The Color of Hedge Fund Activism

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Abstract

We examine the effect of hedge fund activism on mortgage lending. We find that banks targeted by hedge fund activism discriminate less against African American borrowers by (1) approving more mortgage applications from African Americans; and (2) charging lower interests on loans to African Americans. We show that these changes are not driven by changes in risk or risk preferences. Furthermore, we find that target banks are more likely to set up new committees and are more likely to open new branches to address lending discrimination after being targeted by activism.

Keywords: Hedge Fund Activism, Lending Discrimination, HMDA, Mortgage

JEL Code: G0, G21, G28, J16

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1 Introduction

Despite the widely-held view that hedge fund activists destroy firm value because of their short-term focus, the academic literature has overwhelmingly found that hedge fund activism improves firm value, both at the short term and the long term (Brav et al. 2008; Bebchuk et al. 2015; Brav et al. 2015; Brav et al. 2018). Concerns remain, however, that hedge fund activism may benefit shareholders at the expense of other stakeholders, and thus create a negative social impact. Some recent papers have started to examine the effect of hedge fund activism on other stakeholders, such as creditors and competitors (Klein and Zur 2011; Sunder et al. 2014; Aslan and Kumar 2016; Gantchev et al. 2019; and Feng et al. 2018). In this paper, we move one step further to examine the effect of hedge fund activism on customers of target firms, and hence to better understand the social impact of hedge fund activism.

In particular, we examine whether banks targeted by hedge fund activism become more or less likely to discriminate against minority mortgage borrowers. On the one hand, hedge fund activists' pursuit of profit may encourage banks to exploit vulnerable borrowers and hence increase discrimination. For example, targeted banks may increase interest rates or charge higher fees on mortgages to African Americans. If this is the case, it would suggest that hedge fund activism improves firm value by shifting wealth from customers to shareholders and creates negative social impacts. On the other hand, however, as Becker (1971) argues, discrimination serves the ideological preferences of the discriminating entity and is costly and inefficient. When hedge fund activists intervene, they may be able to eliminate the inefficiency and the associated cost, and hence reduce discrimination. If this is the case, it would suggest that hedge fund activism improves operating efficiency and creates positive social impacts.

Specifically, we examine how hedge fund activism affects discrimination in mortgage lending. The literature has shown convincing evidence that minorities are discriminated against in mortgage lending (Black et al. 1978; King 1980; Schafer and Ladd 1981; Munnell et al. 1996). In this paper, we follow these papers and use the Home Mortgage Disclosure Act (HMDA) data to identify discrimination in mortgage lending. The HMDA data report, among other things, applicant race, which allows us to examine the differences of the denial rates between different racial groups.

Using a triple-difference specification, we find that banks targeted by hedge fund activism, relative to otherwise similar control banks, decrease the denial rates of mortgage applications from African Americans. The decline in denial rates amounts to about 20% of the unconditional average denial rates African Americans experience. The results are robust after including MSA-year fixed effects and bank-year fixed effects, suggesting that the results are unlikely to be driven by local demand-side factors or supply-side factors arising from unobservable bank characteristics.

A classical criticism of the lending discrimination literature is that racial status may be correlated with unobservable risk characteristics. While we may also suffer from the omitted variable problem, it will not bias the triple difference estimates of the effect of hedge activism on lending discrimination unless hedge fund activism (1) changes target banks' risk preferences, or (2) the risk characteristics of African American applicants to target banks. For example, if target banks become less risk averse and racial status is positively correlated with unobservable risk characteristics, target banks may approve more loans to African Americans. On the other hand, if African American applicants of target banks become less risky, their applications are more likely to be approved. To mitigate the first concern, we use the loan-to-income ratio as a proxy for loan risk and find that target banks do no become more likely to approve riskier loans. To mitigate the second concern, we find that

loan applications submitted by African Americans to target banks are not becoming safer. We therefore conclude that the omitted risk characteristics correlated with racial status are unlikely to bias our baseline results.

Next, we examine whether hedge fund activism affects lending discrimination at the intensive margin. Examining the intensive margin also helps us to examine whether hedge fund activism benefits shareholders at the expense of customers of the targets. We merge the loans sold to Fannie Mae and Freddie Mac in the HMDA data with the Fannie Mae and Freddie Mac loan performance data to extract the mortgage interest rates on these loans. We find that loans to African Americans originated by target banks have lower contractual mortgage interest rates. Both results are consistent with the hypothesis that hedge fund activism reduces discrimination in mortgage lending at the intensive margin and hedge fund activism does not benefit shareholders at the expense of the customers of the targets.

We also use the Fannie Mae and Freddie Mac matched data to examine how hedge activism affects the performance of loans to African Americans. These tests help to further ascertain whether the changes in denial rates or mortgage interest rates are driven by changes in risk or risk preferences, instead of by changes in discrimination. To this end, we find that hedge fund activism has no impact on the likelihood of default of loans originated by target banks, suggesting that the decreases in denial rates and contractual interest rates are not driven by changes in risk or risk preferences.

We then proceed to explore the potential channels through which hedge fund activism mitigates lending discrimination. First, we use the BoardEx data to identify committees of the board of directors that may be related to addressing lending discrimination issues. We find that target banks are more likely to set up such committees after being targeted. Second, we find that banks are more likely to open new branches in counties in which lending discrimination may have been a problem before being targeted by hedge fund activism.

Finally, we attempt to identify the incentives of hedge fund activists in addressing the lending discrimination problem. In this regard, we first sort target banks into two portfolios, High and Low portfolios, according to the decrease in the differences in denial rates between African American and non-African American applicants before and after activism. We then calculated the buy-and-hold returns of these two portfolios during the twelve months after being targeted. We find that the buy-and-hold returns on the High portfolio are significantly higher than those on the Low portfolio, suggesting that stock performance improves when lending discrimination is mitigated.

This paper contributes to the literature on the effect of hedge fund activism. The existing literature overwhelmingly finds that hedge fund activism benefits shareholders of target firms (Brav et al. 2008 and Klein and Zur 2009). However, as for where these gains come from, the opinions are divided. On the one hand, some papers argue that activism increases shareholder value by improving firm productivity and efficiency or promoting takeover and innovation (Becht et al. 2009; Greenwood and Schor 2009; Brav et al. 2015; Boyson et al. 2017; Brav et al. 2018; and Jiang et al. 2018; and Boyson and Pichler 2019), and that shareholder gains are at least not entirely driven by wealth transfer from other stakeholders to shareholders. On the other hand, however, several papers find that at least part of the shareholder gains come from wealth transfer from other stakeholders (Aslan and Maraachlian 2007; Klein and Zur 2011; Sunder et al. 2014; and Feng et al. 2018). In addition, Aslan and Kumar (2016) and Gantchev et al. (2019) also examine the effect of hedge fund activism on peer firms. This paper contributes to this literature by examining the effect of hedge fund activism on customers of target firms, and thereby helping to better understand the social impact of hedge fund activism. Furthermore, this paper is also one of the very few papers examining hedge fund activism in banking (Roman 2015).

This paper also contributes to the literature on lending discrimination. The early lit-

erature, before 1990 when loan-level HMDA data became available, mostly relies on small sample surveys and finds a large difference in mortgage approval rates between minority and non-minority borrowers (Black et al. 1978; King 1980; Schafer and Ladd 1981; and Maddala and Trost 1982). The milestone in this literature is Munnell et al. (1996), famously known as the Boston Fed study, which augments the HMDA data with more detailed information on applicant, loan, and property characteristics. Controlling for the extensive set of risk-related characteristics, The Boston Fed study finds that mortgage applications from minorities are more likely to be denied. Most later studies confirm the results of the Boston Fed study (Siskin and Cupingood 1996; Calem and Longhofer 2002; Stengel and Glennon 1999; Harrison 2001). Bartlett et al. (2019) find that FinTech Lenders discriminate less than traditional lenders in mortgage lending. In addition to the mortgage markets, some studies also find evidence of discrimination in other credit markets (Blanchflower et al. 2003; Chatterji and Seamans 2012). A closely related paper is Chu et al. (2019b), who find that banks reduce lending discrimination after going public. This paper contributes to this literature by examining how hedge fund activism affects discrimination in mortgage lending.

The rest of the paper is organized as follows. In section 2, we provide the details of the data sources and the sample construction method; in section 3, we provide the empirical analysis of the effect of hedge fund activism on loan origination; in section 4, we instead focus on the effect of hedge activism on the cost of mortgages; in section 5, we examine loan performance; we identify potential channels through which hedge fund activism affects lending discrimination; we then examine the incentives of hedge fund activists in section 7; and section 8 concludes.

