reached at: brogaard@u.washington.edu.

CROWDFUNDING

By Prof. Ethan Mollick

Crowdfunding has become an increasingly important topic to entrepreneurs, investors, regulators, and policymakers. Worldwide, crowdfunding raised $2.7B in 2012, and is growing at over 80% a year, according to research firm Massolution, and practice and policy have often outpaced research. Matters are not helped by multiple definitions of crowdfunding, which share in common only the idea that they involve a request over the internet for relatively small contributions of capital from a relatively large number of individuals to fund some sort of goal or project.

Some crowdfunding efforts, such as art or humanitarian projects, follow a patronage model, placing funders in the position of philanthropists, who expect no direct return for their donations. A second model, the lending model, is one in which funds are offered as a loan, with the expectation of some rate of return on capital invested.

A third approach, commonly called reward-based crowdfunding, is the most prevalent as of the time of this writing. In this approach, funders receive a reward for backing a project. This can include being credited in a movie, having creative input into a product under development, or being given an opportunity to meet the creators of a project. Alternately, reward-based crowdfunding treats funders as early customers, allowing them access to the products produced by funded projects at an earlier date, better price, or with some other special benefit. The “pre-selling” of products to early customers is a common feature of those crowdfunding projects that more traditionally resemble entrepreneurial ventures, such as projects producing novel software, hardware, or consumer products.

Finally, as broadly legalized in the US by the Jumpstart Our Business Startups Act, passed in April 2012, and previously legalized in other countries, crowdfunding efforts may also treat funders as investors.
giving them equity stakes or similar consideration in return for their funding. As of now, equity crowdfunding is still winding its way through the regulatory process, and still relatively rare worldwide, making up less than 5% of all crowdfunding investment, according to Massolution. Even in the absence of equity crowdfunding, investor model crowdfunding can take other forms. For example, funders might receive including a shares of future profits or royalties; a portion of returns for a future planned public offering or acquisition; or a share of a real estate investment, among other options.

Despite its sudden emergence as a major source of funds, crowdfunding is proving to be important. A relatively small proportion of individuals seeking crowdfunding are traditional entrepreneurs, as crowdfunding is increasingly popular in the arts and other fields (in 2012, 10% of Sundance films were). However, crowdfunded entrepreneurs have proven to be extremely innovative. Many of the most important projects in consumer electronics as of 2013 are funded by crowdfunding, including novel 3-D printers, electronic watches, video game consoles, and computer hardware. Further, some of the most successful crowdfunded projects were turned down by venture capitalists, before successfully raising funding from sites such as Kickstarter. Crowdfunding is likely to continue to evolve, but is viewed as an important and viable source for raising funds for innovative companies and projects.

In a series of papers, I and various co-authors have been examining the implications and outcomes associated with crowdfunding, using 48,500 projects on Kickstarter, which is by far the largest and most successful crowdfunding site, though it focuses only on donation and reward-based crowdfunding. Still, many of the lessons should be applicable to other forms of crowdfunding as well.

The first key finding is that the crowd seems generally to be “wise.” Not every project get funded, and those that are funded tend to be ones that show some of the signals of success that experts, such as venture capitalists, look for in companies that they invest in. Having teams with histories of success, demonstrating prototypes, and other factors that show that a team is of high quality seem to make projects more likely to succeed. Projects that aren’t as well prepared or thought out tend to fail: for example, a spelling error on the pitch for a project lowers the chance of success by 13%. That doesn’t mean that every project funded is a good one, but the crowd seems to rationally evaluate projects, rather than making decisions based solely on a herd mentality.

Relatedly, the data shows that fraudulent projects are rare. Almost all projects that were funded made every effort to deliver their results. Less than 4% of projects by number showed any signs of fraud, and less than 0.5% of projects by amount invested. I studied both fraudulent projects that were found out (the vast majority) and the few that appeared to get away with it. What was clear is that having lots of people interacting with projects and project founders is a fairly successful way of rooting out fraudulent or doomed-to-fail projects. The more eyeballs on a project, the better the chance that someone would identify a key problem and bring it to the attention of other investors. If there is less communication between funders and founders, or other changes to how crowdfunding works, it is possible that fraud may increase. After all, there are people trying to defraud crowdfunding investors, it is just that Kickstarter’s community detects them first.

