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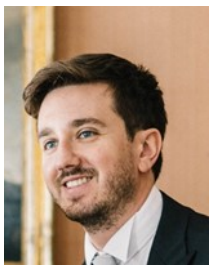
Technology and Asset Liquidations: Evidence from Real Estate Collateral



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This paper investigates how technology affects collateral liquidity in mortgage markets. Exploiting the staggered introduction of electronic bidding across Florida's counties, I show that foreclosure auction success increases by 28%, and price discounts shrink by 45%. Electronic auction winners are more likely to be local non-professionals, who are found to resell acquired properties less often ex post. I also find that credit supply expands and mortgage loan rates decrease, consistent with lenders incorporating lower foreclosure costs into loan origination decisions. Overall, this evidence suggests that technological modernization can improve allocative efficiency, deepen liquidity, and foster financial inclusion in real estate markets.

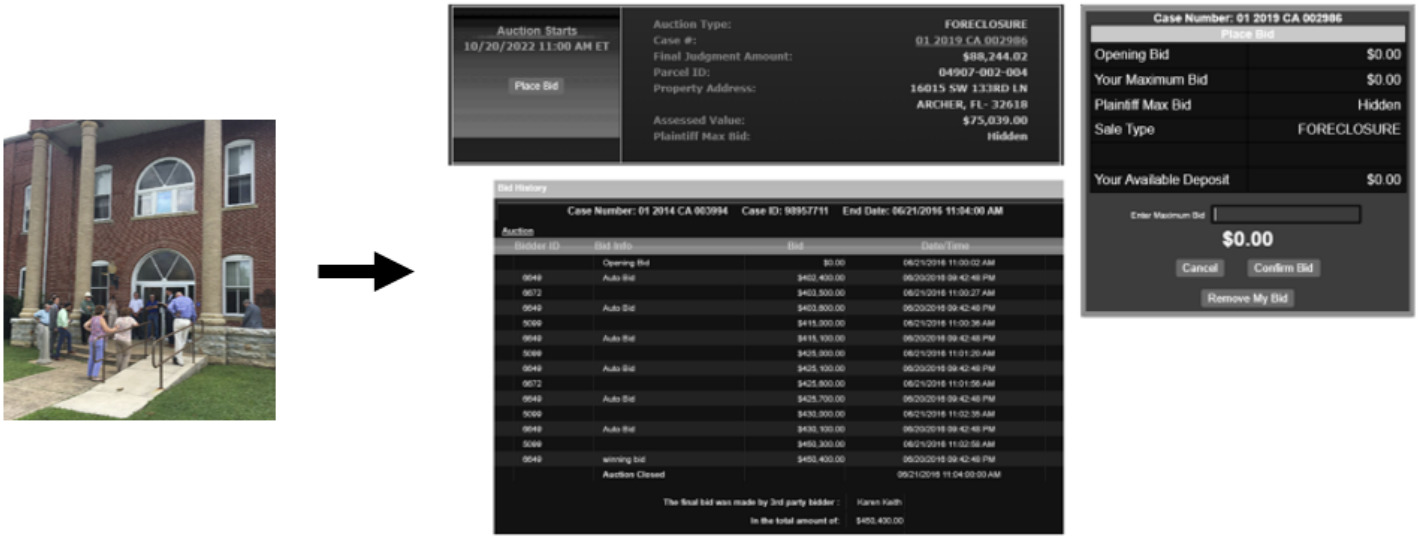
1. Introduction

The advent of information technology (IT) has transformed the way in which parties trade assets in a marketplace (Bakos, 1997, 1998). By improving access to information, IT increases market performance and information production (Jensen, 2007; Gao and Huang, 2020). While much has been written about how the availability of new technologies can benefit more sophisticated investors (Hendershott et al., 2011; Menkveld, 2013; O'Hara, 2015), less is known about how IT empowers retail individuals by lowering participation frictions. Such inefficiencies may be particularly severe in the case of forced asset sales, as the best-suited buyer is unlikely to be readily available at short notice (Shleifer and Vishny, 1992). The digitization of a market may shape potential bidders in terms of pool size and composition, but also mitigate negative price spillovers and feedback loops associated with asset liquidations (Kiyotaki and Moore, 1997; Asquith et al., 1994; Brunnermeier and Pedersen, 2009).

This study uses such an environment and investigates the effect of a "low-hanging fruit" technology, i.e. electronic bidding, on collateral liquidity in U.S. mortgage credit markets. Lenders are entitled to recover the value of their outstanding mortgage loan by seizing and selling the house of defaulting borrowers under a foreclosure process. Foreclosures are ideal to study participation frictions, since the sales of mortgaged properties in U.S. judicial states have been traditionally conducted using live public auctions at the premises of the county courthouse. Although the foreclosing lender (typically a bank) has the obligation to attend the auction, third-party participation is voluntary and, most importantly, quite costly. Potential buyers are required to travel to the courthouse for bidding at specific dates. As a result, bidding competition at auctions is scarce, and the foreclosing lender itself ends up purchasing the foreclosed property in more than 80% of auctions (Burkhart, 2017).