2 Data and Sample Construction

2.1 Hedge Fund Activism Data

We follow Brav et al. (2008) to construct the sample of hedge fund activism in banking based on Schedule 13D filings. The Exchange Act of 1934 mandates that investors must file Schedule 13D with the SEC within 10 days of acquiring more than 5% of any class of securities if they intend to influence the management of the company. We start with all publicly-traded banks and bank holding companies (BHCs) on the list provided by the Federal Reserve Bank of Chicago. We then search the SEC's Edgar website for all the Schedule 13D filings during the period of 2000 to 2014. Using information disclosed in Item 2 of the 13D filings, we first exclude filers of the following types: parent holding companies, banks, brokerage companies, regular corporations, foreign institutions, corporate insiders (for example CEOs or CFOs), and other individuals. We also exclude filings related to mergers, bankruptcy, and mutual to stock conversions.

We then use the following procedure to filter out other non-hedge fund filers. First, we categorize filers in the list of hedge funds involved in activism targeting non-financial companies as hedge funds.[1] We then search the internet for websites and news articles of the remaining filers. We are able to classify most of the remaining filers into hedge funds and non-hedge funds using internet-based information. We then discard all filers for which we cannot confirm the classification. The final sample consists of 119 activism events.

We present the number of events in each year from 2000 to 2014 in Table 1. The activism events are pretty evenly distributed over time, with some evidence that there are more events around the 2007-2009 financial crisis. To mitigate the concern that activism events during the financial crisis are different, we remove activism events that occurred from 2007 to 2009.

[1] We thank Wei Jiang for providing the list to us.

We then merge the activism data with the call report data (aggregated at the holding company level). We match each target bank in year t with a non-target bank from the same year using propensity score matching. In particular, we estimate the probit model with the following variables, *Bank Size* (the natural logarithm of total assets), *Capital* (total capital scaled by total assets), *ROA* (net income scaled by total assets), *Charge-off* (charge-offs scaled by total assets), *Changes in ROA* from *t-3* to *t-1*, and the number of mortgage applications. The control non-target bank is chosen as the one that has the closest propensity score as the target bank in the same year.

We report the summary statistics of comparing the characteristics of the target banks with the matched non-target banks in Table 2. In addition to the variables employed in the propensity score matching, we also include *RWA* (risk-weighted assets scaled by total assets), *Liquidity* (cash assets scaled by total assets), *Deposits* (total deposits scaled by total assets), and *Subdebt* (subordinated debt scaled by total assets). The differences of these variables between target and non-target banks are all small and statistically insignificant, suggesting that the target and non-target banks are rather similar, at least along the dimensions we measure.

2.2 Mortgage Origination Data

We obtain data on mortgage origination during the period of 1997 to 2017 from the HMDA data. Regulated financial institutions with more than $30 million in assets, such as commercial banks, credit unions, and mortgage companies, are required to report the data. The HMDA data report the lender's identity, the location of the property, the dollar amount of the loan, application year, whether the loan is approved, and whether the loan is sold to a third party during the year of origination. The data also provide some borrower information, such as borrowers' reported income, race, gender, and ethnicity. We follow the literature

(Duchin and Sosyura 2014 and Chu et al. 2019a) to filter the HMDA data. We first exclude all government insured or guaranteed loans (Federal Housing Administration-insured, Veterans Administration-guaranteed, Farm Service Agency, or Rural Housing Service loans). We then exclude all refinance and home improvement loans and loans on non-occupied units. Finally, we exclude loans with incomplete race or location information.

We define the following variables based on the HMDA data: *Denial*, equal to one if the loan is rejected, and zero otherwise; *Black*, equal to one if the borrower is an African American, and zero otherwise; *Log Income*, the natural logarithm of reported applicant income; *Loan-to-Income*, the loan amount to applicant income ratio; *Female*, equal to one if the applicant is female, and zero otherwise. We also include ethnicity and race dummies in various specifications.

I then use the link file developed by Robert Avery to merge the HMDA data with call report data for banks. For each activism event, we match the HMDA data for the target and non-target banks from three years before to three years after the event. Our final sample of loan origination consists of 864,815 mortgage applications, among which 50,710 applications are from African Americans and 814,105 applications are from non-African Americans.

I follow Black et al. (1997) and Harrison (2001) to include the following bank characteristics as controls: *Bank Size*, the natural logarithm of total assets, *Capital*, bank capital divided by total assets, *ROA*, net income divided by total assets, *Charge-off*, loan charge-offs divided by total assets, *Deposit*, deposits divided by total assets, *Liquidity*, cash assets divided by total assets, and *Sub Debt*, subordinated debt divided by total assets.

We present the summary statistics of borrower, loan, and bank characteristics separately for black and non-black applicants in Table 3. The denial rates for African American borrowers are 32.1%, much higher than the 20.5% denial rates for non-African Americans. The reported income and loan amount of African Americans are much smaller. African American

borrowers are also more likely to be female.

2.3 Fannie Mae and Freddie Mac Loan Performance Data

We augment the HMDA mortgage origination data with loan performance data provided by Fannie Mae and Freddie Mac. The Fannie Mae and Freddie Mac data provide detailed loan and performance information for conventional single-family mortgages bought by Fannie Mae and Freddie Mac starting from 2000 (1999 for Freddie Mac). In particular, the data provide the contractual interest rates, *Interest Rate*, which we can use to examine the effect of hedge fund activism on mortgage lending at the intensive margin, and to ascertain whether hedge fund activism benefits shareholders at the expense of customers. The data also track loan performance over time and thereby enable us to examine *ex post* loan risk to distinguish between discrimination and risk. Specifically, we define *Default* that equals one if a loan experiences delinquency of more than 90 days within three years of origination. In addition, the data also provide more detailed information on borrower and loan characteristics, including the loan-to-value ratio (LTV), the combined loan-to-value ratio ($CLTV$), credit score (*Credit Score*), debt payment to income ratio (DTI), and whether the borrower is a first time homebuyer ($FTHB$), which can help us further mitigate the omitted variable bias.

Unfortunately, there is no common identifier to link the HMDA data with the Fannie Mae and Freddie Mac data. We follow the algorithm in Sun and Gao (2019) to match HMDA with the Fannie and Freddie data. In particular, we require the following information in both data sets to be exactly the same, including state, MSA, county, year, loan amount, loan purpose (e.g. purchase, refinancing, etc.), owner-occupancy, property type, and the presence of a co-borrower. To ensure match accuracy, we only retain unique matches in our final sample. The final loan performance sample consists of 27,982 single-family loans, among which 471

loans are taken by African Americans and 27,511 are by non-African Americans.

We present the summary statistics of the matched sample separately for African American and non-African American borrowers in Table 4. The average interest rate on mortgages to African Americans is 5.216%, about 50 basis points higher that on mortgages to non-African Americans. The default and foreclosure rates on African American mortgages are higher than those on non-African American mortgages. African American borrowers have lower credit scores, slightly higher loan-to-value and debt payment to income ratios.

3 Origination Analyses

3.1 Graphical evidence

Before we present the formal analysis results on the effect of hedge fund activism, we present some graphical evidence of how hedge fund activism affects mortgage origination. To start, we first plot the denial rates of mortgage applications by African Americans submitted to target banks. The results are presented in Panel A of Figure 1. The denial rates increase dramatically from 18% to more than 60% from five years before to one year before activism. After the activism event, however, the denial rates decrease back to below 14% in five year. We then present the same dynamics for non-black applicants. The denial rates also increase, from 8% to 50%, from five years before to one year before activism, and decrease to about 8% five years after activism. These two figures show that target banks increase mortgage approval rates, for both African Americans and non-African Americans, after being targeted by hedge fund activism.

We then plot the differences between the denial rates of black and non-black applicants for target banks in Panel E. The differences in denial rates increase from about 10% to 16% from five years before to one year before the activism event, and the difference decreases

to only 6.5% five years after the event. These results therefore suggest that target banks decrease denial rates on African American mortgage applications relative to non-African American applications.

For comparison, we also plot the same dynamics for matched control banks. Different from target banks, we do not observe any clear patterns of mortgage denial rates either before or after the hedge fund activism events (of their corresponding target banks).

The results in Figure 1 therefore suggest that target banks increase mortgage approval rates for African Americans, relative to non-African Americans, after being targeted by hedge fund activism, relative to non-target banks.

