Regulatory Stress Testing and Bank Performance

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Abstract

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Keywords: Banks, Stress Testing, Equity Performance, CDS Performance

JEL Classification Numbers: G00, G21, G28

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Abstract

This paper investigates the impact of stress testing results on bank's equity and CDS performance using a large sample of twelve tests from the US CCAR and the European EBA regimes in the time period from 2010 to 2018. We find that passing banks experience positive abnormal equity returns and tighter CDS spreads, while failing banks show strong drops in equity prices and widening CDS spreads. We also document strong market reactions at the announcement date of the stress tests. Although the institutional designs between US- and European stress tests differ, we generally observe similar capital market consequences for both regimes. We complement existing studies by investigating the predictability of stress test outcomes and evaluating strategic options for affected banks and investors.

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1. Introduction

Over the course of little more than a decade, bank stress tests have developed into a key supervisory tool that shapes headlines and fundamentally affects the main business operations of banks worldwide. The financial crisis of 2008 - 2009 revealed that banks' capital was insufficient - both in quantity and quality - to withstand large adverse shocks. Hence, following the crisis, regulators pushed for tighter rules and a systemic overhaul of the pre-crisis Basel II framework with a key focus on the refinement of banks' risk-weighted asset calculation and capital requirements. The post-crisis adjustments of these capital standards continue to present a challenge for financial institutions, especially in times of overall low bank profitability and crisis legacy costs. To assess if banks are keeping pace with regulatory demands, supervisors around the globe increasingly rely on stress testing.

Bank stress tests assess the capitalization of banks on a forward-looking basis under simulated unfavourable economic scenarios. They focus on several key risk types, such as credit risk, market risk, and liquidity risk, to determine the banks' financial health in crisis situations. Stress tests break with traditional supervisory approaches in their far-reaching disclosures and provide market participants with unprecedented insights into bank balance sheets and their reaction to macro variable changes. Moreover, at the same time, stress tests place follow-up requirements on banks that fall short of supervisory expectations.

The aim of this paper is to develop our understanding of the consequences of stress tests for affected banks and investors along two dimensions. On the one hand, we study the impact of stress testing results and stress testing announcements on bank's equity and CDS performance. On the other hand, we examine whether stress testing results are predictable by different bank characteristics as well as the announcement return and whether banks and investors can strategically profit from such predictability. Our analyses are performed on a sample of twelve stress tests; seven tests from the US Comprehensive Capital Analysis and Review (CCAR) and five tests from the European Banking Authority (EBA) regimes in the time period from 2010 to 2018.

We provide five contributions that advance our understanding of the capital market effects of stress tests. First – using data from twelve US and European stress tests (seven stress tests from the US and five from Europe) and an event study design in the period from 2010 to 2018 – we show that stress test results reveal new information to market participants as they significantly affect banks' equity and CDS performance. Passing banks, on average, experience significantly positive abnormal equity returns of 50 basis points and significantly tighter abnormal CDS spreads of -52 basis points on the stress test release day. To the contrary, failing banks earn significantly negative abnormal equity returns of -174 basis points and widening abnormal CDS spreads of 83 basis points on that day. Taken together, we observe that the overall effect of stress tests is performance positive: On average, tested banks experience significantly positive abnormal equity returns of 33 basis points and significantly abnormal tighter CDS spreads of -51 basis points on the result release day.[1] Relating these results to the effectiveness of stress tests as a policy instrument, we can observe (without taking account of the effect of stress test announcements) that past stress test result releases were, on average, successful in improving investor sentiment towards banks' equity and credit risk.

To the best of our knowledge, our paper is the first to analyze the market impact of stress test results based on a *panel* of twelve US and European stress tests. Up to now, existing studies mainly focus either on (i) investigating a *time-series* of stress tests in a jurisdiction (for the US or Europe) or (ii) comparing *two* individual stress tests between the US and Europe. In the time-series setting, for US banks, Morgan, Peristiani and Savino (2014), Flannery, Hirtle and Kovner (2017), and Fernandes, Igan, and Pinheiro (2017) show that bank equity and CDS performance is significantly affected by stress test releases, whereas Neretina, Sahin, and De Haan (2014) do not observe significant capital market effects on the release day. For European banks, Ellahie (2012), Alves, Mendes, and Perreira da Silva (2015), and Georgescu, Gross, Kapp and Kok (2017) document that stress test releases trigger significant capital market consequences, while Petrella and Resti (2013) only observe a minor impact on bank equity performance. Candelon and Sy (2015) compare the CCAR 2009 and the EBA 2011 stress tests and conclude that the overall capital market impact is different across jurisdictions. Due to the contrasting empirical findings retrieved in the literature, we recognize an important merit in synthesizing the results for the up-to-date largest panel of stress tests from both the US and Europe. This dataset also includes the four most recent stress test results (i.e., the CCAR stress tests of 2016, 2017 and 2018 as well as the EBA stress test of 2018) which have never been assessed in the literature before.[2, 3]

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[1] Note that this result is derived from retrieved data of 392 equity return and 277 CDS spread observations of tested banks in our sample. Out of the 392 equity observations, we count 361 passes and 31 fails. Out of the 277 CDS spread observations, we count 256 passes and 21 fails. Hence, one has to be cautious to not overinterpret this result due to the small number of stress test fails. Nevertheless, we observe that, *on average*, the positive impact of the majority of stress test passes exceeds the negative impact of few stress test fails (which can be quite significant on an individual basis).

[2] The research papers with the most recent stress test samples, that we are aware of, are Fernandes, Igan, and Pinheiro (2017) and Neretina, Sahin, and de Haan (2015), who study the US stress tests between 2012 and 2015, as well as Georgescu, Gross, Kapp and Kok (2017) who study the 2014 and 2016 European stress tests. For a recent overview on existing studies. For a recent overview on employed data samples and results of the existing stress testing literature, see Appendices A.1 and A.2.

[3] Note that this large dataset also enables us to compare market reactions of stress test releases and announcements (Section 5.3), predictability of stress test outcomes (Section 5.4), and trading strategies to exploit stress test outcome predictability (Section 5.5) between the US and Europe, which are all new contributions to the literature.

Our second contribution concerns the market reaction on stress test announcement events. On these days, we reveal market effects that point towards the opposite direction of the result release dates, i.e., banks, that are announced to be stress tested, earn significantly negative abnormal equity returns of -21 basis points and significantly abnormal wider CDS spreads of 52 basis points on the event day. We find that these results are driven by banks that are tested for the first-time (abnormal equity return of -34 basis points and abnormal CDS spreads of 72 basis points) and banks which are on the size threshold of being tested (abnormal equity return of -42 basis points and abnormal CDS spreads of 71 basis points). Moreover, when combining the result release- and the announcement event, we document that the overall market reaction is statistically not distinguishable from zero.