I take advantage of a legal reform that changed the foreclosure process to identify the effect of lowering participation frictions on foreclosure sales. To reduce court administrative costs, in the summer of 2008 Florida has become the first U.S. state to modify its statute and allow its counties to switch from in-person auctions to electronic bidding at any point in time.[1] The switch to the new technology is not mandatory for counties under the new law, but if adopted, the bidding format is the only feature of the foreclosure process that changes. In particular, information availability remains constant.

Figure 1: The change in the foreclosure auction setting in Florida from in-person (left) to online (right) bidding



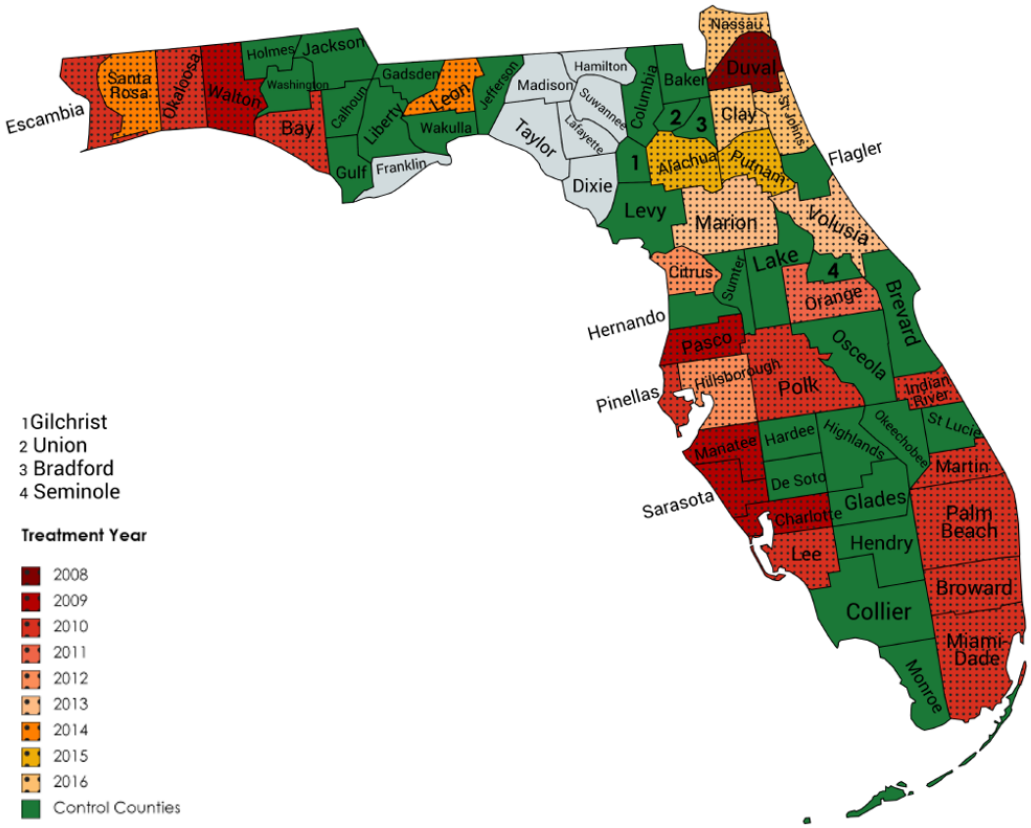
I find electronic bidding leads to a 5 percentage point increase in foreclosure auction success and a 3 percentage point decline in auction discount. When compared to the sample average auction success and discount of houses entering the foreclosure auction stage, these estimates represent a 28% increase and a 45% decrease, respectively, which are economically sizable. The results suggest that electronic bidding considerably improves liquidity in the foreclosure market.

[1] At the time of writing, Florida and Ohio are the only two states in the U.S. permitting county courts to conduct electronic foreclosure auctions as of yet. However, most counties in Ohio adopted the state policy (Bill 390) during the Covid-19 pandemic, making an empirical assessment of electronic auctions more difficult.