3.2 Baseline specification and main results

In this section, we examine the effect of hedge fund activism on loan denial rates for African American borrowers with the following triple difference specification,

$$\begin{aligned} Denial_{i,m,b,t} = {} & \beta_1 Black_i \times Treat_b \times Post_t + \beta_2 Black_i \times Treat_b + \beta_3 Treat_b \times Post_t \\ & + \beta_4 Black_i \times Post_t + \beta_5 Black_i + \beta_6 Treat_b + \beta_7 Post_t + \beta_8 X_i + \beta_9 Y_{b,t} \\ & + \alpha_{b,t} + \alpha_{m,t} + \varepsilon_{i,m,b,t}, \end{aligned} \tag{1}$$

where i indexes mortgage application, m indexes MSA, b indexes bank, and t indexes year. *Denial* is a dummy variable that equals one if the loan application is denied, and zero otherwise. *Black* is a dummy variable that equals one if the borrower is African American, and zero otherwise. *Treat* is a dummy variable that equals one if the bank is targeted by hedge fund activism, and zero otherwise. *Post* is a dummy variable that equals one if the year is after the bank is targeted by hedge fund activism, and zero otherwise. X is a set of borrower controls, including applicant income, applicant loan-to-income ratio, dummy

variables for gender, race, and ethnicity. Y is a set of bank control variables measured at the bank-year level, including *Bank Size*, *Capital*, *ROA*, *RWA*, *Deposits*, *Liquidity*, *Chargeoffs*, and *Subdebt*. In our analyses, we include different sets of fixed effects in the specification: (i) BHC fixed effect α_b; (ii) year fixed effects, α_t; (iii) MSA fixed effects α_m, (iv) $\alpha_{b,t}$, BHC×year fixed effects, to control for time-varying bank balance sheet effects; and (v) $\alpha_{m,t}$, MSA×year fixed effects to control for any time-varying demographic and economic factors within an MSA.

The results are presented in Table 5. In columns (1) and (2), we only include year fixed effects and MSA fixed effects. We then include BHC fixed effects in column (3), BHC×year fixed effects in column (4), and MSA× year fixed effects in column (5). Regardless of the specification, all the triple difference coefficient estimates are negative and statistically significant, suggesting that target banks become less likely to deny loan applications from African Americans after activism. The magnitude of the effect is quite large. The denial rates for African Americans decrease by about six percentage points, which amounts to about 20% of the average denial rates of African Americans in our sample. Among the difference-in-differences terms, only the coefficient estimates on *Post*×*Black* are consistently statistically significant, suggesting that denial rates of African American applications are increasing over time. Comparing the coefficient estimates on the triple interaction term with those on *Post*×*Black*, we can see that hedge fund activism almost completely eliminates the increases in the denial rates of African American loans.

3.3 Omitted variable bias, changing risk preferences, and changing risk characteristics

A common criticism of the lending discrimination literature is that the results may be biased because racial status may be correlated with unobservable risk characteristics. However, we are not identifying the level of lending discrimination, rather, we are examining how hedge fund activism changes the extent to which target banks discriminate. As such, unobservable risk characteristics are unlikely to bias our results unless hedge fund activism (1) changes the target banks' risk preferences, or (2) the risk characteristics of African American applicants. For example, if a bank becomes less risk-averse after being targeted by hedge fund activism, and racial status is positively correlated with unobservable risk characteristics, the denial rates of mortgage applications of African Americans will decline as a result. On the other hand, if target banks attract safer African American mortgage applicants, the mortgage denial rates for African Americans at target banks will decline as well.

We first examine whether hedge fund activism affects target banks' risk preferences. To this end, we use the loan-to-income ratio to measure loan risk (Duchin and Sosyura 2014 and Chu et al. 2019a), and examine whether target banks become more likely to approve loans with higher loan-to-income ratios. Specifically, we replace the dummy variable, *Black*, in Equation (1) with *Risk*, which equals one if the loan-to-income ratio is greater than three, and re-estimate Equation (1). The results are presented in Panel A of Table 6. In contrast to those presented in Table 5, all the triple-difference coefficient estimates are small and statistically insignificant, suggesting that hedge fund activism does not make target banks taking more risk in mortgage origination. Therefore, even if racial status is correlated with unobservable risk characteristics, it is unlikely that such a correlation can explain the negative effect of hedge fund activism on mortgage denial rates.

Next, we examine whether African Americans applicants of target banks become less risky after the bank gets targeted by hedge fund activism. This could happen, although unlikely, if riskier Afrian American borrowers move away from target banks. To examine whether this is the case, we replace the dependent variable in Equation (1) with *Loan-to-Income*, and re-estimate Equation (1). If the African American borrowers of target banks indeed become less risky, we should observe a negative triple difference coefficient. The results are presented in Panel B of Table 6. All the triple difference coefficient estimates are small and statistically insignificant, suggesting that hedge fund activism has very little impact on borrowers' risk characteristics. It is therefore unlikely that the baseline results can be driven by changing borrower risk characteristics of African American borrowers to banks targeted by hedge fund activism.

Overall, the results in Table 6 suggest that the inability to control for unobservable risk characteristics is unlikely to bias our triple difference estimates of the impact of hedge fund activism on lending discrimination.

3.4 Cross-sectional heterogeneity

Next, we examine the cross-sectional heterogeneity of the effect of hedge fund activism on discrimination. Specifically, we examine whether the effect varies with respect to borrower income, gender, and the existence of co-applicant. These tests will provide further evidence on whether the results are driven by the correlation between racial status and unobservable credit characteristics. The correlation, if it exists, is likely to be stronger for low income, female, and single applicants. And therefore, the result is likely to be stronger among these groups of applicants if the result is indeed driven by unobservable credit characteristics.

The results of estimating Equation (1) on subsamples partitioned on income, gender, and the existence of a co-applicants are presented in Table 7. The negative effect of hedge fund

activism on lending discrimination is, in fact, stronger for high income applicants, female applicants, or applicants with a co-applicant. The results therefore further suggest that the effect of hedge fund activism on lending discrimination is unlikely to be driven by the correlation between race status and unobservable credit characteristics.

4 Loan Cost Analyses

The origination analysis may not provide a complete picture of the effect of hedge fund activism. For example, target banks may engage in predatory lending by charging higher interest rates on loans to African Americans while increasing mortgage approval rates for African Americans. In this section, we examine whether hedge fund activism affects the cost or the interest rates on mortgages to African Americans. Unfortunately, however, the HMDA data do not provide information on mortgage interest rates.

We therefore use the loan contractual rates from the Fannie Mae and Freddie Mac matched data. In addition to mortgage interest rates, the Fannie Mae and Freddie Mac matched data also provide additional loan and borrower characteristics. For example, the data provide information on the debt payment to income ratio (DTI), the loan-to-value ratio (LTV), the combined loan-to-value ratio ($CLTV$), the credit score (*Credit Score*), and whether the borrower is a first-time homebuyer ($FTHB$). The additional information can further mitigate the potential omitted variable bias and improve estimation accuracy.

We then replace the dependent variable in Equation (1) with the contractual rate reported in the Fannie Mae and Freddie Mac matched data, *Interest Rate*, and re-estimate Equation (1). We also add the additional loan and borrower characteristics provided by the matched data. The results are presented in Table 8. The triple difference coefficient estimates are all negative and four out of the six estimates are statistically significant, suggesting that

banks charge lower interest rates on loans to African Americans after they are targeted by hedge fund activism. Hedge fund activism reduces the mortgage interest rates for African American borrowers by about 15 basis points. If evaluated at the original loan amount of about $152,000, this amounts to an annual saving of mortgage payment of about $228 by African American borrowers. While the economic magnitude of the effect of hedge fund activism on mortgage interest rate is at best moderate, the result does suggest that hedge fund activism also reduces lending discrimination at the intensive margin. Furthermore, the results also suggest that hedge fund activism does not benefit target shareholders at the expense of target customers.

5 Loan Performance Analysis

With the Fannie Mae and Freddie Mac matched date, we can measure *ex post* loan risk. In particular, we measure *ex post* loan risk by whether the mortgages experience delinquency of more than 90 days within three years after origination. Compared with our *ex ante* risk measure, *Loan-to-Income*, the *ex post* risk measures can better assess whether the changes in origination decisions and mortgage interest rates can be explained by changes in risk.

We start by examining whether hedge fund activism changes target banks' risk preferences. Again, if target banks become less risk-averse after activism and racial status is correlated with unobservable risk characteristics, all the results above can then be explained by the risk story. However, if banks do become less risk-averse, the average loan quality of target banks should deteriorate. To examine whether this is the case, we run the following difference-in-differences test,

$$Default_{i,c,m,t} = \beta_1 Treat_b \times Post_t + \beta_8 X_i + \beta_9 Y_{b,t} + \alpha_b + \alpha_{m,t} + \varepsilon_{i,m,b,t}, \tag{2}$$

where $Default$ is a dummy variable of whether the loan experiences delinquency of more than 90 days within three years after origination. If the average loan quality deteriorates after a bank is targeted by hedge fund activism, we expect β_1 to be positive.