Previous studies, such as Petrella and Resti (2013), Morgan, Peristiani and Savino (2014), Candelon and Sy (2015), and Fernandes, Igan and Pinheiro 2017, examine the market impact of stress test announcements with mixed results. While Petrella and Resti (2013) do not find evidence of a market reaction of stress test announcements, Morgan, Peristiani and Savino (2014), Candelon and Sy (2015), and Fernandes, Igan and Pinheiro 2017 find empirical support for a significant market impact for some stress test announcements (e.g., for the EBA 2011 stress test and the CCAR 2013 stress test). Again, as in the case of the result release effect, our study is the first to apply a panel dataset of twelve US and European stress tests to document that the market impact of stress test announcements is, on average, performance negative. Moreover, we contribute to show that the positive effect of stress tests on bank`s equity and CDS spreads on the result release day is subsumed by a negative effect realized on the stress test announcement day.[4]

Our third contribution is to compare the capital market effects of stress test results and announcements between banks tested under the US CCAR and the European EBA regimes. This investigation is interesting because institutional designs between the two regimes differ.[5] As an example, we observe that, for US stress tests, the institutional architecture and number of banks tested is more stable as well as the credibility of the regulatory backstop (i.e., the procedures that require failing banks to cut capital distributions or raise new capital, see also Section 2.3) is higher than for European stress tests. To the opposite, European stress test regulators publicly disclose a much larger share of retrieved banking data to the public than US regulators do. Empirically, we observe that capital market effects are similar across regimes: Abnormal equity and CDS return differences between banks tested under the US CCAR and the European EBA are statistically indifferent from each other, both at the result-

[4] Note that the finding of a significant negative market impact of stress test announcements only holds when we pool the CCAR and EBA stress tests. We do not find a significant market effect when examining the US and European stress tests individually.

[5] We describe differences in institutional stress test designs in Section 2.3. We also explain these institutional details with corresponding expected market reactions in Section 3 when we derive our testable hypotheses of the paper.

and the announcement day. Hence, we observe that – despite differences in institutional details exist – US and European stress tests trigger market reactions of an overall similar magnitude.

Fourth, our study investigates whether different variables, publicly known on the day after the stress test announcement, can predict the final stress test outcome (with corresponding abnormal equity and CDS performance). For this purpose, we perform a logistic regression of a bank's stress test release outcomes on different bank characteristics as well as the announcement day return. We show that that a bank's excess capital, the ratio of non-performing assets to regulatory capital (CET1), and the announcement day return are significant predictors of the pass/fail outcome of a bank. Moreover, when validating the predictive model in-sample (out-of-sample), it correctly classifies 210 out of 218 (139 out of 142) banks passing the stress tests and 8 of 10 (6 of 8) banks failing the stress tests, assuming a passing likelihood threshold of 50%.[6]

The question of whether stress test results are predictable by bank fundamentals – known on the day after the stress test announcement – is largely unexplored in the literature. Using data on the EBA 2014 stress test, Barucci, Baviera and Milani (2018) investigate the association between bank fundamentals, though *at the time of the stress test release*, and test outcomes. Similar to our results, they identify, among others, a bank's capitalization and non-performing exposures as being correlated to the stress test pass/fail likelihood. Morgan, Peristiani and Savino (2014) and Carboni, Fiordelisi, Ricci and Lopes (2017) investigate whether the market has largely deciphered on its own which banks are likely to fail a stress test and document a relationship between the bank's announcement day return and its stress test result performance. Philippon, Pessarossi, and Camara (2017) evaluate the quality of banking stress tests in Europe by comparing predicted banks' losses to actual losses. Finally, by applying data on different US stress tests, Glasserman and Tangirala (2016) observe that stress test outcomes have become more predictable over time, while Flannery, Hirtle and Kovner (2017) show that market reactions of stress tests are more pronounced for riskier institutions, i.e., banks that are more leveraged. We add to these papers by creating a prediction model for stress test passes/fails which is calibrated on our panel of twelve stress tests from both the US and Europe.

Given a certain degree of stress test predictability, it seems plausible that this is exploited by both tested banks and informed investors to profit from the documented capital market consequences on the stress test release date. We investigate these strategic options as our fifth contribution of the paper. On the one hand, banks that are likely to fail a stress test should be

[6] The passing likelihood refers to the predicted probability of a bank passing the corresponding stress test and is derived from the logistic regression calibrated on different bank characteristics. We obtain identical results when we alter the passing likelihood threshold to 60% or 70%.

worried about the negative capital market consequences on the release date and should wish to optimize their capital structure accordingly. In line with this idea, we find that banks that are predicted to fail a stress test disproportionately raise additional capital over the 180-days period before the result release day. We do not observe such behaviour from banks that are predicted to pass a stress test or from non-tested banks.[7] On the other hand, informed investors could also profit from the documented capital market reactions. Indeed, we show that a trading strategy of buying likely-to-pass bank stocks and short-selling likely-to-fail bank stocks generates significant abnormal returns on the release date of 70 basis points. Moreover, and consistent with this idea, we find that short interest of likely-to-fail US bank stocks rises by 26.76% between the stress test announcement and the stress test result release date.[8] Again, we do not observe a significant rise in short interest for banks that are predicted to pass a stress test or for non-tested banks. While past research, such as Goldstein and Sapra (2014) as well as Flannery, Hirtle and Kovner (2017), has identified the risk that banks and investors consider strategic options to profit from market reactions due to stress tests, our paper is the first to provide actual empirical evidence about this notion. Specifically, we contribute to the literature in showing that likely-to-fail banks disproportionately raise capital and that informed investors short likely-to-fail banks over the 180-days period before the release day.

The remainder of this paper is structured as follows. Section 2 provides information about the institutional designs of stress tests in the US and Europe. We derive testable hypotheses for the empirical study in Section 3. Section 4 introduces the data and discusses the empirical methodology. In Section 5, we provide the main empirical results of the paper. Finally, in Section 6, we conclude.

2. Institutional Design for US and European Stress Tests

Bank stress tests are supervisory analyses conducted on a forward-looking basis under simulated unfavourable economic scenarios which are designed to determine whether a bank has sufficient capital to withstand the impact of adverse developments. They were introduced in the aftermath of the global financial crisis in 2007 - 2009 with the objective to detect weaknesses in the banking system at an early stage, so that preventive action can be taken by banks and regulators.

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[7] Another potential reason why likely-to-fail banks are incentivized to disproportionately raise capital over the 180-days period before the result release day is the anticipation of the need to meet future constraints imposed by the stress test supervisor. Raising additional capital before the result release makes intuitive sense as capital market conditions are likely to become more challenging for failing banks.

[8] Since short interest data is publicly available on a larger scale only for stocks trading on the NYSE, AMEX, and NASDAQ, this empirical analysis can only be performed for US bank stocks.

2.1. US Stress Tests

The beginning for country-wide, centrally-administrated bank stress tests is considered to be the Fed's 2009 Supervisory Capital Assessment Program (SCAP). It included the largest 19 US-domiciled bank holding companies and hence covered more than two-thirds of US banking assets (Fed, 2009). The stress tests that followed the SCAP can be sub-divided into the Dodd-Frank Act Stress Tests (DFAST) and the Comprehensive Capital Analysis and Review (CCAR). While the DFAST stress testing regime covers banks with balance sheet sizes ranging from $10bn to $50bn, the CCAR assesses institutions with balance sheets in excess of $50bn.

In our paper we focus on all seven US CCAR stress tests from 2012 to 2018. The CCAR assesses both a quantitative as well as a qualitative dimension: Whereas the quantitative dimension provides information on banks' forecasted capital positions under three Fed-defined economic scenarios, the qualitative dimension serves to verify and assess bank internal capital planning processes (which includes an assessment of bank stress testing practices, methodology and governance controls). A bank will fail a stress test if it either fails in the quantitative dimension or in the qualitative dimension of the assessment.

Panel A of Figure 1 provides a timeline of the seven US CCAR stress tests. Panel A of Table 1 reports additional information to the respective stress test with regard to participating banks and economic scenarios applied.

