

# The Cost of Anonymous Lemons

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## The Cost of Anonymous Lemons

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**Abstract:** Rules that restrict information required in negotiated private transactions have spurred a vast increase in the scope of anonymous financial markets, particularly in the US. The subtle costs of the information restricting rules raise questions about the social value of “completing” anonymous markets that would not naturally survive and did not historically exist.

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*Abstract: Rules that restrict information required in negotiated private transactions have spurred a vast increase in the scope of anonymous financial markets, particularly in the US. The subtle costs of the information restricting rules raise questions about the social value of “completing” anonymous markets that would not naturally survive and did not historically exist.*

Continuous anonymous markets that can range from open outcry “pits”, to exchanges with specialist market makers, to ‘over-the-counter’ trading networks, provide well-known benefits such as immediate and low-cost transactions (Demsetz 1968). However, anonymous trading precludes measures such as direct inspection, reference checks, and post-purchase recourse widely used to reduce ‘lemon’ problems (Akerlof 1970) in private transactions. Instead, I argue, rules in many financial markets, such as restrictions on insider trading in stock markets, reduce information asymmetry by symmetrically restricting information. In other words, while anonymous trading naturally limits what buyers can know, the enabling rules increase everyone’s ignorance.

This argument questions claims that Schumpeterian innovation has increased the scope of anonymous financial markets. Rajan (2006), for instance, argued that new information and financial technologies developed in the previous thirty years had helped spur deregulation and institutional change. These changes had combined to move many financial transactions “from being embedded in a long-term relationship between a client and a financial institution to being conducted at arm’s length in a market.” In many parts of the world where relationship banking had dominated, arm’s length corporate bond markets and equity markets ha[d] expanded ... Increasingly only the most complicated, innovative, or risky financial transactions are embedded in relationships.” (Rajan 2006 p. 504). Rajan further reported that the changes had produced “beneficial real effects, increasing lending, entrepreneurship, and growth rates of GDP, while reducing costs of financial transactions,” ((Rajan 2006 p. 504) although they had increased the misalignment of incentives.

*Contra* Rajan, my historical and institutional analysis suggests that: 1) Information restricting rules, not “deregulation” that unleashed competitive forces, spurred the expansion of anonymous markets. 2) Public policy choices, rather than new technologies, spurred the imposition of these rules, rather than technologies spurring the rules. 3) Increasing the scope of anonymous markets by inducing symmetrical ignorance has subtle costs that can offset the more obvious benefits of anonymous markets.

### Exceptional Anonymity

Competing, unconditional bids and offers for standardized goods or claims (such as copper plates or US government bonds) that may be made on behalf of anonymous buyers and sellers, self-evidently support immediate, low-cost transactions in anonymous markets. But these very features also self-evidently require restricting information about specific items and sellers and exclude recourse to buyers who later regret their purchases.

These information and recourse restrictions have historically limited anonymous markets in tangible goods

This paper generalizes – and to some degree clarifies -- propositions in two earlier papers: Bhidé (1993) on stock market liquidity and Bhidé (2017) on securitization. The earlier papers are longer and contain more institutional and historical detail and supporting references.

mainly to metals and agricultural commodities where a few, easily verifiable specifications can sustain continuous arm's length trading. For instance, buyers of copper care about purity, not who mined the metal or where. Exchanges can therefore sustain anonymous markets in copper by specifying purity and some delivery terms acceptable to many buyers and sellers. Moreover, copper exchanges provide benefits that offset the inflexibility of standardized terms. Transactions do not require time-consuming or costly negotiation. Buyers can reduce the risk of idiosyncratic supply disruptions that might arise from an accident at a particular mine; conversely, sellers are protected from the bankruptcy of a particular buyer.

However, easily standardized commodities are exceptional. When goods have many valued attributes, buyers face considerable problems in verifying quality and fit with their preferences. Transactions therefore require some combination of direct examination, knowledge of seller reputations and credible after-sales recourse. Houses, for example, aren't purchased over trading screens by the square foot the way copper is bought by the ton. Rather, homebuyers assess properties for a good fit with their preferences and make bids contingent on a home inspection. Branded products sold in sealed packages cannot be examined. But they are usually sold by reputable producers who typically offer 30-day returns and extended warranties. And, the examinations, reputations, and warranties that enable mutually beneficial transactions in complex goods preclude anonymous trading.