The results of estimating Equation (2) are presented in Panel A of Table 9. The difference-in-differences coefficient estimates are all small and statistically insignificant, suggesting that hedge fund activism has little impact on banks' risk preferences, consistent with the results in Panel A of Table 6.

Next, we examine whether African American loans approved by target banks are less risky than those approved by non-target banks to ensure that the results are not driven by risk instead of discrimination. We therefore re-estimate Equation (1) by replacing the dependent variable with *Default*. If the decline in denial rates or decrease in loan contractual rates is driven by decreases in the riskiness of African American borrowers of target banks, we should also observe the default rates of those loans to decrease.

The results are presented in Panel B of Table 9. All the coefficient estimates are small and statistically insignificant, suggesting that hedge fund activism has little impact on risk of African American loans. Therefore, the low denial rates and the low contractual interest rates cannot be explained by the decreased risk of these loans. Overall, these results are consistent with those in Table 6 that hedge fund activism does not change target banks' risk preferences or the risk characteristics of African American borrowers, and hence the baseline results are unlikely to be driven by risk.

6 Potential Channels

Next, we proceed to identify potential channels through which hedge fund activism reduces innovation efficiency. One obvious starting point is the stated purpose in the 13D

filings. However, most 13D filings do not contain specific information regarding lending discrimination. We therefore resort to actions banks take after being target by activism that may reduce lending discrimination.

6.1 Committees related to lending discrimination

The effect of hedge fund activism, if any, may start from either the top executive teams or the board of directors. We examine whether target banks may become more likely to form a committee related to lending discrimination. In particular, we use the data from BoradEx to identify committees whose names contain the following keywords, "fair lending", "community reinvestment", "regulatory compliance", "social responsibility", "ethics", or "public responsibility" as committees that may be related to lending discrimination. We then code the variable, *Committee*, to be equal to one if the bank has such a committee in that year, and zero otherwise. We then estimate the following difference-in-differences specification,

$$Committee_{b,t} = \beta_1 Treat_b \times Post_t + \beta_2 Y_{b,t} + \alpha_b + \alpha_t + \varepsilon_{b,t}, \tag{3}$$

The results of estimating Equation (3) are presented in Table 10. In column (1), we do not include any controls to mitigate the concern that hedge fund activism may also affect these variables. In column (2), we then include the set of bank controls. The difference-in-differences coefficient estimates are both positive and statistically significant, suggesting that target banks are more likely to set up committees related to lending discrimination after being targeted. These committees may then reduce lending discrimination as documented above.

6.2 Branch Openings

Next, we identify specific actions target banks take to address lending discrimination. In particular, we examine whether target banks increase or reduce the number of branches at locations in which lending discrimination might be a problem. We start by calculating the difference in mortgage denial rates between African American and non-African American applicants at the bank-county level during the three years prior to being targeted by hedge fund activism. We then denote a bank-county pair as *High* if the calculated difference in mortgage approval rates is above the county median. We then examine whether banks take specific actions in these counties by estimating the following,

$$Number\ of\ Branch_{b,c,t} = \beta_1 High_{b,c} \times Treat_b \times Post_t + \beta_2 High_{b,c} \times Treat_b + \beta_3 Treat_b \times Post_t$$
$$+ \beta_4 High_{b,c} \times Post_t + \beta_5 High_{b,c} + \beta_6 Treat_b + \beta_7 Post_t + \beta_9 Y_{b,t} + \alpha_{b,t} + \alpha_{c,t} + \varepsilon_{b,c,t}, \qquad (4)$$

where $Number\ of\ Branch_{b,c,t}$ is the natural logarithm of the number of branches of bank b in county c one year before the bank is targeted by hedge fund activism.

The results of estimating Equation (4) are presented in Table 11. We include bank, county, and year fixed effects in column (1), but without any bank-level controls. We then include bank-level controls in column (2). We further include bank-county pair fixed effects in column (3), and include bank-year fixed in column (4). In all columns, the triple difference coefficient estimates are all positive and statistically significant, suggesting that target banks are putting more resources in counties in which lending discrimination may have been a problem before being targeted by hedge fund activism.

7 Incentives of Hedge Fund Activists

We argue that hedge fund activism decreases lending discrimination because discrimination is costly and hedge funds' pursuit of profit. In this section, we provide direct evidence on the benefit of the decreases in lending discrimination brought by hedge fund activism. To start, we first calculate the change in lending discrimination at the bank level for target banks. Specifically, we first calculate the difference between the denial rates of African Americans and non-African Americans at the bank level. We then calculate the changes in the difference from one year before activism to one year after activism, which we call the change in discrimination. we then sort all treated banks based on the changes in discrimination into two portfolios, *High* and *Low*. The *High* portfolio consists of banks with the decrease in discrimination above the median, and the *Low* portfolio consists of banks with the decrease in discrimination below the sample median. We then calculate the buy-and-hold portfolio returns (equally weighted) of these two portfolios.

The plot of the buy-and-hold returns from one month after to twelve months after activism is presented in Figure 2. The returns of the *High* portfolio is consistently above those of the *Low* portfolio. The result is therefore consistent with our argument that hedge fund activism decreases lending discrimination, and hence mitigates operating inefficiency and results in better stock performance.

8 Conclusion

We examine how hedge fund activism affects discrimination in mortgage lending. We find that banks targeted by hedge fund activism become more likely to approve loan applications from African Americans. We also find that loans to African Americans by these target banks enjoy lower interest rates, but do not experience lower default rates. These results

are consistent with the hypothesis that discrimination is costly and hedge funds' pursuit of profits helps to mitigation discrimination.

References

Aslan, Hadiye, and Praveen Kumar, 2016, The product market effects of hedge fund activism, *Journal of Financial Economics* 119, 226–248.

Aslan, Hadiye, and Hilda Maraachlian, 2007, Wealth effects of hedge fund activism, Working Paper, Georgia Stata University.

Bartlett, Robert, Adair Morse, Richard Stanton, and Nancy Wallace, 2019, Consumer-lending discrimination in the FinTech era, Technical report, National Bureau of Economic Research.

Bebchuk, Lucian A, Alon Brav, and Wei Jiang, 2015, The long-term effects of hedge fund activism, *Columbia Law Review* 115, 1085–1155.

Becht, Marco, Julian Franks, Colin Mayer, and Stefano Rossi, 2009, Returns to shareholder activism: Evidence from a clinical study of the Hermes UK focus fund, *Review of Financial Studies* 22, 3093–3129.

Becker, Gary S, 1971, *The Economics of Discrimination* (University of Chicago Press).

Black, Harold, Robert L Schweitzer, and Lewis Mandell, 1978, Discrimination in mortgage lending, *American Economic Review* 68, 186–191.

Black, Harold A, M Cary Collins, and Ken B Cyree, 1997, Do black-owned banks discriminate against black borrowers?, *Journal of Financial Services Research* 11, 189–204.

Blanchflower, David G, Phillip B Levine, and David J Zimmerman, 2003, Discrimination in the small-business credit market, *Review of Economics and Statistics* 85, 930–943.

Boyson, Nicole M, Nickolay Gantchev, and Anil Shivdasani, 2017, Activism mergers, *Journal of Financial Economics* 126, 54–73.

Boyson, Nicole M, and Pegaret Pichler, 2019, Hostile resistance to hedge fund activism, *Review of Financial Studies* 32, 771–817.

Brav, Alon, Wei Jiang, and Hyunseob Kim, 2015, The real effects of hedge fund activism: Productivity, asset allocation, and labor outcomes, *Review of Financial Studies* 28, 2723–2769.

Brav, Alon, Wei Jiang, Song Ma, and Xuan Tian, 2018, How does hedge fund activism reshape corporate innovation?, *Journal of Financial Economics* 130, 237–264.

Brav, Alon, Wei Jiang, Frank Partnoy, and Randall Thomas, 2008, Hedge fund activism, corporate governance, and firm performance, *Journal of Finance* 63, 1729–1775.

Calem, Paul S, and Stanley D Longhofer, 2002, Anatomy of a fair lending exam: The uses and limitations of statistics, *Journal of Real Estate Finance and Economics* 24, 207–237.

Chatterji, Aaron K, and Robert C Seamans, 2012, Entrepreneurial finance, credit cards, and race, *Journal of Financial Economics* 106, 182–195.

Chu, Yongqiang, Tao Ma, and Daxuan Zhao, 2019a, Option compensation, risky mortgage lending, and the financial crisis, Working Paper, University of North Carolina at Charlotte.

Chu, Yongqiang, Xiaonan (Flora) Ma, and Teng (Tim) Zhang, 2019b, The stock market and discrimination in mortgage lending, Working Paper, University of North Carolina at Charlotte.