[Insert Figure 1 and Table 1 around here]

Over our sample period from 2010 to 2018, a total of 36 US banks have been tested with 18 to 34 banks per individual stress test. We observe a total of 16 US stress test failures (four failures in 2012, two in 2013, five in 2014, two in 2015, two in 2016, none in 2017, and one in 2018) of which ten are qualitative and six are quantitative failures. A complete list of participating and failing US banks per stress test is available in Panel A of Table A.4 of the Internet Appendix.

2.2. European Stress Tests

Although stress-testing experiments had already been conducted internally by big banks before, the first official European stress test was coordinated by the Committee of European Banking Supervisors (CEBS) in 2009. This 2009 exercise was embryonic in nature, with only 22 covered banks, no explicit capital target, and no official list of failing banks. After increasing doubts about the capacity of some European governments (such as Greece, Ireland, Italy, Portugal, and Spain) to repay their debt, the CEBS announced the second stress test in 2010 which increased the number of stress tested banks to 91 covering approximately 65% of EU banking assets.

From 2011 onwards, the stress testing responsibilities were transferred to the European Banking Authority (EBA), which operated exercises in 2011, 2014, 2016, and 2018. Compared to the 2010 CEBS test, the EBA strongly increased the transparency of the stress test process and provided details on macroeconomic scenarios and methodologies (e.g., the EBA publicly disclosed 3,200 data items in 2011 vs. 149 data items in the CEBS stress test of 2010). In our paper, we focus on the five European stress tests from 2010 to 2018; for the sake of simplicity, both CEBS and EBA stress tests will be referred to as EBA stress tests. Panel B of Figure 1 provides a timeline of the five European stress tests. Panel B of Table 1 reports additional information to the respective stress test with regard to participating banks and economic scenarios applied.

Over our sample period from 2010 to 2018, a total of 130 European banks have been tested with 48 to 130 banks per individual stress test. The results reveal seven failures in 2010, eight in 2011, and 25 in 2014. For the stress tests of 2016 and 2018, the supervisor departed from a strict pass/fail procedure. In order to be consistent with previous EBA stress tests, we assign an implicit hurdle rate of 5.5% CET1 (as applied in the EBA 2014 stress test) also to the stress tests in 2016 and 2018: Using this procedure, we obtain one implicit fail of Banca Monte dei Paschi in 2016 and a total of 41 EBA stress test failures. A complete list of participating and failing banks European banks per stress test is available in Panel B of Internet Appendix A.4.[9]

2.3. Differences in the Design of US and European Stress Tests

Following Haben, Liesegang, and Quagliariello (2013) and Petrella and Resti (2016) we observe the following key differences between the US CCAR and the European EBA stress test designs.

First, the *institutional architecture* of US stress tests is consistently managed by the Fed throughout the process (from the validation of data to the disclosure of results). In contrast, the institutional architecture underlying the stress tests in Europe was a patchwork of different bodies and supervisory cultures involving nation-wide differences in accounting and fiscal rules. The Federal Reserve Bank in the US uses its own models to estimate P&L implications of the stress test. In contrast, the EBA approach indeed relies on bank internal models. As a consequence, US stress tests can be regarded as more homogenous compared to the corresponding stress tests in Europe.

Second, the *number of banks tested* strongly differs between the US and Europe (i.e., in our sample are a total of 36 vs. 130 tested banks in the US vs. Europe). Whereas a high degree of market concentration exists in the US (the 36 banks cover approximately 65% nation-wide

[9] The implicit failure assumption for Banca Monte dei Paschi in the EBA 2016 stress test is in line with Georgescu, Gross, Kapp and Kok (2017). Note that all of our main empirical results about the market impact of stress tests are robust if we do not assign an implicit fail in the EBA 2016 stress test.

banking assets), most European banks are still "national champions" with a large presence in the domestic market and a limited activity in other European countries (i.e., a similar market share of 65% of banking assets are held by 91 banks).

Third, the US CCAR evaluates banks based on a *quantitative* as well as a *qualitative dimension*, whereas the EBA only assesses the quantitative information delivered by a bank. Hence, US stress tests also emphasize the evaluation of bank internal capital planning processes, methodology, and governance controls.[10]

Fourth, both stress test designs vary in the *credibility of the regulatory backstop*. While the Fed provides clear-cut set off procedures that require failing banks to cut capital distributions or raise new capital, European authorities have applied different rulebooks to different stress tests and not reached a common agreement on how to treat failing banks.[11] Hence, US stress tests display a more credible regulatory backstop than European stress tests.

Finally, the US and European stress tests diverge on the publicly disclosed items of the participating banks. While the data items released by the Fed come in tens, the EBA keeps disclosing thousands of detailed figures for each covered bank (and using web-based tools to enable investors to quickly gain control of the data and use them for their own analyses). We thus observe strong differences in the *degree of detail in the disclosed results*.[12]

3. Testable Hypotheses

This paper aims to develop our understanding of the consequences of stress tests for affected banks and investors using the up-to-date largest cross-jurisdictional sample of twelve US and European stress tests. This section derives our main hypotheses of the paper which will then be empirically tested in Section 5.

We start our examination by evaluating whether the publication of stress test outcomes provides new information to market participants, so that equity prices and CDS spreads of affected banks immediately react on stress test releases (following the principle of an efficient market, see Fama, 1970, and Campbell, Lo, and MacKinlay, 1997). Since (i) stress test result decisions are (mainly) based on private information submitted by the banks to the regulator and (ii) passing/failing a stress test results in increased/decreased investor confidence about the financial stability of an institution, we assume that result outcomes indeed provide new,

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[10] The qualitative dimension remained out-of-scope in the first three EBA stress tests. The 2016 and 2018 iterations aimed for a gradual introduction of qualitative information.

[11] The underlying reason for this characteristic has been a hand-over of banking supervision from national supervisors to the ECB creating the so-called Single Supervisory Mechanism (SSM) and the introduction of the Banking Resolution and Recovery Directive (BRRD), which shaped the period from 2012 to 2016.

[12] For an overview of additional methodological differences in stress test designs between the US and Europe, we refer to Kronfellner, Suess, and Vonhoff (2017).

relevant information to most market participants. Specifically, we expect that passing (failing) a stress test is associated with positive (negative) capital market consequences for the affected bank. Hence, we expect a positive abnormal equity return and a tightening abnormal CDS spread for passing banks as well as a negative abnormal equity return and a widening abnormal CDS spread for failing banks.[13]

Hypothesis 1 (Result Effect): *The publication of a stress test result has informational content for the equity price and CDS spread of a tested bank. Passing institutions will experience a positive abnormal equity return and a tightening abnormal CDS spread at the result release date, whereas failing institutions will be confronted by a negative abnormal equity return and a widening abnormal CDS spread.*

We conjecture that not only the result release matters for investors, but also stress test announcements can trigger a significant market reaction for affected banks. In particular, we argue – in line with Goldstein and Sapra (2014) and Goldstein and Leitner (2018) – that in case of a negative result outcome stress test disclosures can destroy risk-sharing opportunities for banks (see also Hirshleifer, 1971) which is likely to increase investors' uncertainty about the respective bank.[14] As a consequence, holding securities of this financial institution requires an additional premium to investors in the form of higher expected returns (i.e., one would expect an immediate decrease in the equity price and widening CDS spreads). This argument is particularly relevant for those banks which are particularly susceptible to the stress test scenarios, for those where a negative result outcome would be particularly harmful (e.g., when market-based funding options are limited), for those which are tested for the first time, and for those that are being on the size threshold of being tested or not.