However, most crowdfunded projects have delays in delivering what they promise. Over 75% of projects are delayed in delivering promised products. This isn’t surprising, given that most entrepreneurs are delayed in their efforts as well, but it is clear that most project proposers bite off more than they can chew. The more successful the project, the greater the delay.

Finally, crowdfunding holds out great promise for democratizing access to capital. Very few companies with female cofounders get VC funding (less than 2% in some studies). Among equivalent technology-centric crowdfunding projects, over 20% have female cofounders. Similarly, most venture capitalists only invest in companies in their region, while crowdfunding is less constrained. Our evidence suggests that crowdfunding extends the number of people who can get access to startup funds, and the number of people who can therefore have an opportunity to pursue their ideas.

Ethan Mollick is a professor at the Wharton School of the University of Pennsylvania. He can be reached at: emollick@wharton.upenn.edu

Papers are available on SSRN:


“... the crowd seems to rationally evaluate projects, rather than making decisions based solely on herd mentality.”
Following the recent financial crisis there has been a surge of interest in regulating consumer financial products. In the United States, the Dodd-Frank “Wall Street Reform and Consumer Protection Act” of 2010 established the Consumer Financial Protection Bureau to monitor and regulate mortgages, credit cards, and similar products. As one of the major regulatory responses to the financial crisis, in May 2009 President Obama signed the Credit Card Accountability Responsibility and Disclosure (CARD) Act, which was drafted to “implement needed reforms and help protect consumers by prohibiting various unfair, misleading and deceptive practices in the [U.S.] credit card market.”

In a recent research paper, Agarwal, Chomsisengphet, Mahoney and Stroebel (2013), we analyze the effectiveness of two key aspects of the CARD Act:

- Regulatory limits on the ability of banks to charge certain types of credit card fees (in particular late fees and over-limit fees), which became effective in February and August of 2010;
- Attempts to affect consumers’ repayment behavior by requiring credit card bills to provide clear information on the costs of only making the minimum payment, which became effective in February 2010.

The effectiveness of these types of policies has been hotly debated. Proponents of the CARD Act argued that credit card markets had become increasingly unfair with firms taking advantage of consumers’ behavioral biases (e.g., present bias and inattention) to earn large profits, often from unsophisticated consumers. Skeptics argued that limits on fees would be offset through increases in other prices (for example, interest rates) or would lead to a reduction in credit, and that “nudges” would have at best a limited impact on consumer behavior.

Agarwal, Chomsisengphet, Mahoney and Stroebel (2013) conducted a quantitative analysis of the effects of the CARD Act’s provisions using a unique dataset on over 150 million credit card accounts held by the eight largest U.S. banks. We find that regulations to limit fees were highly effective. Over-limit fees dropped from an annualized 1% of average daily balances (or ADB, which corresponds closely to total borrowing) to zero in February 2010. Late fees dropped by 0.5 percentage points in February 2010 and another 0.5 percentage points in August 2010, for a combined decline of 1 percentage point on a base of 2%. Figure 1 shows bank revenue...
through different fee categories as a share of average daily balances (borrowing volume) over time; vertical bars are drawn at the two CARD Act implementation dates. Combined across the various implementation phases, the CARD Act seems to have reduced overall fee cost by an annualized 2.8% of borrowing volume. This translates into annual cost savings for U.S. credit card users of $20.8 billion per year.

The regulatory limits on fees had the largest effect on the borrowing costs of consumers with the lowest FICO scores, who paid the highest fees before the CARD Act. For accounts with FICO scores below 620 (corresponding to the bottom 20% of the distribution), total fees dropped by about 14 percentage points on a pre-CARD Act base of 23.3 percent.