Duchin, Ran, and Denis Sosyura, 2014, Safer ratios, riskier portfolios: Banks' response to government aid, *Journal of Financial Economics* 113, 1–28.

Feng, Felix Zhiyu, Qiping Xu, and Caroline Zhu, 2018, Caught in the crossfire: How the threat of hedge fund activism affects creditors, Working Paper, University of Notre Dame.

Gantchev, Nickolay, Oleg R Gredil, and Chotibhak Jotikasthira, 2019, Governance under the gun: Spillover effects of hedge fund activism, Forthcoming, *Review of Finance*.

Greenwood, Robin, and Michael Schor, 2009, Investor activism and takeovers, *Journal of Financial Economics* 92, 362–375.

Harrison, David M, 2001, The importance of lender heterogeneity in mortgage lending, *Journal of Urban Economics* 49, 285–309.

Jiang, Wei, Tao Li, and Danqing Mei, 2018, Influencing control: Jawboning in risk arbitrage, *Journal of Finance* 73, 2635–2675.

King, Alvin Thomas, 1980, *Discrimination in Mortgage Lending: A Study of Three Cities* (Federal Home Loan Bank Board, Office of Policy and Economic Research).

Klein, April, and Emanuel Zur, 2009, Entrepreneurial shareholder activism: Hedge funds and other private investors, *Journal of Finance* 64, 187–229.

Klein, April, and Emanuel Zur, 2011, The impact of hedge fund activism on the target firm's existing bondholders, *Review of Financial Studies* 24, 1735–1771.

Maddala, Gangadharrao S, and Robert P Trost, 1982, On measuring discrimination in loan markets, *Housing Finance Review* 1, 245.

Munnell, Alicia H, Geoffrey MB Tootell, Lynn E Browne, and James McEneaney, 1996, Mortgage lending in Boston: Interpreting HMDA data, *American Economic Review* 86, 25–53.

Roman, Raluca A, 2015, Shareholder activism in banking, Federal Reserve Bank of Kansas City Working Paper.

Schafer, Robert, and Helen F Ladd, 1981, *Discrimination in Mortgage Lending* (MIT Press (MA)).

Siskin, Bernard R, and Leonard A Cupingood, 1996, Use of statistical models to provide statistical evidence of discrimination in the treatment of mortgage loan applicants: a study of one lending institution, in John Goering, and Ron Wienk, eds., *Mortgage Lending, Racial Discrimination, and Federal Policy* (Urban Institute Press: Washington, DC).

Stengel, Mitchell, and Dennis Glennon, 1999, Evaluating statistical models of mortgage lending discrimination: A bank-specific analysis, *Real Estate Economics* 27, 299–334.

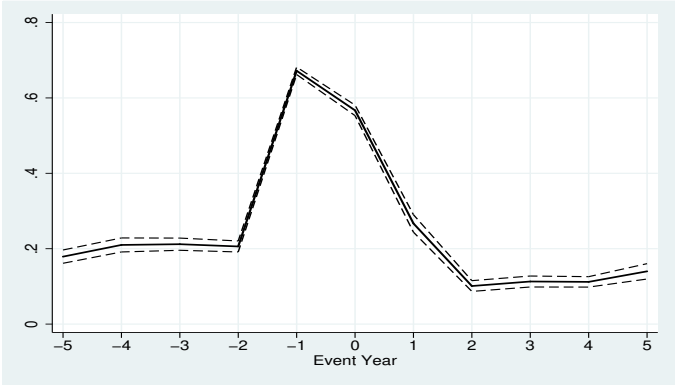
Sun, Hua, and Lei Gao, 2019, Lending practices to same-sex borrowers, *Proceedings of the National Academy of Sciences* 116, 9293–9302.

Sunder, Jayanthi, Shyam V Sunder, and Wan Wongsunwai, 2014, Debtholder responses to shareholder activism: Evidence from hedge fund interventions, *Review of Financial Studies* 27, 3318–3342.

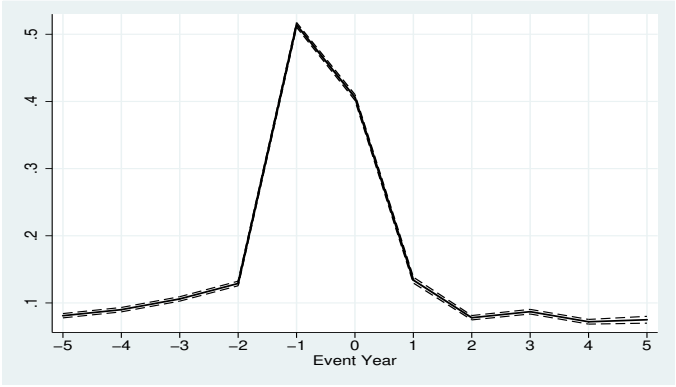
Figure 1: Graphical evidence

This figure plots the dynamics of the mortgage denial rates of target and matched non-target banks, with Panel A for denial rates of African Americans at target banks, Panel B for denial rates of non-African Americans at target banks, Panel C for denial rates for African Americans at non-target banks, Panel B for denial rates for non-African Americans at non-target banks, Panel E for the difference of denial rates between African Americans and non-African Americans at target banks, and Panel E for the difference of denial rates between African Americans and non-African Americans at non-target banks.

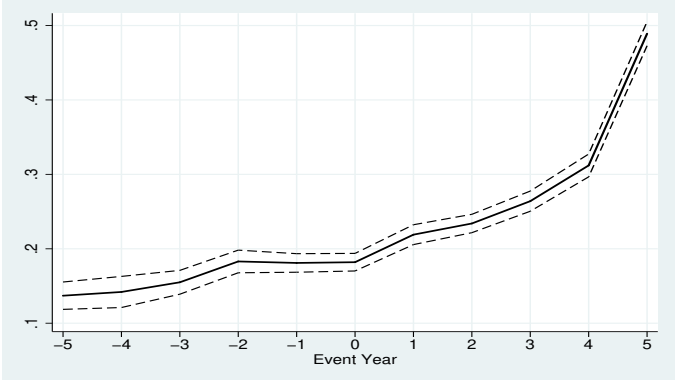
Panel A: Black applications to target banks



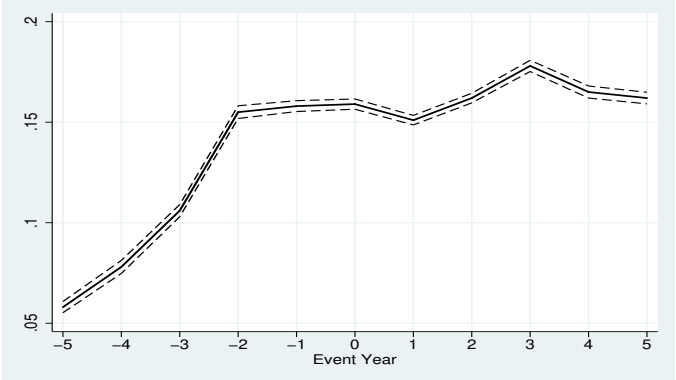
Panel B: Non-black applications to target banks



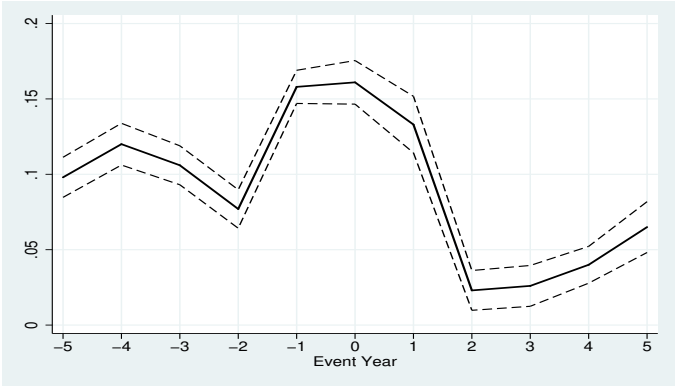
Panel A: Black applications to control banks



Panel B: Non-black applications to control banks



Panel E: Differences at target banks



Panel F : Differences at control banks

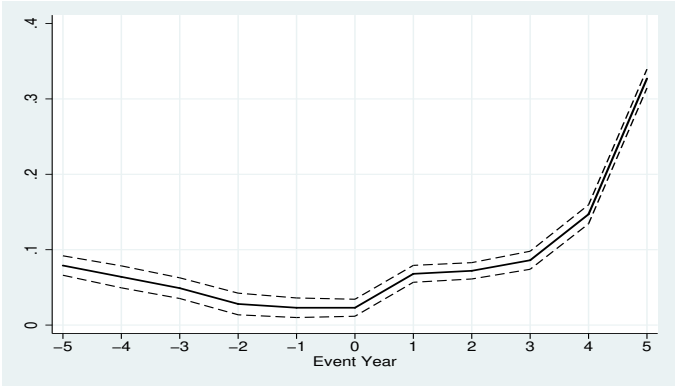


Figure 2: Buy-and-hold returns of portfolios sorted on change in discrimination

This figure plots the buy-and-hold returns of target banks sorted on the changes in lending discrimination from one year before to one year after the 13D filings computed at the bank level. The *High* portfolio consists of banks with the measure of the decrease in discrimination above the median, and he *Low* portfolio consists of banks with the measure of the decrease in discrimination below the median.