Hypothesis 2 (Announcement Effect): *The announcement of a stress test result has informational content for the abnormal equity price and CDS spread of a tested bank. Due to increased uncertainty about the financial situation of the bank, institutions will experience a negative abnormal equity return and a widening abnormal CDS spread. We expect that this effect is particularly severe for different subset of banks, including those that are tested for the first time, and for those that are being on the size threshold of being tested or not.*

Stress test procedures between the US and Europe strongly differ in their institutional design (see also Section 2.3). In particular, we observe that, for US stress tests, the *institutional*

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[13] It should be noted that studying the market reaction based on equity prices and CDS spreads can provide additional insights as each measure captures a different component of a bank's profit distribution (see Petrella and Resti, 2013). In particular, since stress test result releases provide information on solvency, one could argue for a direct impact of releases on banks' CDS spreads as uncertainty is being lifted.

[14] This argument is particularly relevant in view of the interbank market. Since negative stress test results could help market participants identify weak institutions, banks could be unwilling to provide liquidity insurance to weak banks via interbank lending, which impedes this market from functioning.

architecture and *number of banks tested* is more stable as well as the *credibility of the regulatory backstop* is higher than for European stress tests. To the opposite, European stress test regulators publicly disclose a much larger share of retrieved banking data to the public than US regulators do.

When assessing the implications of the differences in institutional design on the magnitude of the *result effect* and the *announcement effect* between regimes, we believe that a more stable *institutional architecture* (involving several stress tests of the identical banks over time) and a well-defined *regulatory backstop* (as observed in the US) will lead to a less pronounced market impact. In a similar vein, a *large amount of publicly disclosed data items of banks* (as observed in Europe) will make the stress test procedure more predictable and is, ceteris paribus, also expected to shrink the magnitude of the result- and announcement effect. As a consequence, from an ex-ante view, we expect that – despite differences in institutional details exist – US and European stress tests should trigger market reactions of an overall similar magnitude.[15]

Hypothesis 3 (Differences between the US and Europe): *The market reactions of the result- and announcement effect do not significantly differ between US CCAR and European EBA stress test regimes.*

The existence of the result- and the announcement effect for stress tested banks indicates that market participants do not fully anticipate the stress test announcement- and release outcomes (assuming that Hypotheses 1 and 2 hold empirically). This, however, does not exclude the possibility that stress tests results are – at least to a certain extent – predictable for a subset of informed investors by variables publicly known after the day of the stress test announcement. Following Glasserman and Tangirala (2016) and Morgan, Peristiani and Savino (2014), we include a bank's stress test announcement return as well as fundamentals that provide a holistic representation of the state of the bank as such predictors. Since both US and European stress test procedures use quantitative information to evaluate the capitalization of banks under simulated economic scenarios, our conjecture is that (at least some) of the bank variables are significantly related to the stress test outcome.

Hypothesis 4 (Predictability of Stress Test Outcomes): *Stress test outcomes for both US and European banks are (at least partly) predictable by bank variables known at the day after the stress test announcement.*

Given that Hypothesis 4 holds, predictability of stress test results opens the opportunity for affected banks and informed investors to exploit the situation. On the one hand, banks that

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[15] Note that the severity of the stress test scenarios between the US and Europe can also differ. However, since a discussion of scenario severity is challenging and likely to be imprecise (since macroeconomic shocks of the CCAR and EBA stress tests are based on a plurality of different economic variables), we refrain from a systematic investigation between the severity of the stress test scenario and the respective market reaction.

are likely to fail a stress test might be worried about possible negative capital market consequences (Hypothesis 1) and optimize their capital structure accordingly, i.e., they might raise capital before the stress test release to mitigate the loss from declining equity prices and widening credit spreads. On the other hand, strategic investors could use the predictability of stress test outcomes to profit from the expected market impact of the release event. A possible trading strategy would be to buy bank stocks that are likely-to-pass and sell bank stocks that are likely-to-fail a stress test.

Hypothesis 5 (Strategic Options due to Predictability): *Both affected banks and informed investors will exploit the predictability of stress test outcomes. Possible actions include capital increases of likely-to-fail banks and amplified short-selling of likely-to-fail bank stocks before the stress test release event.*

4. Data and Methodology

Section 4.1 describes the stock market and CDS data applied in the empirical analysis of the paper. We then explain the event study methodology to compute abnormal returns for specific event windows and provide first summary statistics in Section 4.2.

4.1. Stock Market and CDS Data

We cover all twelve stress tests from the US CCAR and the European EBA regimes in the time period from 2010 to 2018; these tests include seven tests in the US and five tests in Europe. We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. To mitigate the influence of outliers in our empirical analysis, we winsorize all daily equity prices and CDS spreads at the 1% level. Our overall sample consists of the union of all banks that are assessed in at least one of the stress tests. For CCAR stress tests, our sample allows us to assess the equity and/or CDS implications for a total of 36 banks over the 2010 - 2018 period.[16] For EBA stress tests, we analyze the equity and/or CDS implications for a total of 93 banks.

For each stress test we split our sample into tested and non-tested banks. A bank which is tested in a selected individual stress test only, is attributed to the group of non-tested banks in the remaining stress tests. Furthermore, CCAR and EBA non-tested groups are expanded with the 'next-20' listed US banks and the 'next-30' listed banks within the European Economic Area, respectively, based on average 2010 to 2018 balance sheet sizes. As a result, approximately half of the abnormal equity return estimates (see Section 4.2.3) are computed

[16] If banks are not listed themselves, they are attributed to their ultimate parent. Hence, foreign domiciled CCAR participants (e.g., Deutsche Bank Trust, Santander Holdings) are attributed their parents' equity and CDS performance.

for the stress-tested banks and half for the non-tested banks. For the CDS return study, approximately two-thirds of the observations belong to the stress-tested banks and one-third to the non-tested sample.

4.2. Event Study Methodology

This paper employs the event study methodology pioneered by Fama, Fisher, Jensen and Roll (1969) and MacKinlay (1997) to compute abnormal return estimates which has become the standard approach in the stress test literature. The event study setup is illustrated along the three steps traditionally involved in event studies (see Sections 4.2.1 to 4.2.3). We provide summary statistics of the computed abnormal equity and CDS return estimates in Section 4.2.4.

4.2.1 Defining Events

This study considers two specific days as key events in the stress test procedure. The first event is the day of the stress test announcement, which is defined as the day of the first communication of supervisors to the public in a stress testing cycle.[17] The second key event is the stress test disclosure by the supervisor. Since stress test results are published upon market closing, the event date is the next available trading day (on which we then analyze abnormal security performance).