Similarly, anonymous markets in financial claims are most easily sustained when buyers care mainly about a few easily verifiable terms and therefore do not worry about concealed adverse information. For instance, traders of quintessentially "information insensitive" government bonds mainly care about the coupon and time to maturity. This is not the case however for claims whose attractiveness depends on complex attributes. Here, as with residential properties, the value of comprehensive case-specific information in assessing the risks and returns – including the risks of buying from better informed or overconfident issuers and sellers – discourages unconditional sight-unseen bidding. For instance, investors would not normally purchase shares in a startup without access to the confidential information that startups provide only to credible investors, such as reputable venture capitalists, under non-disclosure agreements. Private transactions can also include provisions whereby payments to sellers partially depend on the subsequent achievement of milestones.

Investors in some financial claims accept restrictions on information to secure the benefits of immediate, low cost trading in anonymous public markets. For instance, purchasers of publicly traded corporate bonds forgo the confidential information that borrowers provide to lenders in securing bank loans. However, certification by underwriters who have access to confidential information (which we can think of as "indirect examination") provides some comfort to investors. Bond covenants also provide some post-purchase recourse; some bonds even include put options.\*

## **Fragile Origins**

Anonymous financial markets originated in English government bonds issued in the 1690s to fund a war against France. Information asymmetry problems in tradable government bonds were inherently low, because governments could levy tax and issue money; indeed, unlike bank loans made to private borrowers, bonds issued by credible governments were not – and still are not – backed by collateral or have covenants. "Covered" bonds backed by real estate were created by Frederick The Great in Prussia in 1769 after the Seven Year War (1756–1763) and in Denmark in 1795 after the Great Fire of Copenhagen.

In the United States most publicly traded securities consisted of government issues until the 1870s: The first insider trading scandal, implicating William Duer an Assistant Secretary of the Treasury in the 1790s,

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\* At the same time, markets in corporate bonds are not as liquid as markets in US government bonds, even though the government does not provide confidential information to underwriters or include covenants in its bonds.

involved government bonds. The financing needs of nineteenth-century railroads – and, later, other large industrial enterprises – then made raising capital from diffused providers a necessity. This, in conjunction with a highly fragmented banking system in the US, helped spur the development of a market in railroad and industrial bonds and underwriting firms that certified and sold the bonds. Certification by underwriters was not always effective however and the bond market was prone to periodic panics and collapses.

US stock markets in the 19<sup>th</sup> and the first decades of the 20<sup>th</sup> century were narrower and more fragile. “Prior to 1920,” Baskin writes, “there were no large-scale markets in common stock. . . . Shares were viewed as akin to interests in partnerships and were simply conveniences for trading among business associates rather than instruments for public issues” (Baskin 1988, 222). Promoters of canals and railroads – the few businesses organized as joint-stock companies – restricted ownership to known investors whom they believed to be “both wealthy and committed to the enterprise.” The public at large perceived equities as “unduly speculative”, and “tales of the South Sea fiasco evoked instant horror” (Baskin 1988, 216).

Carol Vinzant (1999) similarly observes that through the early twentieth century, the stock market was considered “a shadow world in which only the initiated could find their way.” Most companies raised money from the public through bonds: of the 1,200 public issues listed in 1900, “fewer than a quarter were stocks, and nearly half of those were railroads.” Emerging high technology companies of the time relied mainly on private funding. DuPont family money helped Durant (and later Alfred Sloan) build General Motors. Investors represented by J.P. Morgan helped Vail build A.T.&T. and Coffin create the modern General Electric.

## Securities Acts

Between September 1, 1929 and July 1, 1932, stocks listed on the NYSE lost 83 percent of their total value, and half of the \$50 billion of new securities which had been offered in the 1920s proved to be worthless (Seligman 1982 p. 1). The Crash, according to the Securities and Exchange Commission (SEC), brought the "country's business and financial systems to the verge of disaster;" it followed a decade in which some 20 million shareholders "took advantage of the postwar prosperity and set out to make their 'killing' on the stock market," but gave “little thought to the inherent dangers” (SEC 1984 p. 7).