One key concern prior to the implementation of the CARD Act was that the declining revenue for banks due to lower fee income would be offset by increases in other borrowing costs, such as interest rates, or by declines in access to credit. Whether fee restrictions led to a decline in borrowing costs for consumers without affecting credit access is a key determinant of the effectiveness of consumer financial regulation, and an important factor to consider in designing future regulation.

We find no evidence in the data of an offsetting increase in interest charges or a reduction in access to credit. To remove the effect of general economic trends, we compare interest charges on accounts at banks that differed in their reliance on fee revenue prior to the CARD Acts implementation, and show that there is no differential change in interest rates around the CARD Act implementation across these banks. We argue that these findings are consistent with a model in which late fees and over-limit fees were not salient to consumers prior to the CARD Act, but in which banks compete on interest rates, and thus cannot just increase interest rates without losing customers to other banks. Taken together, we interpret these results as demonstrating that regulating “hidden fees” can bring about a substantial reduction in borrowing costs without necessarily leading to an offsetting increase in interest charges or a reduction in access to credit.

We also analyze the CARD Act requirement to report the interest savings from paying off balances in 36 months rather than only making minimum payments. In particular, the CARD Act mandated that monthly credit card statements report the cost savings achieved by repaying the current balance in 36 equal monthly payments relative to only making the minimum payment. The hope was that such disclosures might encourage borrowers to make larger payments than they would otherwise do, and help them reduce their debt balance faster.

Figure 2 shows the distribution of the payment amounts in the months before and after the CARD Act, showing the number of months it would take to repay the current balance when making the same monthly payment on the horizontal axis. We find that the “repayment nudge” increased the number of account holders making the 36-month payment value by 0.5 percentage points, with a similarly sized decrease in the number of account holders paying less than this amount. Overall, this “nudge” generated modest annual interest savings of about $71 million for U.S. consumers.

We hope that the findings in Agarwal, Chomsisengphet, Mahoney and Stroebel (2013) and other related research will help to inform how to construct effective consumer financial regulation going forward. ■

Johannes Stroebel is an assistant professor of finance at the Stern School of Business, New York University. He can be reached at: johannes.stroebel@nyu.edu.

References:

“FAIR COMPETITION” AT THE CONSUMER FINANCIAL PROTECTION BUREAU: THE CASE OF PAYDAY LENDING AND BANK OVERDRAFT PROTECTION

By Todd J. Zywicki

A cornerstone of the Dodd-Frank financial reform legislation was the establishment of the new Consumer Financial Protection Bureau (CFPB) within the Federal Reserve. Under Dodd-Frank, the CFPB has authority to regulate almost every consumer credit product in America and bring enforcement actions against virtually any provider of consumer credit products for “unfair, deceptive, and abusive” services or products. The CFPB was seen as a needed response to a glaring failure in the federal consumer financial protection regime, a failure that was said to be at the heart of the recent financial crisis. Heightened consumer protection is seen as the overriding mission of the new regulator.

A less-noticed component of the CFPB’s mission under Dodd-Frank is a requirement to preserve fair competition among different products by making sure that “comparable products” are treated consistently for regulatory purposes, regardless of whether they are offered by a bank, a nonbank lender, or some other provider of consumer financial products. The CFPB, in turn, has interpreted this mandate to require it to “[p]romote fair competition by consistent enforcement of the consumer protection laws in the Bureau’s jurisdiction.”

While the contours of consumer protection policy are fairly clear, how might the CFPB go about executing its mission
to “promote fair competition” among different products offered by different lenders? One area in which this mandate might apply would be to the regulatory treatment of payday lending and bank overdraft protection, as well as new bank products such as direct deposit advance products.

Payday lending and overdraft provide a good case study of the application of the CFPB’s mandate to preserve fair competition because they illustrate the promise of the CFPB in creating a coherent, integrated regulatory regime. To the extent that payday loans and overdraft protection are considered “comparable” products, this suggests that the optimal regulatory regime for overdraft protection will depend in part on a state’s regulatory regime with respect to payday lending, and vice-versa. In other words, if the two products compete with each other, the welfare effects for consumers from restricting access to overdraft protection will differ in states where consumers can access payday lending and in states where they cannot. How should the CFPB thus determine whether the two products are “comparable” products for which the CFPB should consider the impact on “fair competition” from regulation?