4.2.2 Estimating Normal Returns

The estimation of normal returns follows the recent stress test literature and applies a one-factor market model according to Sharpe (1964). First, equity prices and CDS spreads are transformed into logarithmic returns using

$$R_{i,t} = ln\,(\frac{p_{i,t}}{p_{i,t-1}}), \qquad (1)$$

where $R_{i,t}$ is the log return and $p_{i,t}$ is the end-of-day market closing price for day t of security i. This approach is applied to $p_{i,t}$ either being an equity price or being an CDS spread and

[17] Some ambiguity exists in the literature regarding the classification of the announcement event. We follow Georgescu, Gross, Kapp and Kok (2017) by relying on the date on which the first and actual stress test related press release is made available by a supervisor. These press releases typically reveal the set of tested banks and give details on the applied stress test methodology. In cases where the press release provides a timestamp after the market closing, we consider the next trading day as the announcement event day. When possible, we stick to the announcement dates that have been used in the existing literature before: For the US CCAR stress tests of 2012 and 2013 our announcement dates are in line with Candelon and Sy (2005), for the EBA stress test of 2011 our announcement date is in line with Candelon and Sy (2005) as well as Petrella and Resti (2013), and for the EBA stress tests of 2014 and 2016 our announcement dates are in line with Georgescu, Gross, Kapp and Kok (2017). For the EBA 2016 and 2018 stress tests, we apply the dates where the supervisor released the confirmed stress test methodology to the public.

follows the work of Morgan, Peristiani and Savino (2014) and Flannery, Hirtle and Kovner (2017). Since CDS spreads are quoted in basis points and are increasing in riskiness, their interpretation is opposite to that of equity performance. A reduction in CDS spreads is referred to as 'spread tightening'. Vice versa, an increase in CDS spreads is referred to as 'spread widening'.

Second, an estimation window of 120-trading days that ends 10 trading days before the event (-10, -130) is constructed.[18] The exclusion of the last 10 trading days should shield the estimation against event related drifts. The parameters α and β of the one-factor model are then estimated over the estimation window using

$$R_{it} = a_i + \beta_i R_{m,t} + \varepsilon_{i,t.} \quad (2)$$

In our main specification, we follow Morgan, Peristiani and Savino (2014) and use a financial sector market model. For the equity market, we use the S&P 500 Financials index for CCAR stress tests and the EURO STOXX Financials index for EBA stress tests. Moreover, for the CDS market, we apply the 5Y CDX North America Financials Senior index for CCAR stress tests and the 5Y iTraxx Europe Financials Senior index for EBA stress tests. All of our results are robust when we use a general (non-financial sector) market model (as in Petrella and Resti, 2013, and Candelon and Sy, 2015) or apply a hybrid model (i.e., a two-factor model including a country and a regional banking sector index, as in Georgescu, Gross, Kapp, and Kok, 2017).

4.2.3 Estimating Abnormal Returns

Abnormal returns (*AR*) represent returns in excess of the estimated market model, computed as

$$AR_{it} = R_{it} - \left(\widehat{a}_i + \hat{\beta}_i R_{m,t} \right). \quad (3)$$

For the purpose of this study, *AR* refers to $\mathrm{AR}_{\mathrm{it=0}}$, i.e., the abnormal return observable on the event day. In addition to the *AR*, a three-day cumulative abnormal return (*CAR*) is applied, which expands from the day before the event to the day after the event (+1,-1):

$$CAR_i = \sum_{t=-1,0,+1} AR_{\mathrm{it}}. \quad (4)$$

The *CAR* is the second key performance measure considered in this study.

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[18] Our results are robust when we apply a 250-trading days estimation window (as in Neretina, Sahin, and de Haan, 2014) instead of a 120-trading days window.

4.2.4 Summary Statistics

Our overall sample consists of 801 abnormal equity return estimates related to stress test release- and announcement events. Out of these 801 estimates, 362 are retrieved for passing banks, 31 for failing banks, and 408 for non-tested banks. In a similar vein, we compute 368 abnormal CDS return estimates: 256 for passing banks, 21 for failed banks, and 91 for non-tested banks.

A detailed list of all banks participating in our stress test sample with corresponding available abnormal equity and CDS return estimates is reported in Internet Appendix A.4. We use these estimates to assess the impact of stress test results and announcements on bank's equity and CDS performance in Section 5.

5. Empirical Results

This section provides the empirical results of our paper and tests Hypothesis 1 to Hypothesis 5. Sections 5.1 and 5.2 examine the market impact of stress test releases and announcements, respectively, while Section 5.3 evaluates differences in these effects for the US and the EU regime. Section 5.4 investigates whether the stress test outcome is predictable by looking at data known at the day after the stress test announcement and Section 5.5 analyses strategic options for banks and investors due to this predictability.

5.1. The Market Impact of Stress Test Releases

5.1.1 Passing vs. Failing Banks

We start our empirical analysis by testing Hypothesis 1 of the paper and investigate whether stress test results include informational content for the stock price and CDS spread of a tested bank. Results, covering the sample of all participating banks as described in Section 4.1 and accounted for stress test fixed effects in pooled analyses, are reported in Panel A of Table 2.

[Insert Table 2 around here]

In line with the intuition that stress test results provide important new information to market participants, we observe strong and significant effects on banks' equity and CDS spreads. Passing banks, on average, experience significantly positive abnormal equity returns of 50 basis points and significantly tighter abnormal CDS spreads of -52 basis points on the result release date (statistical significance is tested versus an abnormal return/spread of zero). Corresponding *t*-statistics, adjusted for serial correlation using the Newey and West (1987) method with two lags, amount to 4.57 and -2.88, respectively.[19] We find that these patterns (i)

[19] In our combined results of CCAR, EBA, and all stress tests, standard errors and *t*-statistics might be biased by the effect of serial correlation. Hence, in all significance tests of a pooled sample in Section 5, we (i) account for

hold both for the US CCAR and the European EBA stress tests, i.e., passing banks in the CCAR (EBA) stress tests experience positive abnormal equity returns of 55 (46) basis points and tighter CDS spreads of -41 (-58) basis points at the release date, and (ii) are stable when we apply *CAR* instead of *AR* as our measure of abnormal bank performance.

At the same time, we also observe that failure of stress tests is heavily penalized by the market. Failing banks, on average, show significantly negative abnormal equity returns of -174 basis points and significantly abnormal widening CDS spreads of 83 basis points on the release date with corresponding *t*-statistics of -1.88 and 1.78 (again, statistical significance is tested versus an abnormal return/spread of zero). These results are stable for both the US CCAR and the European EBA stress test regimes. We also find (not reported in Table 2) that abnormal equity returns (CDS spreads) of passing banks are statistically significantly higher (lower) from the abnormal equity returns (CDS spreads) of failing banks at the 1% level.

On the individual stress test level, the overall findings are frequently confirmed. Equity market response to stress test passes is positive in ten of the twelve stress tests considered, with five market responses being statistically significant at least at the 10 percent level.[20] The largest positive impact for passing banks is observed in the CCAR test of 2015 (163 basis points) for the USA and the EBA test of 2010 (114 basis points) for Europe. For failing banks, our overall observation of negative equity returns and wider CDS spreads is also documented in all but two of the stress tests considered. We document the most severe negative equity and CDS market responses with regard to *AR* in the CCAR 2016 and EBA 2014 stress tests. [21]

These empirical results point towards a confirmation of Hypothesis 1 of the paper, i.e., we can support the notion that stress test releases have informational content for the stock price and CDS spread of a tested bank. To further corroborate this evidence, we now go one step further and investigate for which subsets of stress test releases the market effects are particularly pronounced.

For this purpose, we split our sample into two subsamples: (i) releases of banks which are tested for the first time (i.e., *first-time tests*), versus (ii) releases of banks which are assessed subsequently after their first stress test (i.e., *all subsequent tests*). Panel B of Table 2 reports the results of the market reactions for the *first-time tests* and the *all subsequent tests* subsamples. In line with our conjecture, the empirical results reveal that the market impact of stress test

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stress test fixed effects and (ii) adjust standard errors using the Newey and West (1987) with two lags to account for serial correlation of abnormal equity returns / CDS spreads.