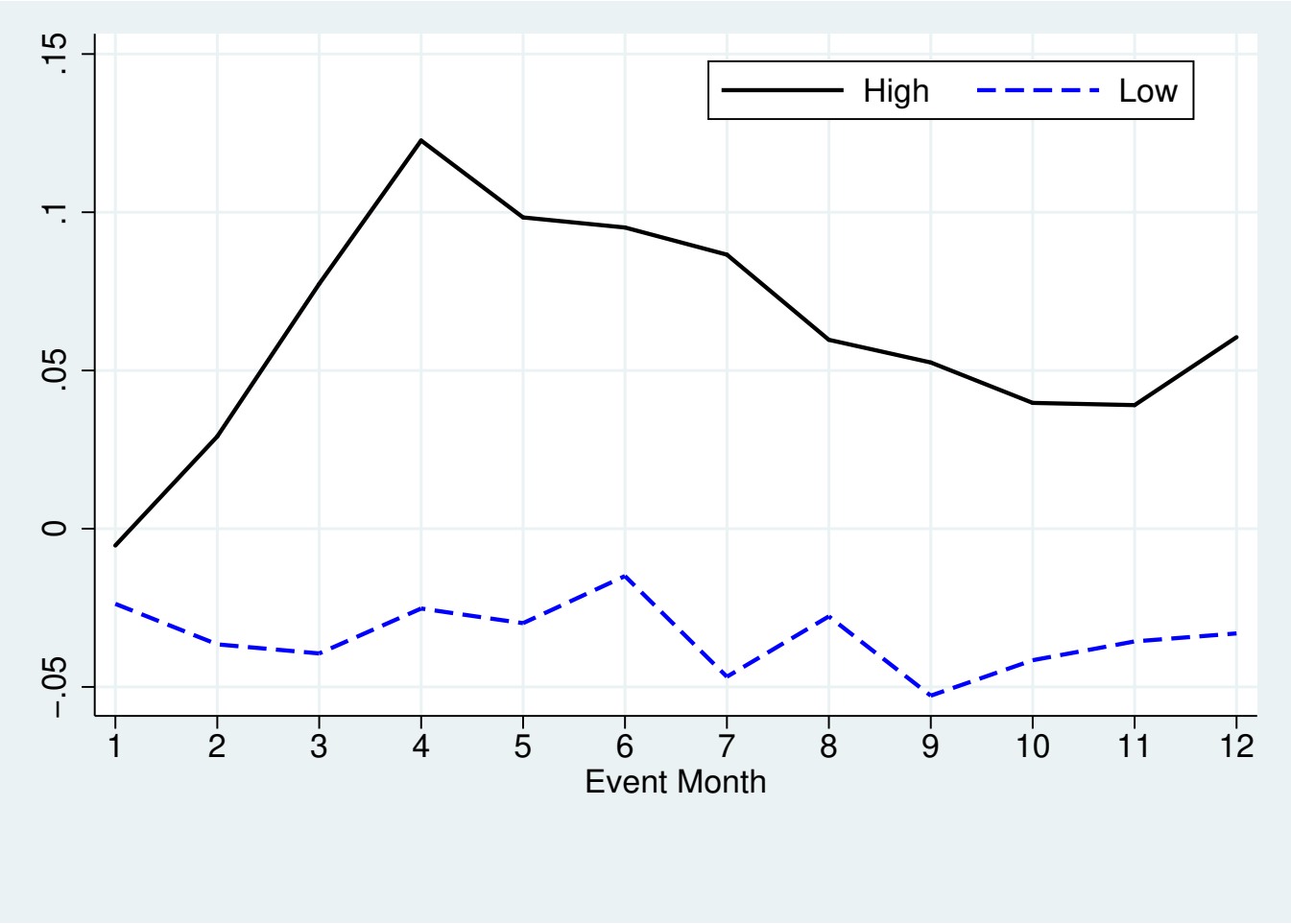


Table 1: Hedge fund activism targeting banks by year
This paper provides the distribution of activism events targeting banks by year from 2000-2014.

Year	No.	Percent
2000	7	5.88
2001	7	5.88
2002	3	2.52
2003	2	1.68
2004	2	1.68
2005	8	6.72
2006	10	8.4
2007	13	10.92
2008	6	5.04
2009	13	10.92
2010	20	16.81
2011	10	8.4
2012	8	6.72
2013	5	4.2
2014	5	4.2
Total	119	100

Table 2: Comparing the treated and control banks

This table presents the comparison of the treated and control banks right hedge fund activism. The variables are *Bank Size* (the natural logarithm of total assets), *Capital* (Total capital to total assets), *ROA* (net income to total assets), *RWA* (risk-weighted assets scaled by total assets), *Deposits* (deposits to total assets), *Liquidity* (cash assets scaled by total assets), and *Charge-offs* (loan charge-offs scaled by total assets), *Subdebt* (subordinated debt scaled by total assets).

	Target		Non-Target			
	Mean	S.D.	Mean	S.D.	Difference	t-Statistic
Bank Size	13.953	0.096	13.859	0.113	0.094	0.635
Capital	0.129	0.004	0.136	0.003	-0.008	-1.315
ROA	-0.002	0.001	-0.003	0.001	-0.001	-0.841
RWA	0.731	0.011	0.729	0.011	0.003	0.203
Deposits	0.792	0.007	0.798	0.006	-0.005	-0.593
Liquidity	0.059	0.005	0.055	0.004	0.004	0.697
Chargeoff	0.006	0.001	0.005	0.001	0.001	0.744
Subdebt	0.001	0.000	0.001	0.000	0.000	0.936

Table 3: Summary statistics of HMDA loan origination data

This table presents the summary statistics of the HMDA origination sample, with Panel A for African American applicants, and Panel B for other applicants. *Denial* equals one if the loan application is denied; *High Cost* equals one if rate spread is reported in HMDA. *Treat* equals one if the bank is a targeted bank by hedge fund activism; *Black* equals one if the applicant is an African American; *Female* equals one if the applicant is female; *Loan Amount* is the loan amount rounded to the thousands; *Applicant Income* is the reported applicant income rounded to the thousands; *Loan-to-income ratio* it the loan amount to applicant income ratio The definitions of the bank variables are in the note to Table 2.

Panel A: African American Applications

	N	Mean	S.D.	P25	Median	P75
Denial	50,710	0.321	0.467	0.000	0.000	1.000
Treat	50,710	0.491	0.500	0.000	0.000	1.000
Loan Amount	50,710	121.271	114.058	51.000	90.000	152.000
Applicant Income	50,710	56.951	90.934	29.000	43.000	65.000
Loan-to-Income	50,710	2.353	2.292	1.500	2.286	3.071
Female	50,710	0.490	0.500	0.000	0.000	1.000
Bank Size	50,208	15.630	1.898	13.995	15.776	16.933
Capital	50,208	0.116	0.025	0.100	0.112	0.126
ROA	50,208	0.009	0.011	0.007	0.012	0.015
RWA	50,208	0.816	0.124	0.751	0.826	0.872
Deposits	50,208	0.742	0.074	0.682	0.758	0.787
Liquidity	50,208	0.057	0.033	0.035	0.046	0.077
Chargeoffs	50,208	0.005	0.006	0.002	0.004	0.008
Subdebt	50,208	0.008	0.013	0.000	0.002	0.007

Panel B: Non-African American Applications

	N	Mean	S.D.	P25	Median	P75
Denial	814,105	0.205	0.404	0.000	0.000	0.000
Treat	814,105	0.358	0.480	0.000	0.000	1.000
Loan Amount	814,105	150.258	162.535	60.000	115.000	190.000
Applicant Income	814,105	77.849	113.161	37.000	57.000	88.000
Loan-to-Income	814,105	2.221	2.080	1.278	2.095	2.951
Female	814,105	0.242	0.429	0.000	0.000	0.000
Bank Size	799,926	16.211	1.891	14.874	16.104	18.112
Capital	799,926	0.124	0.030	0.100	0.119	0.132
ROA	799,926	0.009	0.012	0.008	0.012	0.017
RWA	799,926	0.819	0.139	0.726	0.826	0.935
Deposits	799,926	0.729	0.074	0.679	0.708	0.785
Liquidity	799,926	0.063	0.034	0.038	0.054	0.090
Chargeoffs	799,926	0.008	0.007	0.003	0.007	0.009
Subdebt	799,926	0.012	0.014	0.000	0.002	0.030