Online technology benefits foreclosing lenders with quicker and less costly foreclosure sales. Accordingly, lenders save asset ownership expenses.[2] But there are also social benefits because better foreclosure outcomes improve the allocation of assets from the banking sector, which is holding troubled assets, to the household sector, which is buying them. In fact, banks frequently hold foreclosed properties in a neglectful way – which hurts neighboring property owners and the community (Harding et al., 2009; Campbell et al., 2011; Lin et al., 2009) – whereas households can derive utility from possessing the house. Considering the opportunity cost of a vacant property, brokerage sale commissions, and inventory costs avoided, I determine with a back-of-the-envelope calculation that the estimated increase in foreclosure auction success generates substantial welfare gains (at least 0.56 basis point of GDP).[3]

For identification, I use a within-state difference-in-differences (DiD) design, comparing affected counties to adjacent non-affected counties around an adoption date. Such a strategy prevents confounding effects resulting from discrepancies in state level foreclosure laws to bias the estimates. To circumvent the bias of the staggered DiD estimators (Baker et al., 2021), I adopt the "stacked regression" approach (Cengiz et al., 2019). I obtain novel public tax roll property-level data spanning the years 2009-2019 from Florida Department of Revenue, which allows me to compare foreclosure auction outcomes before and after the digitization. To measure the foreclosure discount, I use the county assessor's opinion of the annual market value of each residential property, which considers all its tangible and intangible conditions.

Figure 2: Treatment incidence and timing



Note: This figure shows the year in which Florida counties adopted (dotted) the online bidding technology, those that never adopt but adjoin adopters (green) and those that never adopt and do not adjoin adopters (light blue). Adoption decisions are considered up to, and including, 2019.

[2] After no third parties buy at the foreclosure auction, the property becomes a Real Estate Owned (REO) asset in the balance sheet of the bank. REO expenses include maintenance and selling costs, and can total up to 15.95% of property value. See https://www.benefits.va.gov/homeloans/servicers_valeri.asp.

[3] There are also indirect benefits the improved sale technology most likely brings: defaulting borrowers suffer smaller deficiency judgements, fire-sale spillovers are lower in neighborhoods and the community therein. These analyses are outside the scope of this paper.

Next, I study whether ex-ante decisions in mortgage credit supply incorporate the improvement in future foreclosure outcomes. An increase in collateral liquidation payoffs lowers the cost of extending credit for banks (Benmelech et al., 2005; Pence, 2006). Using borrower application-level data, I find that in affected counties mortgage lending increases by 1.83%. This effect is even more pronounced in the risky borrower segment of the mortgage market. Furthermore, lenders start charging lower rates on accepted mortgage loans in affected counties. These results suggest that in-person foreclosure auctions impose material costs on borrowers at the time of loan origination.