The Crash led to landmark securities legislation in the form of the Securities Act and Securities and Exchange Act, as well as the creation of the Securities and Exchange Commission. A legal expert at the time observed that "until the advent of the New Deal, the law relating to security markets has been characterized by gradual growth rather than by abrupt change... [W]hat has heretofore been evolution has become revolution" (Meyer 1934 p. 11). The response to earlier panics had been to let the victims bear the consequences and prosecute frauds and cheats. The Securities Acts, however, sought to protect investors before they incurred losses in three ways: ensuring adequate disclosure by firms to investors, discouraging the unfair use by insiders of information which is not made public (Meyer 1934 p. 11) and eliminating "manipulation and sudden and unreasonable fluctuations of security prices" (Section 2 of the 1934 Act).

*Disclosure rules* required issuers of publicly traded securities to file registration statements containing information about the directors, officers, underwriters, and large stockholders (and their remuneration), the organization and financial condition of the corporation, and certain material contracts of the corporation. Issuers were also required to file annual and quarterly reports, whose form and detail could be prescribed by the SEC (Meyer 1934 p. 19-20). The disclosure regulations were backed by a variety of enforcement devices: the securities laws provided criminal penalties for willful material false or misleading statements, and empowered the SEC to suspend or withdraw the registration of securities for failure to comply with the reporting provisions of the Acts.

*Insider trading rules* of the Securities Exchange Act sought to prevent "the unfair use of information" by

officers, directors, or major stockholders. Accordingly, the Act required every officer, director, and 10% equity owner to report their ownership of all equity securities. The Act also provided that any short-term profits realized by such persons (i.e., due to purchases and sales within any six-month period) shall "inure to and be recoverable by" the company. By most accounts, the SEC has zealously prosecuted the insider trading provisions of the 1934 Act, and, arguably, has expanded the scope of its provisions. For example, in the 1966 Texas Gulf Sulfur case, the SEC first asked a federal court to order outsiders to make restitution to shareholders who sold them stock (SEC 1984 p. 46). In the 1980s, the SEC began to seek jail terms for insider trading and the 2009 Galleon case broke new ground through the use of wiretaps.

*Rules to eliminate market manipulation* in the 1934 Act prohibited several practices (such as sham transactions) outright and subjected others (such as stop loss orders and short sales) to regulation by the SEC. The SEC could also close exchanges that did not adequately enforce anti-manipulation rules. The SEC soon used its powers to close nine stock exchanges, and, in the late 1930s, Chairman William O. Douglas virtually threatened the NYSE with takeover by the SEC if reforms were not instituted (Phillips and Zecher 1981, p. 12).

Disclosure rules, backed by criminal penalties, increased the uniform availability of reliable information. But the rules did not require disclosure of confidential information and plans, which if made public would harm stockholders' interests. And insider trading rules that forbade trading on material non-public information discouraged investors from expending resources to secure confidential information. At the same time, the expectation of unmanipulated trading under stringent disclosure and insider trading rules encouraged investors to purchase widely diversified portfolios. And wide diversification reduced incentives to investigate the prospects of individual companies. In other words, securities rules helped reduce information differentials by symmetrically reducing information production.

Securities rules could not however reduce lemon problems in the "primary" issuance of stocks to the same degree as they could in the secondary trading of previously issued securities. Inevitably, issuers have material non-public information. They also have the incentive to issue stocks when they believe prices are unduly elevated – the securities laws only discourage outright fraud or hiding material risks. Investors who expect well-timed issuance will in turn be more reluctant to buy newly issued stock. The protections of the securities laws notwithstanding, this lemon problem will tend to "bunch" stock issuance to "windows" of unusual investor optimism. However, because stocks don't have a termination or maturity date, even opportunistic issuance can produce a "float" of interchangeable claims that can sustain active trading in secondary markets. (The lemon problem of primary issuance is less acute in high-grade bonds of blue-chip companies; because outside investors can more confidently assess creditworthiness, issuance of bonds – which do mature --- tends to be more routine.)