[20] The negative equity market response for passing banks in the case of the CCAR 2014 stress test confirms the empirical findings of Neretina, Sahin, and De Haan (2014).

[21] An interesting question is whether our results are influenced by European banks with US subsidiaries which are tested both in the CCAR and the EBA regimes. To check whether interdependencies are influencing our results, we exclude those banks from our sample. We find that our results are unaffected (results are available upon request.)

releases is higher for the first-time tests than for the all subsequent tests. First-time test passes, on average, experience abnormal equity returns of 71 basis points and abnormal CDS spreads of -81 basis points, whereas subsequent test passes receive abnormal equity returns of 42 basis points and abnormal CDS spreads of -39 basis points at the release date.[22] In a similar vein, we also observe that first-time stress test fails display a more severe market reaction than subsequent stress test fails.[23] Hence, we can conclude that the market impact of stress test releases is stronger for banks which are tested for the first time and hence, for which the stress test outcome is likely to display a higher degree of uncertainty.

Second, we examine whether the market impact of stress test outcomes differs between fails in the *quantitative* and the *qualitative* dimension. Since the EBA does not discriminate based on quantitative and qualitative dimensions in the stress test methodology, this analysis can only be performed for the US regime. In our sample of 16 US stress test failures, six are from the qualitative and ten are from the quantitative dimension. Panel C of Table 2 reports the average market impact of stress test due to quantitative and qualitative fails. Our results reveal that quantitatively failing banks experience negative abnormal equity returns of -171 basis points and significantly widening CDS spreads of 134 basis points, whereas qualitatively failing banks display negative abnormal equity returns of -196 basis points and significantly widening CDS spreads of 65 basis points. Differences in the market impact between quantitative and qualitative fails are hence very narrow and statistically not different from each other (at the conventional significance levels). We conclude that the market impact of stress test releases is not dependent on the fail dimension.[24]

To summarize, this section provides strong evidence that stress test results include informational content for the stock price and CDS spread of tested banks, i.e., we find support

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[22] In our subsequent tests sample, there are 15 events where the corresponding bank failed the past stress test and passes the corresponding one. We observe that the average abnormal equity returns and CDS spreads of these events amount to 0.60 and -0.62 basis points, respectively. Hence, the average market reaction is smaller in magnitude compared to the first-time sample, but larger in magnitude compared to the overall subsequent test sample. We interpret this finding that at least some investors were expecting the stress test pass of the respective bank at this point in time.

[23] In our subsequent tests sample, there are 14 events where the corresponding bank passed the past stress test and failed the corresponding one. As for stress test passes, our results indicate that the average market reaction for these events is smaller in magnitude compared to the first-time sample, but larger in magnitude compared to the overall low uncertainty sample.

[24] We also examine for US banks that fail the quantitative dimension (i.e., a number of six fails, see above) whether there exists a relationship between the *magnitude of the capital shortage* and subsequent abnormal equity returns and CDS spreads. In line with the expectation that higher capital shortages lead to more severe market reactions, we find that the correlation between the magnitude of the capital shortage and the abnormal equity return is -0.33, while the correlation between the magnitude of the capital shortage and the abnormal CDS spread is 0.06. We do not report results with regard to statistical significance, because the sample size for this test is restricted to only six banks.

for Hypothesis 1 of the paper. Moreover, our results indicate that the market impact is more severe for banks which are tested for the first time. We do not find differences in the market impact between fails in the quantitative and the qualitative dimension (for the banks tested under the US regime.)

5.1.2 Tested vs. Non-Tested Banks

The existing academic literature, so far, does not give a clear picture on the overall impact of stress testing on the abnormal performance of tested banks. While Neretina, Sahin, and De Haan (2014), Candelon and Sy (2015), and Flannery, Hirtle and Kovner (2017) identify a positive impact for the 2009, 2012, and 2015 stress tests in the US and Europe, Georgescu, Gross, Kapp and Kok (2017) observe an overall marginally negative effect on participating banks. Hence, we now use our up-to-date largest panel stress test sample to shed light on this research question and examine the overall impact of stress test releases on the equity and CDS performance of tested banks (compared to a group of non-tested banks whose composition is explained in Section 4.1).

Panel A of Table 3 reports the results on the overall effect of stress test releases on bank's abnormal equity and CDS performance in the CCAR and EBA tests between 2010 and 2018.

[Insert Table 3 around here]

Across all stress tests covered, we document that the overall effect of stress test releases is performance positive. On average, tested banks experience significantly positive abnormal equity returns of 33 basis points and significantly tighter abnormal CDS spreads of -51 basis points with corresponding *t*-statistics of 2.51 and -2.71 (statistical significance is tested versus an abnormal return/spread of zero). These results are confirmed when we look at *CAR* instead of *AR* as our main measure of abnormal performance. Notably, we find that the impact of stress testing on equity and CDS performance of tested banks is particularly positive in the CCAR 2017 test, which has, to the best of our knowledge, not been assessed in the existing literature up-to-date. This result does not confirm the prediction of Glasserman and Tangirala (2016) who highlight the risk of diminishing information value of stress test results as they become a consistent feature of the supervisory agenda.[25]

We also check whether stress-testing result releases show significant spill-over effects to non-tested banks (as noted by Flannery, Hirtle, and Kovner, 2015, for a number of selected US stress tests). In our large sample of twelve stress tests both from the US and Europe, we cannot confirm this finding. On the one hand, we observe that non-tested banks earn abnormal equity

[25] Our empirical findings are in line with previous results in the literature. For example, as in Petrella and Resti (2013), we observe a muted and insignificant market response to the EBA 2011 stress test (abnormal equity return of only 11 basis points) which is reconciled with undermined EBA credibility following the 2010 assessment's inability to detect troubled Irish lending institutions.

returns and CDS spreads which are statistically indifferent from zero in terms of the daily *AR* and the three-day *CAR* (see Panel A of Table 3). On the other hand, Panel B of Table 3 indicates that the abnormal equity returns (CDS-spreads) of tested banks are 27 (-110) basis points higher (lower) that the abnormal equity returns (CDS-spreads) of non-tested banks with respective *t*-statistics of 1.81 and -2.81. Hence, the tested sample delivers significantly different performance on the release day compared to the sample of non-tested banks.[26] Note that differences in equity returns and CDS-spreads between first-time tested banks and non-tested banks are more pronounced than differences between subsequently tested banks and non-tested banks. This result is in line with the notion that resolution of uncertainty (higher uncertainty for *first-time tests* vs. lower uncertainty for *all subsequent tests*) is probably a main driver of our results.

Finally, a justified concern is – since balance sheet size is the key criteria on which stress tested banks are selected – that the samples between tested and non-tested are (by assumption) different, i.e., tested banks are substantially larger than non-tested banks. To check whether our results are stable when we restrict our sample to banks of similar size, we repeat the empirical tests of Panel A in Table 3, but restrict our sample to the five nearest financial institutions above and below the threshold line for each stress test. We report the results in Panel C of Table 3.