First, the profiles of consumers who use payday lending and bank overdraft protection are very similar. In particular, both products are used by similar customers—consumers with impaired credit and limited access to other higher-quality credit products such as credit cards. But at the same time they have greater access to financial products than those who use substitutes such as pawn shops. Available research suggests that consumers who use payday lending and overdraft protection do so because it is the best alternative available to them at the time. Moreover, they appear to be largely aware of the price of the products when they use them.

Moreover, the two products compete directly against each other. Ingenious research by Brian Melzer and Donald Morgan found that consumers choose rationally in deciding which product to use. Overdraft protection essentially offers flat-fee pricing—the consumer pays a flat fee (roughly $27-$31) regardless of the size of a transaction. So, whether the overdraft covers a $50 check or a $300 check the fee is the same. Payday lending, by contrast, is scaled to the size of the loan: typically $15 per $100 borrowed. This difference in pricing suggests that for covering smaller checks payday lending will be less expensive but that for larger payments the consumer should use overdraft protection. And in fact that's what they found: in states where payday lending is permitted, consumers make fewer overdrafts (suggesting that they are covering some of their bills by using payday lending instead) but that the average size of overdraft payments increases (suggesting that consumers are using payday loans to cover smaller payments and overdraft protection for larger payments). Similarly, research by Morgan, Strain, and Seblani found that in states where payday lending has been banned, bank revenues from overdraft protection rise, suggesting that consumers who previously used payday loans substitute to overdraft protection instead.

Finally, survey research finds that roughly 20-25% of payday loan users report that they would reduce consumer access to deposit advance products, a move which could lead to increased demand for payday loans, over which these regulators have no jurisdiction.

In considering new regulation on each of these products individually, the CFPB should be conscious to consider the effect of regulating one product on consumer use of other products. Regulating on a product-by-product basis rather than taking a systemic view can stifle competition among various products, resulting in higher prices and reduced choice for consumers. And if the consumer protection concerns are similar, consumers will be made unambiguously worse off: they will lose choices and competition, while advancing no coherent consumer protection goals.
$4.8 trillion and insurance companies, banks, and other private funds had another $24 trillion under management. Asset managers do oversee large amounts of capital, but that, by itself, does not make them systemically important. Not a single large independent asset manager received assistance from TARP or the Federal Reserve during the financial crisis, so it is reasonable to ask why asset managers pose a threat to financial stability.

The OFR report lists several factors that they believe makes the asset management industry vulnerable to financial shocks. The first is reaching for yield and herding. Reaching for yield occurs when interest rates are low and asset managers shift to riskier investments in search of higher yields. Herding occurs when different asset managers move together into the same popular assets. The report lists redemption risk as its second vulnerability. If investors believe there is an advantage to being the first to redeem, a run on managed assets could occur. The third vulnerability is from leverage. The report notes that asset managers can borrow at the firm level or fund level. The fourth vulnerability listed in the report is risk from management firms themselves. The OFR report claims “instability at a single asset manager could increase risks across the funds it manages or across markets....” The vulnerabilities listed in the OFR report seem to reflect a bank-centric perspective, and seem unlikely to be relevant for asset managers.

The critical vulnerability is redemption risk, or the risk of a run. In banks, that was a real problem, at least before deposit insurance. In the shadow banking system, it remains a problem. Mutual funds, and other managed assets are different. In a bank, a creditor is promised a specified amount. If the bank’s assets are not large enough to pay off the amount owed to all creditors, there is an incentive to withdraw funds before others do. Investors in mutual funds are due the net asset value of their investments, rather than a promised amount. If the net asset value falls, all investors receive less, not just those who are late to cash out. One could argue that a run could take place in a mutual fund if it held illiquid assets and fire sales would depress prices. This however, could give fund investors an incentive not to run. If an investor cashes out and a fund has to sell assets, the net asset value that the seller receives will reflect the depressed market prices of the assets. After a fire sale though, prices rebound. An investor who waits to sell may receive a higher net asset value.