## **Indications of Effectiveness**

In 1984, the SEC celebrated its 50th anniversary. Its then-Chairman John Shad wrote that when the agency had been created, in the depths of the depression, the nation's securities markets were demoralized. "Today," he observed, "they are by far the best capital markets the world has ever known -- the broadest, the most active and efficient, and the fairest. The Securities and Exchange Commission has played an important role in the restoration of public confidence ...[and] has discharged with distinction its mandate to protect investors and maintain fair and orderly markets [SEC (1984) p.1].

Shad's claim could not be definitively validated – and the SEC had not made stock issuance in the US routine. As Baskin (1988, p. 213) reported four years later, large public corporations in the US, as in all major industrialized nations, issued common stock to raise funds "only in the most exigent circumstances", and that "funds raised by new equity issues – especially by established firms – appear[ed] to be relatively insignificant." Nonetheless, the limited liquidity and breadth of many European markets, where securities

regulation was relatively weak, bore out Shad's claims.

Transaction costs in the U.S. through the 1980s were half the level of Germany, Italy, and Japan which were the next most liquid stock markets. And, restraints on insider trading, disclosure requirements, and manipulative practices were much weaker in the less-liquid markets outside the U.S. In the Belgian market, described as 'a sad, largely deserted place' [Bertoneche (1984)], insider trading was considered unethical but not illegal. Most other countries in Europe did not have statutes against insider trading until the European Community directed member countries to adopt a minimum level of shareholder protection laws by 1992. U.S. occupation forces instituted laws against insider trading in Japan after World War II, but officials exercised 'benign neglect' of the rules [The Economist (5/19/90, p. 91)].

After European and other regulators adopted U.S.-style insider trading and other investor protection rules, those stock markets caught up with U.S. stock markets in breadth and depth. There is nothing to suggest, *contra* Rajan (2006) that information technology played any role either in first holding stock markets outside the U.S. back or then in spurring their catch up.

## Sustaining Securitization

As other countries started adopting US style securities rules and their stock markets started catching up in the mid-1980s, credit tradable in anonymous markets in the U.S. began a transformative expansion. Previously, most tradable private debt had comprised obligations of large creditworthy companies (where, as in government bonds, concerns about information asymmetries are naturally lower). After the 1980s it included significant amounts of securities created by pooling residential mortgages, credit cards, auto loans, and other such consumer debt. The stock of such tradable "securitized" debt outstanding grew from about \$800 billion in 1987 to over \$4.5 trillion in 2001, and, in spite of a decline after the 2008 crisis, recovered to about \$8.3 trillion in 2014.

Secondary trading in securitized debt benefitted from securities rules discussed earlier but primary issuance – a prerequisite for secondary trading -- posed distinctive problems. Securitizing small loans, that regularly mature or get repaid, requires a routinized, high-throughput system. Organizations that produce securities cannot rely on their opportunistic issuance in favorable markets (unlike issuers of common equity). They must also originate many loans to produce an issue with tradable "float." For instance, to produce a \$1 billion float —now considered the minimum necessary for a tradable issue—requires pooling hundreds of thousands of credit card obligations.

Producing ("originating") the underlying loans itself poses information asymmetry problems, because loan applicants can exaggerate their creditworthiness. But, hiring and controlling a staff to screen hundreds of thousands of loan applications poses organizational challenges. And, because turnover of the lending staff can be high, their screening mistakes can be unpredictable, especially for outside purchasers of securitized loans. Moreover, good screening of loan applications increases the concerns of outside purchasers that loan originating organizations will selectively securitize their bad loans. In other words, reducing information asymmetries in loan screening (by securing more information about the ultimate borrowers) increases the information asymmetry problems of issuing securities to investors.\*

Using statistical models to screen loan applications can reduce reliance on the quality and diligence of front-line lending staff. But models can't solve the information asymmetry problems of issuance: securitizing organizations may exaggerate the accuracy of their models -- or use statistical screening to sell just high-risk

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\* This problem does not arise with European "covered bonds" backed by mortgage loans. Banks who originate the mortgages have full responsibility for interest and principal repayments on the bonds and therefore have no incentive to "keep" their good bonds to themselves. Covered bonds are thus simply safer versions of traditional industrial bonds (which are usually not secured by specific collateral.)



loans. A private equity investor negotiating the purchase of a loan portfolio can ask to check the models, applications and loans. But this direct examination is impossible in selling securitized loans to diffused public investors.