Our results based on this reduced sample confirm the findings from Panel A. While tested banks above the threshold show statistically significant abnormal positive equity returns and abnormal tightening CDS spreads of 38 and -62 basis points (when being tested against an abnormal return/spread of zero), non-tested banks earn statistically indifferent equity returns and CDS spreads of 5 and 24 basis points. On average, tested banks above the threshold experience significantly higher abnormal equity returns and tighter abnormal CDS spreads than non-tested banks below the threshold. Also note that the market reactions of 38 and -62 basis points are higher than those of the full sample, indicating that banks on the threshold are a main driver of the results. Hence, our empirical results of an overall positive performance effect of stress test releases hold and even get more pronounced when we restrict our sample to the five nearest financial institutions above and below the threshold line for each stress test.

In summary, this section provides empirical evidence that the overall stress test result effect is performance positive at the result release day. We document statistically significant

[26] In unreported tests, we also check for the statistical significance of the abnormal performance between the sample of passing banks vs. non-tested banks and the sample of failing banks vs. non-tested banks. In line with our previous results, we find that (i) passing banks earn significantly higher abnormal equity returns and tightening CDS spreads than non-tested banks as well as (ii) failing banks earn significantly lower abnormal equity returns and widening CDS spreads than non-tested banks on the stress test release day.

abnormal equity returns and abnormal CDS spreads for tested banks based on the full and a reduced sample (where we only take into account banks of similar size), but fail to observe corresponding significant abnormal performance for the non-tested group.

5.2. The Market Impact of Stress Test Announcements

Hypothesis 2 of this paper assumes that not only the stress test result event displays informational content for affected banks, but also the stress test announcement. Following the research of Goldstein and Sapra (2014) and Goldstein and Leitner (2018), we conjecture that stress test disclosures can destroy risk-sharing opportunities for banks according to the Hirshleifer (1971) effect in case of a negative stress test result. As a consequence, the announcement of a stress test is likely to increase investors' uncertainty about the financial situation and holding securities of this financial institution requires an additional premium in the form of higher expected returns (i.e., one would expect an immediate decrease in the stock price and widening CDS spreads). This argument is particularly relevant for those banks which are (i) tested for the first time, and (ii) on the size threshold of being tested or not.

We empirically investigate Hypothesis 2 in this section. Results for the effect of the stress test announcement on equity and CDS performance for our whole sample of banks are reported in Panel A of Table 4.

[Insert Table 4 around here]

We find that the average impact of stress test announcements on banks' performance is fundamentally different from the average impact of stress test releases. While Table 3 displays that tested banks experience positive abnormal equity returns and tighter CDS spreads on the stress test result day, we observe -- in Table 4 -- that tested institutions experience negative abnormal equity returns of -21 basis points and wider abnormal CDS spreads of 52 basis points on the announcement day. The corresponding *t*-statistics amount to -1.85 and 1.79 and display statistical significance at the 10% level, respectively (statistical significance is tested versus an abnormal return/spread of zero). Note that these reported *t*-statistics are statistically significant at the 10% level only when we pool the CCAR and EBA stress tests together. We generally do not obtain statistically significant results when we look at the corresponding jurisdictions separately.

We also investigate whether there exist spill-over effects between tested and non-tested banks on the announcement day. As reported in Panel B of Table 4, we do not observe such spill-over effects; instead we find that abnormal performance of tested banks is statistically different (at the 10% level) from the abnormal performance of non-tested banks with spreads of -26 (40) basis points based on abnormal equity returns (CDS-spreads). In the same way as for the result release effect, we observe that differences in equity returns (CDS-spreads) between tested and non-tested banks on the announcement day are particularly pronounced for the subset of first-time tested banks: Equity returns and CDS spreads between first-time and subsequent tests are statistically significantly different at the 10% level. This result supports Hypothesis 2 documenting that the stress test announcement has particular informational content for banks for which no prior information is accessible.

As already mentioned in Section 5.1, a justified concern of our empirical analysis is that the samples between tested and non-tested are (by assumption) different, i.e., tested banks are larger than non-tested banks. To check the stability of our results with regard to this size concern, we only cover financial institutions around the threshold of being tested.[27] Results of the announcement day effect for this reduced sample are reported in Panel C of Table 4 and confirm that the abnormal performance of tested banks is significantly different from the abnormal performance of non-tested banks. Moreover, we observe that the market reactions for tested banks that are on the threshold are more pronounced (abnormal equity and CDS effect of -42 and 71 basis points) than for the whole sample (abnormal equity and CDS effect of -21 and 52 basis points). Hence, in a similar vein as for the first-time events, specifically the banks on the threshold of being tested or not, are driving the results.

After having revealed the different directions of the average stress test announcement and result release effect, we now turn to investigate the combined, i.e., the *announcement* + *result effect* in Table 5.

[Insert Table 5 around here]

Due to the opposite directions of the announcement- and the results effect, we observe that the combined market reaction is close to zero for the abnormal equity and CDS performance of tested banks. Specifically, when taking account of both effects, tested banks experience abnormal equity returns of 12 basis points and abnormal CDS spreads of one basis point with corresponding *t*-statistics of 0.66 and 0.02 (statistical significance is tested versus an abnormal return/spread of zero). Hence, the impact of the combined effect is statistically indistinguishable from zero at the conventional levels.[28]

To summarize, this section provides empirical support for Hypothesis 2 in the paper. Tested banks experience significantly abnormal negative equity returns and positive CDS spreads at the announcement date. Moreover, this result is driven by those banks which are tested for the first time, and those which are on the size threshold of being tested or not. To the contrary, we do not observe such significant effects for non-tested banks. Taken together, we find that the positive effect of stress tests on bank`s equity and CDS spreads on the result release day

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[27] As in Section 5.1, we restrict our sample to the five nearest financial institutions in terms of market capitalization above and below the threshold line for each stress test.

[28] On the individual stress test level, we also document that stress test release and announcement effects frequently point in opposite directions, especially in Europe. We observe -- for all European stress tests – that a positive (negative) announcement event performance is followed by a negative (positive) result event performance.

is subsumed by the negative effect realized on the stress test announcement day. Thus, the combined (announcement + result) stress test effect is performance neutral.

5.3. Differences between the US and the European Regime

We conjecture in Hypothesis 3 of the paper that the market impact of the result and announcement effects do not significantly differ between US CCAR and European EBA stress test regimes. The reason for this statement is that mediators of the market reaction (i.e., *institutional architecture*, *number of banks tested*, *different dimensions in the stress test assessment*, *the creditability of the fiscal backstop*, and the *degree of detail in the disclosed results*, see Section 3*)* are distributed in such a way, that the magnitude of the expected announcement and result effects between both regimes are very similar. We empirically test this hypothesis in Table 6 of the paper.

[Insert Table 6 around here]

Across regimes, we examine average performance differences between passing banks (Panel A), failing banks (Panel B), as well as tested banks on the result release day (Panel C) and the announcement day (Panel D). In all of these described tests, we observe that market reactions across regimes point in the same direction. Moreover, we do not find significant statistical differences in average performance between banks in the US and Europe (both on the result release and the announcement day). We thus find empirical support for Hypothesis 3 of the paper.[29]

5.4. Predictability of Stress Test Outcomes

Our empirical investigations in Sections 5.1 to 5.3 show that there exists considerable market impact of stress test announcements and releases indicating that these events provide new and important information to most market participants. However, these results do not exclude the possibility that stress tests results are -- at least to a certain extent -- predictable by variables publicly known on the day after the stress test announcement. This conjecture is formulated in Hypothesis 4 of our paper which we test empirically in this section. In particular, we examine whether stress test outcomes (pass/fail) and associated financial market outcomes on the stress test release day can be predicted by the announcement day return and bank fundamentals.[30]

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[29] In unreported tests, we also assess statistical differences in performance between non-tested banks on the result release and the announcement day. In line with the results of Table 6, we do not observe significant performance differences between US and European banks.