Table 4: Summary statistics of the Fannie Mae-Freddie Mac matched sample
This table presents the summary statistics of the Fannie Mae-Freddie Mac matched sample, with Panel A for African American applicants, and Panel B for other applicants. *Interest Rate* is the contractual interest rate on the mortgage; *Default* equals one if the mortgage experiences a delinquency of more than 90 days within three years of origination. *Foreclosure* equals one if the mortgage is foreclosed within three years of origination. *Modification* equals one if the mortgage is modified within three years of origination. *Credit Score* is the FICO score of the borrower at origination. *LTV* is the loan to value ratio at origination. *CLTV* is the combined loan to value ratio at origination. *DTI* is the debt payment to income ratio. *FTHB* equals one if the borrower is a first time home buyer. *Treat* equals one if the bank is a targeted bank by hedge fund activism; *Black* equals one if the applicant is an African American; *Female* equals one if the applicant is female; *Loan Amount* is the loan amount rounded to the thousands; *Applicant Income* is the reported applicant income rounded to the thousands; *Loan-to-income ratio* it the loan amount to applicant income ratio The definitions of the bank variables are in the note to Table 2.

Panel A: African American loans

	N	Mean	S.D.	P25	Median	P75
Interest Rate	471	5.216	0.990	4.375	5.375	6.000
Default	471	0.059	0.237	0.000	0.000	0.000
Foreclosure	471	0.002	0.046	0.000	0.000	0.000
Modification	471	0.032	0.176	0.000	0.000	0.000
Treat	471	0.493	0.500	0.000	0.000	1.000
Loan Amount	471	152.172	92.552	88.000	132.000	190.000
Applicant Income	471	79.304	75.746	41.000	63.000	96.000
Loan-to-Income	471	2.264	1.009	1.559	2.172	2.861
Female	471	0.386	0.487	0.000	0.000	1.000
Bank Size	460	15.853	1.268	15.356	16.463	16.838
Capital	460	0.131	0.030	0.113	0.128	0.141
ROA	460	0.009	0.009	0.008	0.012	0.014
RWA	460	0.733	0.077	0.726	0.762	0.788
Deposits	460	0.739	0.073	0.679	0.761	0.785
Liquidity	460	0.055	0.055	0.036	0.040	0.049
Chargeoffs	460	0.006	0.006	0.003	0.004	0.007
Subdebt	460	0.003	0.005	0.000	0.000	0.002
Credit Score	468	730.278	53.362	687.000	732.000	779.000
LTV	471	79.981	16.295	80.000	80.000	94.000
CLTV	471	80.813	16.490	80.000	80.000	95.000
DTO	466	33.661	11.685	25.000	34.000	41.000
Loan Maturity	471	342.803	51.354	360.000	360.000	360.000
FTHB	470	0.423	0.495	0.000	0.000	1.000

Panel B: Non-African American loans

	N	Mean	S.D.	P25	Median	P75
Interest Rate	27,511	4.717	0.927	4.000	4.625	5.250
Default	27,511	0.016	0.126	0.000	0.000	0.000
Foreclosure	27,511	0.002	0.040	0.000	0.000	0.000
Modification	27,511	0.013	0.111	0.000	0.000	0.000
Treat	27,511	0.308	0.462	0.000	0.000	1.000
Loan Amount	27,511	184.992	102.145	112.000	160.000	233.000
Applicant Income	27,511	91.965	71.994	51.000	76.000	112.000
Loan-to-Income	27,511	2.366	1.160	1.568	2.174	2.955
Female	27,511	0.240	0.427	0.000	0.000	0.000
Bank Size	26,797	15.806	1.101	15.356	15.856	16.838
Capital	26,797	0.144	0.034	0.127	0.132	0.163
ROA	26,797	0.005	0.017	0.002	0.008	0.012
RWA	26,797	0.722	0.070	0.678	0.729	0.769
Deposits	26,797	0.727	0.070	0.679	0.724	0.782
Liquidity	26,797	0.053	0.043	0.033	0.045	0.053
Chargeoffs	26,797	0.010	0.010	0.004	0.007	0.017
Subdebt	26,797	0.003	0.005	0.000	0.000	0.004
Credit Score	27,446	755.760	45.928	728.000	768.000	792.000
LTV	27,511	79.200	14.670	77.000	80.000	90.000
CLTV	27,511	80.006	14.757	78.000	80.000	90.000
DTO	27,315	33.439	10.511	26.000	34.000	41.000
Loan Maturity	27,511	341.980	53.401	360.000	360.000	360.000
FTHB	27,510	0.390	0.488	0.000	0.000	1.000

Table 5: Baseline results

This table reports the results of estimating Equation (1). The dependent variable, *Denial*, is a dummy variable that equals one if the mortgage application is denied, and zero otherwise; *Treat* is a dummy variable that equals one if the bank is targeted by hedge fund activism, and zero otherwise; *Post* is a dummy variable that equals one of the mortgage application occurred after the bank is targeted by hedge fund activism; *Black* is a dummy variable that equals one if the applicant is an African American, and zero other otherwise. Standard errors clustered by bank are reported in the parentheses below the coefficient estimates. Significance at 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	(1)	(2)	(3)	(4)	(5)
Post× *Treat*× *Black*	-0.072*	-0.064*	-0.074**	-0.061**	-0.059***
	(0.038)	(0.035)	(0.029)	(0.023)	(0.021)
Post × *Treat*	-0.153	-0.122*	-0.089**	-0.147***	0.002
	(0.093)	(0.068)	(0.041)	(0.043)	(0.003)
Post × *Black*	0.059**	0.047**	0.047**	0.037**	0.041***
	(0.026)	(0.023)	(0.022)	(0.015)	(0.015)
Treat × *Black*	0.053	0.020	0.022	0.016	0.021
	(0.044)	(0.020)	(0.017)	(0.014)	(0.013)
Treat	0.044	-	-	-	-
	(0.032)				
Post	0.158**	0.152***	0.120***	0.108***	-0.000
	(0.067)	(0.055)	(0.040)	(0.028)	(0.001)
Black	0.106**	0.080**	0.055**	0.081***	-0.002*
	(0.045)	(0.039)	(0.028)	(0.023)	(0.001)
Loan_to_income		-0.025	-0.025	-0.024	-0.023
		(0.015)	(0.015)	(0.016)	(0.016)
Log_income		-0.098***	-0.097***	-0.096***	-0.093***
		(0.017)	(0.017)	(0.017)	(0.017)

Bank Size			0.099***	0.131***	
			(0.026)	(0.043)	
Capital			0.372	0.317	
			(0.287)	(0.364)	
ROA			0.199	0.103	
			(0.657)	(0.740)	
RWA			0.102	0.006	
			(0.158)	(0.167)	
Deposits			0.095	-0.060	
			(0.259)	(0.281)	
Liquidity			0.114	0.052	
			(0.140)	(0.155)	
Chargeoff			1.139	2.196*	
			(1.079)	(1.112)	
Subdebt			-4.329**	-7.048***	
			(2.020)	(2.463)	
Year Fixed Effects	Yes	Yes	Yes		
MSA Fixed Effects	Yes	Yes	Yes		
BHC Fixed Effects		Yes	Yes	Yes	
MSA-Year Fixed Effects				Yes	Yes
BHC-Year Fixed Effects					Yes
Observations	864,815	850,126	850,126	849,736	849,718
Adjusted R-squared	0.218	0.288	0.290	0.306	0.316

Table 6: Changing risk preferences and risk characteristics

This table reports the results of whether the correlation between racial status and unobservable risk characteristics may bias the triple difference estimates. Panel A presents the results of estimating Equation (1), but with *Black* replaced with *Risk*, which equals one if the loan-to-income ratio is greater than three. Panel B presents the results of estimating Equation (1), but with the dependent variable *Denial* replaced with *Loan-to-Income*. *Denial*, is a dummy variable that equals one if the mortgage application is denied, and zero otherwise; *Treat* is a dummy variable that equals one if the bank is a target bank, and zero otherwise; *Post* is a dummy variable that equals one of the mortgage application occurred after the bank is targeted by hedge fund activism; *Black* is a dummy variable that equals one if the applicant is an African American, and zero other otherwise. Standard errors clustered by bank are reported in the parentheses below the coefficient estimates. Significance at 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

Panel A: Changing risk preferences?