The US rules government's fair-lending rules and mortgage guarantee programs have helped reduce this lemon problem by encouraging originators of mortgages and other consumer loans to rely on credit scores (commonly referred to as FICO scores) produced by credit bureaus.

*Fair lending rules.* Bank regulators enforcing the 1968 Fair Housing Act and 1974 Equal Credit Opportunity Act subject lenders who use "judgmental" systems or "customized" statistical credit scoring models (instead of FICO scores) to more scrutiny. Regulators worry that subjective judgments may reflect unwarranted biases and customized models may contain variables, such as education, that could correlate with prohibited factors like race, ethnicity, and gender. Customization isn't prohibited but it can require lenders to provide a "business justification." Regulators also subject lenders who permit "discretionary overrides" of credit scores to more scrutiny especially if lenders allow staff in their branches (rather than at headquarters) to overrule scores.

My interviews suggest that these fair-lending rules have significantly influenced lending practices, particularly of large banks whose size alone tends to attract regulatory attention. Thus, banks with nationwide branch networks do not allow any discretionary overrides of score results by local staff. And while some large lenders may customize their scoring models (rather than rely on FICO scores), they typically take (or claim to take) measures to exclude or limit the influence of variables that could have "disparate impact" under fair-lending rules.\*

*Mortgage guarantee programs.* U.S. government-"sponsored" agencies, notably Fannie Mae and Freddie Mac, now guarantee most new residential mortgages in the U.S. against defaults by borrowers. The guarantees in turn have supported the issuance of trillions of dollars of mortgage-backed securities. But because very little capital supports the guarantees, the credibility of the protection that Fannie and Freddie offer investors depends on their capacity to limit loan defaults. The government, widely regarded as a backup guarantor, also has reason to worry about default rates.

Until the mid-1990s, the agencies used "thick books of underwriting guidelines" that were "stringently designed" to screen mortgages originated by brokers and banks for "acceptable" quality. Yet, unscrupulous originators found "procedural loopholes" and the costs and time required to verify applications limited the loans guaranteed (Poon 2009 p. 661-663).

During the mid-1990s, the agencies automated screening to increase mortgages guarantees by cutting costs and times, and to prevent racial discrimination by "removing subjective reasoning" (McDonald et. al, 1997 p. 861). And because the complexity of existing rules made computerizing them difficult, the agencies developed an algorithm based on FICO scores to simplify screening of applications [Freddie Mac (1996)].

By 1997, Fannie Mae reported "a significant reduction in time and effort" spent on processing loans (McDonald et. al, 1997 p. 882); and the net issuance of mortgage-backed securities guaranteed by Fannie Mae and Freddie Mac jumped from \$127 billion in the first half of the 1990s to \$314 billion in the second half of the decade. The example set by government agencies—and fair lending laws that applied to housing as well as consumer credit—also encouraged the use of FICO in evaluating mortgages that weren't eligible for Fannie Mae and Freddie Mac guarantees, such as "jumbo" mortgages. In this way, FICO scoring

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\* Why then do credit card issuers even bother developing proprietary models with variables that only have a modest impact on outcomes? My interviews suggest that card issuers believe that, on the margin, including more variables reduces losses on the high-risk tranches issuer usually retain to mitigate information asymmetry concerns. Issuers also hope that if they can convince investors about the superior quality of their models, they may realize slightly higher prices for their securities. They balance this hope, however, against the risk of regulatory problems if superior scoring produces "disparate impact."

became “hardwired throughout the [mortgage] industry” [Poon (2009) p. 661].