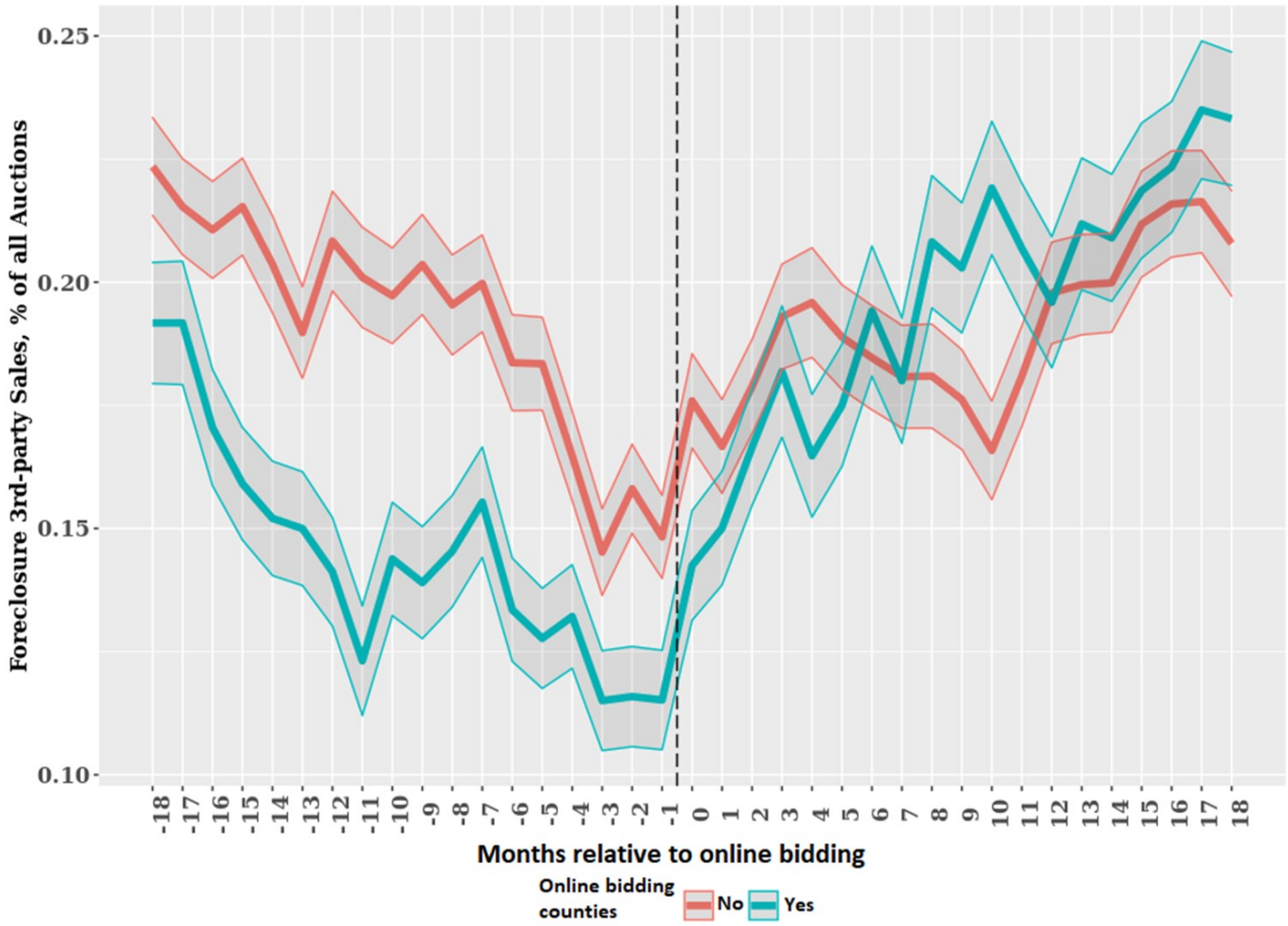
I continue by investigating the mechanisms through which the collateral liquidity resulting from the implementation of electronic bidding increases. I find that once online auctions become available, the share of volume buyers and that of professional investors in the composition of auction buyers decrease. These types of agents generally are more likely to be motivated by financial returns (e.g., buy-to-let, renovate and turn over).[4] Instead, new buyers, i.e. non-professional individuals, are found to hold the acquired property for longer, as may view the asset as a consumption good rather than an investment. This result —which is novel in the digital finance literature—suggests that technological advances may have enabling functions, empowering retail individuals at the expense of specialized professional intermediaries. In the foreclosure setting, this is plausible given the relatively larger participation frictions for non-professional individuals at live auctions. Moreover, I find the electronic bidding technology to increase the probability that bidders already living in areas close to the property win the auction.[5] Arguably, these are the users with the highest valuation for the property. Local buyers may have a personal preference for the neighborhood since they already chose to reside and possibly work there. Therefore, they may be better able to evaluate the value of the house (e.g., more knowledgeable about pollution, attractive shops nearby, noise, etc.). Overall, these results suggest that electronic bidding facilitates allocating a troubled asset to its best-suited holder.

Finally, I explore heterogeneous effects of electronic bidding on auction success across geographies, time periods, and property quality. The largest effects are found in counties with more remote courthouses, which is in line with the fact that technology lowers participation hurdles overall. Moreover, the estimates increase for properties that are more distant from the courthouse. If paired with the evidence on reduced buyer-property distance, this result is in line with the idea that local buyers (i.e., those living close to the property, and distant from the courthouse) can use the technology to participate in the foreclosure market. Also, electronic bidding effects are stronger in months with more simultaneous foreclosure auctions, which suggests that technology helps alleviate inefficiencies of simultaneous liquidations (i.e., fire sales). Finally, properties in good condition benefit the most from online auctions, which is consistent with the fact that non-professional buyers are less likely to immediately refurbish their house for letting it, as they may be more averse to bad quality.

[4] Therefore, online bidding helps owner-occupants to acquire a home in a cost-effective way. The cost savings potential is found to be the primary motive for most U.S. consumers to acquire a foreclosed home at an action. This factor is particularly important among Millenials, who are also the ones more willing to participate with remote bidding (see https://www.svclnk.com/blog/more-than-three-in-five-us-consumers-would-consider-buying-a-home-at-auction-according-to-new-servicelink-survey/).

[5] Though I cannot rule out that participation rates of more distant buyers increase (data about non-winning bids are observable only for affected counties post-treatment), another reason why electronic bidding reduces buyer-property distance may just be that monetary participation costs are lower than frictions associated with in-person participation (e.g., dealing with the lender's representative, requesting days off at work, non-anonymity).

Figure 3: The effect of electronic bidding on foreclosure auction success



All in all, the evidence of this paper suggests that onsite auctions – part of the foreclosure process – are costly to access and therefore incur efficiency losses. Removing bidding frictions by means of technology can improve buyer-asset matching in this segment of the real estate market. Faster reallocation of risky distressed assets from the bank sector to households generates substantial welfare gains. Moreover, the results are in line with recommendations advocating necessary government efforts to streamline the foreclosure process (Fisher et al., 2015; Gerardi et al., 2015).

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