	(1)	(2)	(3)	(4)	(5)
Post× *Treat*× *Risk*	0.049	0.026	0.013	-0.009	-0.004
	(0.037)	(0.025)	(0.019)	(0.010)	(0.015)
Borrower and Loan Characteristics		Yes	Yes	Yes	Yes
BHC Characteristics			Yes	Yes	
Year Fixed Effects	Yes	Yes	Yes		
MSA Fixed Effects	YEs	Yes	Yes		
BHC Fixed Effects		Yes	Yes	Yes	
MSA-Year Fixed Effects				Yes	Yes
BHC-Year Fixed Effects					Yes
Observations	864,815	850,126	850,126	849,736	864,399
Adjusted R-squared	0.216	0.289	0.291	0.307	0.316

Panel B: Changing risk characteristics?

	(1)	(2)	(3)	(4)	(5)
Post× *Treat*× *Black*	0.018	0.009	0.004	0.023	0.046
	(0.062)	(0.053)	(0.050)	(0.055)	(0.054)
Borrower and Loan Characteristics		Yes	Yes	Yes	Yes
BHC Characteristics			Yes	Yes	
Year Fixed Effects	Yes	Yes	Yes		
MSA Fixed Effects	YEs	Yes	Yes		
BHC Fixed Effects		Yes	Yes	Yes	
MSA-Year Fixed Effects				Yes	Yes
BHC-Year Fixed Effects					Yes
Observations	864,815	850,126	850,126	849,736	864,399
Adjusted R-squared	0.189	0.222	0.222	0.238	0.241

Table 7: Applicant heterogeneity

This table reports the results of estimating Equation (1) on subsamples partitioned on applicant income, gender, and the existence of co-applicant. The dependent variable, *Denial*, is a dummy variable that equals one if the mortgage application is denied, and zero otherwise; *Treat* is a dummy variable that equals one if the bank is targeted by hedge fund activism, and zero otherwise; *Post* is a dummy variable that equals one of the mortgage application occurred after the bank is targed by hedge fund activism; *Black* is a dummy variable that equals one if the applicant is an African American, and zero other otherwise. Standard errors clustered by bank are reported in the parentheses below the coefficient estimates. Significance at 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	Income		Female		Co-Borrower	
	High	Low	No	Yes	Yes	No
	(1)	(2)	(3)	(4)	(5)	(6)
Post× *Treat* × *Black*	-0.075**	-0.026	-0.043**	-0.027	-0.064**	-0.037*
	(0.031)	(0.033)	(0.021)	(0.026)	(0.032)	(0.021)
Borrower and Loan Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
MSA-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
BHC-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	424,546	424,620	547,510	217,532	638,868	210,512
Adjusted R-squared	0.177	0.359	0.298	0.353	0.350	0.095

Table 8: Contractual interest rates from the Fannie Mae and Freddie Mac matched data
This table reports the results of estimating Equation (1) on loans matched with Fannie Mae and Freddie Mac matched data, with the dependent variable replaced with the mortgage contractual rate, *Interest Rate*. The regressions also include additional loan and borrower characteristics from the loan performance data sets. *Treat* is a dummy variable that equals one if the bank is a targeted bank by hedge fund activism, and zero otherwise; *Post* is a dummy variable that equals one of the mortgage application occurred after the bank is targeted by hedge fund activism; *Black* is a dummy variable that equals one if the applicant is an African American, and zero other otherwise. Standard errors clustered by bank are reported in the parentheses below the coefficient estimates. Significance at 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Post× *Treat*× *Black*	-0.222**	-0.220**	-0.203*	-0.186*	-0.138	-0.124
	(0.108)	(0.104)	(0.108)	(0.107)	(0.115)	(0.115)
Borrower and Loan Characteristics		Yes	Yes	Yes	Yes	Yes
Additional Borrower Characteristics				Yes	Yes	Yes
BHC Characteristics			Yes	Yes	Yes	
Year Fixed Effects	Yes	Yes	Yes	Yes		
MSA Fixed Effects	Yes	Yes	Yes	Yes		
BHC Fixed Effects		Yes	Yes	Yes	Yes	
MSA-Year Fixed Effects					Yes	Yes
BHC-Year Fixed Effects						Yes
Observations	27,979	27,949	27,680	26,956	26,775	26,763
Adjusted R-squared	0.782	0.788	0.798	0.798	0.806	0.806

Table 9: Loan default

This table reports the results on ex post loan foreclosure. Panel A reports the results of estimating Equation (2) on loans matched with Fannie Mae and Freddie Mac loan performance data. Panel B reports the results of estimating Equation (1) on loans matched with Fannie Mae and Freddie Mac loan performance data, with the dependent variable replaced with an indicator variable, *Default*. The regressions also include additional loan and borrower characteristics from the loan performance data sets. The dependent variable, $Default$, is a dummy variable that equals one if the mortgage experiences a delinquency of more than 90 days within three years after origination; $Treat$ is a dummy variable that equals one if the bank is a target bank by hedge fund activism, and zero otherwise; *Post* is a dummy variable that equals one of the mortgage application occurred after the bank is targeted by hedge fund activism; *Black* is a dummy variable that equals one if the applicant is an African American, and zero other otherwise. Standard errors clustered by bank are reported in the parentheses below the coefficient estimates. Significance at 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

Panel A: Changing risk preferences and loan default

	(1)	(2)	(3)	(4)	(5)
Post × *Treat*	-0.001	-0.002	-0.002	0.001	0.017
	(0.005)	(0.005)	(0.005)	(0.005)	(0.009)
Borrower and Loan Characteristics		Yes	Yes	Yes	Yes
Additional Borrower Characteristics				Yes	Yes
BHC Characteristics			Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	
MSA Fixed Effects	Yes	Yes	Yes	Yes	
BHC Fixed Effects		Yes	Yes	Yes	Yes
MSA-Year Fixed Effects					Yes
BHC-Year Fixed Effects					
Observations	27,979	27,949	27,680	26,956	26,775
Adjusted R-squared	0.054	0.099	0.110	0.110	0.137

Panel B: Default of African American loans

	(1)	(2)	(3)	(4)	(5)	(6)
Post× *Treat*× *Black*	-0.028	-0.023	-0.026	-0.027	-0.019	-0.019
	(0.017)	(0.016)	(0.016)	(0.017)	(0.017)	(0.018)
Borrower and Loan Characteristics		Yes	Yes	Yes	Yes	Yes
Additional Borrower Characteristics				Yes	Yes	Yes
BHC Characteristics			Yes	Yes	Yes	
Year Fixed Effects	Yes	Yes	Yes	Yes		
MSA Fixed Effects	Yes	Yes	Yes	Yes		
BHC Fixed Effects		Yes	Yes	Yes	Yes	
MSA-Year Fixed Effects					Yes	Yes
BHC-Year Fixed Effects						Yes
Observations	27,979	27,949	27,680	26,956	26,775	26,763
Adjusted R-squared	0.054	0.099	0.110	0.109	0.137	0.135

Table 10: Committees related to lending discrimination

This table reports the results of estimating Equation (3). The dependent variable, *Committee*, is a dummy variable that equals one if bank has a committee related to lending discrimination; *Treat* is a dummy variable that equals one if the bank is targeted by hedge fund activism, and zero otherwise; *Post* is a dummy variable that equals one of the mortgage application occurred after the bank is targeted by hedge fund activism; Standard errors clustered by bank are reported in the parentheses below the coefficient estimates. Significance at 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	(1)	(2)
post_treat	0.016**	0.017**
	(0.008)	(0.008)
Bank Characteristics		Yes
Bank Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	1,039	1,011
Adjusted R-squared	0.819	0.814

Table 11: Bank branch openings

This table present the results on how hedge fund activism affects the number of branches of target banks at the county level. The dependent variable, $Number\ of\ Branch$, is the natural logarithm of the number of bank branches measured at the county level; $Treat$ is a dummy variable that equals one if the bank is targeted by hedge fund activism, and zero otherwise; *Post* is a dummy variable that equals one of the mortgage application occurred after the bank is targeted by hedge fund activism; $High$ is a dummy variable that equals one if the the differences in mortgage denial rates between African American and non-African American applicants are above the county median. Standard errors clustered by bank are reported in the parentheses below the coefficient estimates. Significance at 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	(1)	(2)	(3)	(4)
post_treat_high	0.102**	0.102**	0.103**	0.116**
	(0.050)	(0.051)	(0.051)	(0.053)
Bank Controls		Yes	Yes	
Bank Fixed Effects	Yes	Yes		
County Fixed Effects	Yes	Yes		
Year-Fixed Effects	Yes	Yes	Yes	
Bank-County Pair Fixed Effects			Yes	Yes
Bank-Year Fixed Effects				Yes
Observations	2,031	2,003	2,003	1,801
Adjusted R-squared	0.914	0.915	0.956	0.960