The use of credit-bureau scores to discourage discriminatory lending and evaluate mortgage applications was itself predicated on credible credit reporting promoted by lawmakers. In the 1950s and '60s, as Bank of America and Citibank started marketing credit cards in states where they weren't yet allowed to have branches, they used credit bureau scores to screen applications. Growing use of these scores by card issuers prompted the US Congress to enact the Fair Credit Reporting Act of 1970. The Act, which forbade lenders from providing inaccurate information to credit bureaus and required the bureaus to ensure maximum possible accuracy helped increase confidence in credit-bureau scores, which promoted even wider use of the scores to extend credit.

And, relying on outsourced scores and credit analysis helped reduce lemon problems of issuing securitized loans. By restricting the information loan originators themselves secured and analyzed – and by forgoing discretionary overrides based on local knowledge of individual applicants -- issuers could credibly tell investors almost everything of the little they knew. And less accurate credit screening would not worry buyers of securitized loans provided they received an interest rate commensurate with the symmetrically reduced information.\*

## Indications of FICO promotion effects

Securitization has lagged in Europe just as stock trading once had before regulators adopted US style rules. In 2001, the amount of mortgage-backed and asset-backed securities outstanding in Europe was less than 6% of the amount outstanding in the US. Although there was catch-up in the credit boom (now often considered nearly a mania) preceding the 2008 crisis, from 2009 onwards more mortgage-backed and asset-backed securities were retired in Europe each year than were issued. By 2014, European mortgage-backed and asset-backed securities outstanding had fallen back to below one-fifth of US levels, amounting to a difference of more than \$5 trillion.

Bernanke and Lown (1991) argued that the “main impetus” for securitization were rules that increased the capital costs of holding loans to maturity and, as mentioned, Rajan (2006) suggested that new technologies had spurred securitization. But capital requirements and technology cannot explain the large difference in European and U.S. securitization: capital requirements were virtually identical until 2004 and the same technology was available on both sides of the Atlantic. Nor can a general aversion to market-based debt explain the size of the gap: in recent years, proceeds from the issuance of investment-grade corporate bonds in Europe have exceeded proceeds from US issuance and proceeds from “high-yield” corporate bonds issued in Europe have not lagged to the same extent as they have in securitized debt.†

High securitization in the U.S. is consistent, however, with differences in information production rules. European rules do not encourage lenders to rely on scores calculated by credit bureaus. Historic and contemporary rules in Europe have effectively, if unintentionally, discouraged the development of U.S.-style credit scoring. Therefore, generic credit scores have not become popular in Europe despite the efforts of the

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\* Additionally, generic scoring has facilitated the securitization of mortgages and other consumer loans that aren't guaranteed by government agencies by making the securities more fungible and easier to analyze. “Before the widespread use of FICO scores,” according to credit analysts Mark Adelson and Elizabeth Bartlett, “investors and other market participants faced greater difficulties in comparing the riskiness of loans... Although each lender had a classification system for borrowers or loans (e.g., quality grades A, B, C, and D), the classification systems differed from one company to the next. FICO scores provided an independent and broadly applicable measure of borrower credit quality” [Adelson and Bartlett (2004)].

† And, as mentioned, European banks have a very long tradition of issuing bonds backed by mortgages. Crucially however the bonds are the liabilities of the issuing banks, not of a special entity or trust created to pool and sell securitized interests in the mortgages.

European subsidiaries of U.S. credit bureaus to propagate their use. The absence of U.S.-style fair-lending rules has allowed European banks to use more customized scoring models that use proprietary customer information as inputs. Unlike their U.S counterparts, many large European banks allow branch staff to override their credit scoring models and some even require their local staff to review scores. But, as mentioned, good screening of loan applicants makes issuing securitized loans harder. Investors who worry that more information about borrowers gives banks more scope for selectively securitizing bad loans will demand commensurately high rates. In fact, my simulations (Bhidé 2020) suggest the large information asymmetry “penalty” that potential buyers require may preclude securitization of well-screened loans.

The same argument also helps explain why differences in the securitization of small-business loans between the U.S. and Europe have been trivial. Fair-lending rules in the US that support the widespread use of consumer scores do not apply to business borrowers. Unlike Fannie Mae and Freddie Mac, the U.S. Small Business Administration does not mandate the use of generic bureau scores for the loans it guarantees. And, because the information asymmetry problems that hinder securitization are as severe in the U.S. as in Europe, small-business loans account for less than 1% of securitized U.S. debt outstanding.