Regulations currently in place also minimize redemption risk. The SEC requires mutual funds to hold at least 85% of their funds in liquid assets, defined as assets that can be sold at or near carrying value within seven days. These regulations may be part of the reason why mutual funds only experienced moderate withdrawals at the height of the financial crisis. Private equity funds and hedge funds that invest in illiquid assets are not regulated in the same way, but typically restrict investors’ redemptions.

The OFR report lists asset management firms as a potential source of risk. The management firm itself is not, however, a source of risk for the investors in its funds. Asset management is an agency business. An asset company administers funds, but they are separate from the manager’s assets. If the asset manager gets into trouble, they cannot touch the invested assets. If an asset manager goes out of business, it is relatively easy to hire a new asset manager to oversee a fund.

The FSOC’s concern, of course, is with systemic risks, not the risks of one asset manager becoming insolvent. To be systemically risky, problems encountered at the fund level need to be transmitted to other firms in the financial sector. The OFR
report lists two channels in which asset managers can transmit risks throughout the financial system. The first is exposure of creditors, counterparties and other market participants. The second transmission channel is fire sales of assets. A fire sale refers to asset managers selling securities at prices below their fundamental values to meet liquidity needs. This can cause a decline in net asset values for portfolios of other asset managers.

Neither of these channels seems important. In discussing the exposure of creditors, investors and other market participants, the OFR report mentions that banks provide a number of services to funds, including prime brokerage, custody service, and fund accounting. The report also mentions that pricing providers and credit rating agencies also provide services. These service providers do just that – provide services. They do not invest in the funds or asset companies. If an asset manager goes out of business, these service providers lose a customer, not their own capital. If losing a customer creates systemic risk, then every business in every industry is a source of systemic risk.

Fire sales also seem an unlikely transmitter of risk. An asset manager who is faced with a large number of redemptions may be forced to sell assets at depressed prices. Fire sales then supposedly transmit risk to other asset managers by temporarily lowering their net asset values and thereby bringing additional redemptions.

There is a counterargument that fire sales do not transmit risk to other asset managers, they make other funds safer. By definition, fire sales mean that assets are sold at artificially low prices. The institutions that buy them will, on average, profit from their purchases. A fire sale increases expected returns and lowers risk for the asset purchasers.

If asset managers were declared SIFIs, how would the Fed regulate them? Would they require living wills or annual stress tests? Neither makes any sense. Would they attempt to prevent asset managers from selling securities during periods of market stress in order to avoid fire sales? This is not far-fetched. Recall that in 2008 investors were prohibited from shorting financial stocks.

Ultimately, limiting sales of assets at fire sale prices keeps asset managers from doing what investors want. Asset managers add value by lowering trading costs and improving diversification. They may also add value by selecting undervalued securities, but that is debatable. In the end though, managed funds are acting for investors and doing what the investors would do themselves. A fund cannot invest in a class of assets or follow an investment strategy unless there is an investor demand for it.

So, if a fund is forced to sell assets to meet redemptions, it’s because investors want to get out of that asset class.

If there were no mutual funds, and investors were forced to manage their own portfolios, the risks described in the OFR report would still be with us. Individual investors herd and reach for yield. If they force asset managers to sell securities, they would sell the securities directly if they held them themselves. Individual investors also leverage their investments through margin and in other ways. If new regulations prevent asset managers from following certain investment strategies, individuals may choose to do them on their own.

The SEC is the primary regulator of asset managers, and should remain their primary regulator. Regulating asset managers as if they were banks will probably lead them to behave like banks. This means less regulatory diversification and therefore more systemic risk.

Paul Schultz is the John and Maude Clarke Professor of Finance at the University of Notre Dame and Director of he Center for the Study of Financial Regulation. He can be reached at: pschultz@nd.edu.