## Costs of symmetric information restriction

Rules that enable anonymous trading of financial claims by symmetrically restricting information – and the tradability itself – also impose a variety of costs.

Impaired governance is an often-overlooked consequence of anonymous stock markets. Insider trading rules for instance discourage investors from playing an active “insider role” that would compromise the liquidity of their holdings, as Roe (1990) points out. Likewise, unmanipulated low-cost stock trading encourages passive indexation of portfolios. But, active inside stockholding is crucial for good governance because evaluating a firm’s management is, necessarily, highly subjective. Stockholders must weigh observed outcomes against their *guesses* about what would have happened if managers had followed different strategies. Active stockholders who obtain confidential data and maintain close contact with managers enjoy obvious advantages in making these subjective evaluations.

Monitoring by bondholders who do not have access to confidential information is also more limited than in lending by banks. Reduced monitoring is however less consequential for bondholders promised fixed payments than for stockholders whose residual claims are more sensitive to what managers do. Therefore, as mentioned, high quality bonds are naturally more tradable in anonymous markets.\*

Rules that help securitization by inducing reliance on generic FICO scores (instead of customized models) while limiting local review of the scoring results, will tend to increase unwarranted lending and defaults as research on mortgage lending by Rajan, Vij and Seru (2014) suggests.† Increased defaults in turn will tend to increase the rates charged to borrowers, likely contributing to a multi-decade high rate of 17.8% on credit card balances in July 2019 when rates on risk-free government debt were in the low single digits (Armstrong 2019). Therefore, while fair lending rules (and reliance on bureau scoring) have likely increased lending to minorities and women [Ryan, Trumbull, and Tufano (2011 p. 482-3)] such rules have also likely increased

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\* The absence of confidential information and joint-action problems created by diffused ownership do, however, hinder ongoing adjustments, such as waivers or modifications of covenants. These and other tradeoffs of issuing corporate bonds instead of borrowing from banks have also been extensively analyzed in Townsend, 1979; Diamond, 1984; Rajan, 1992; Petersen and Rajan, 1994; 1995; Berger and Udell, 1995; Cole, 1998; Elsas and Krahenen, 1998; Boot, 2000; Degryse and van Cayseele, 2000; Berger and Udell, 2002; Agarwal and Hauswald, 2010.

† Rajan, Vig, and Seru’s (2014) finding that purely statistical lending leads to more defaults clearly supports the hypothesis that relying on generic scores increases lending mistakes. Other researchers, mistakenly in my view, attribute the higher defaults to willfully “lax screening” of securitized loans rather than to rules that encourage loan originators to stick to FICO scores—and thereby facilitate securitization.

the indebtedness of overconfident borrowers and required creditworthy borrowers (including minorities and women) to pay higher rates.

## **Concluding Comments**

New technological antidotes to information asymmetry problems have given buyers more scope to examine goods, investigate track records of sellers, and secure post-purchase recourse. For instance, online marketplaces such as Airbnb provide pictures of the lodgings offered and ratings of the hosts. Amazon's marketplace provides pictures, ratings and swift returns. But purchases made from remote and previously unknown sellers on these innovative "platforms" contrast sharply with anonymous transactions without "prior personal examination of the goods" which Demsetz (1968 p. 50) calls a distinguishing characteristic of organized public exchanges.

Technological advances do support the anonymous trading and issuance of financial claims, however. Computerized algorithmic and high-frequency trading now accounts for more than half of US stock trading volumes (Seth 2019). Bank and non-bank lenders now mail more than 3 billion automated offerings of credit cards and other personal loans to US consumers each year and websites offer "instant approval credit cards". This use of technology to increase trading volumes and issue more anonymously tradable securities was not foreordained. Like their European counterparts, US banks could have developed customized credit-scoring algorithms to more precisely identify creditworthy borrowers limiting the growth of securitized consumer credit. Instead, securities, fair lending, and credit reporting laws, and government-sponsored housing finance agencies favored more active and complete anonymous markets. Yet, given the many direct and indirect consequences, the overall public benefit of reducing information along with information asymmetries is debatable.

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