[30] This analysis adds an additional dimension to the existing literature. Morgan, Peristiani and Savino (2014) identify a role of announcement returns in predicting result returns. Flannery, Hirtle and Kovner (2017) identify a larger susceptibility to negative abnormal equity returns for riskier banks in CCAR stress tests. Barucci, Baviera and Milani (2018) identify various cross-sectional fundamental drivers of stress test outcomes for the EBA 2014

Following the existing literature, we construct different fundamental variables that give a holistic representation of the state of a bank. All measures are based on accounting data sourced from the S&P's SNL Financial database and available on the day after the stress test announcement. *EXCESS CAP* is defined as the difference between the bank's regulatory capital ratio at the announcement event and minimum required capitalization to pass the stress test and measures bank capitalization going into the stress test.[31] *NON-PERFORMING EXPOSURE* assesses overall balance sheet quality and is defined as the ratio of non-performing assets to regulatory capital (CET1). *RWA/A* captures the riskiness of business models, following the premise that riskier banks feature a higher RWA to asset density.[32] *ROE* measures the return on equity over the trailing 12-month period, a key determinant for bank internal capital generation. *ASSETS* is the natural logarithm of a bank's market capitalization. Finally, given the relation between announcement and result performance uncovered in Morgan et al. (2014), *ANNOUNCEMENT AR* is the abnormal equity market reaction at the announcement date of the stress test.

To predict the outcome of banks' stress tests and corresponding performance on the release day, we perform three different multivariate regression specifications for the pooled sample of US and European stress-tested banks in Table 7.[33] In the regression setup, we apply time-fixed effects and cluster standard errors on the bank level. In addition, Specifications (2) and (3) of Table 7 are estimated using the Heckman (1979) correction adjustment for the selection bias that a bank's result performance is conditional of having passed / failed the stress test.[34]

[Insert Table 7 around here]

Specification (1) reports the results of a logistic regression to assess the predictive power of the above-mentioned bank characteristics (*EXCESS CAP*, *NON-PERFORMING EXPOSURE*, *RWA/A*, *ROE*, *ASSETS, ANNOUNCEMENT AR*) on the binary pass / fail stress test outcome of a bank. We find that three out of the six variables display a significant impact at the 10% significance level: a bank's *EXCESS CAP, NON-PERFORMING EXPOSURE*, and *ANNOUNCEMENT AR*. Hence, a high difference between the bank's regulatory capital ratio

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stress test. They illustrate that capitalization and non-performing exposures at the time of release are associated with release outcomes (capital losses).

[31] As there is no defined minimum required capitalization in the EBA stress tests of 2016 and 2018, we define EXCESS CAP in accordance with the minimum capitalization required in the EBA 2014 stress test (following Georgescu, Gross, Kapp and Kok, 2017).

[32] Note that when computing the RWA, euro-denominated government bonds are weighted at zero for European banks, although riskiness risk levels of government bonds can strongly differ in riskiness (e.g.., riskiness of German government bonds are not identical to Italian government bonds).

[33] We observe that all absolute pairwise correlation coefficients between two predictive variables are smaller than 0.3. Hence our multivariate regressions are unlikely to be affected by the statistical problem of multicollinearity

[34] We also estimate regressions individually for the US and the European sample. Results are similar to the pooled sample and are available upon request from the authors.

at the announcement event and minimum required capitalisation to pass the stress test, a low ratio of non-performing assets to regulatory capital, and a positive abnormal announcement return increases the probability of passing the stress test. Our model produces a McFadden R-squared of 0.30 and hence shows that a considerable part of the dependent variable's variance is explained by bank characteristics known on the day after the stress test announcement.

We also validate the predictive ability of the model in-sample and out-of-sample. In-sample, the model correctly classifies 210 out of 218 banks passing the stress tests and 8 of 10 banks failing the stress tests, assuming a passing likelihood threshold of 50%. Out-of-sample, i.e., calibrated on the first two tests in each individual stress test regime (the 2012 and 2013 CCAR tests as well as the 2010 and 2011 EBA tests), the model correctly classifies 139 out of 142 banks passing the stress tests and 6 of 8 banks failing the stress tests. We provide more detailed findings of this model validation exercise in Internet Appendix A.3 of the paper.

In specifications (2) and (3) we then run OLS regressions to predict the abnormal equity and CDS performance of banks on the stress test release. Our results indicate that *NON-PERFORMING EXPOSURE* and *ASSETS* are significantly related to the abnormal equity return of the bank at the time of the stress test release. These relationships are also economically relevant: A one standard deviation increase in *NON-PERFORMING EXPOSURE* (*ASSETS*) leads to negative abnormal equity returns of -29 (-34) basis points at the release day. We also document that abnormal CDS performance on the release day is statistically unrelated to bank characteristics and the announcement day return. Note, however, that the weak statistical relationships for abnormal CDS performance as the dependent variable are enforced by the fact that we only can use data from 122 banks in this analysis due to missing CDS spreads of some financial institutions.

In summary, we show that the stress test outcome of a bank is to a certain extent predictable by bank variables and the return on the day after the stress test announcement. Hence, we find empirical support for Hypothesis 4 of the paper. Moreover, this predictive ability of stress tests gives rives to strategic options for both tested banks and investors. We will discuss these options in the next section and, hence, test Hypothesis 5 of the paper.

5.5. Strategic Options Due to the Predictability of Stress Test Outcomes

First, banks that are likely to fail a stress test might be worried about possible negative capital market consequences (which we document in Section 5.1). Thus, they might wish to optimize their capital structure accordingly and raise capital before the stress test release date to mitigate their loss from declining equity prices and widening credit spreads. It is important to highlight that any capital actions conducted in the time period between the announcement date and the stress test release date window will not directly affect stress test outcomes, since the supervisor 'freezes' a bank's balance sheet with the announcement of the stress test.

To empirically investigate this idea, we use our regression model (1) of Table 7 to predict the likelihood that a specific bank (at a specific stress test) will pass (or fail) a stress test on the day after the stress test announcement.[35] We rank all observations (i.e., each bank in a specific stress test) according to the likelihood of failing a stress test in increasing order. We define the sample of banks as likely-to-fail (likely-to-pass) when they are in the top (bottom) 20% of the predicted fail-likelihood among all banks. Then, we check capital issuances of likely-to-fail, likely-to-pass, and non-tested banks over the 180-days window before and 180-days after the stress test release day. Figure 2 shows the timing decisions and CET1 ratio impact of the sample of likely-to-fail, likely-to-pass, and non-tested banks.

[Insert Figure 2 around here]

We observe that likely-to-fail banks cluster towards the left part of the figure which indicates that these banks increase their capital before stress test outcomes. We do not find such a tendency for the samples of likely-to-pass and non-tested banks. Speaking in numbers, 18% of the predicted likely-to-fail banks announce capital increases over the 180-days window before the stress test release, whereas the share of capital increases among the predicted likely-to-pass and non-tested banks is 8.3% and 4.3%, respectively.[36] In addition to showing a stronger tendency to raise capital before the stress test result, we also find that likely-to-fail banks raise more capital than likely-to-pass banks. Specifically, likely-to-fail banks increase their CET1 capital by 2.7 percentage points on average, whereas likely-to-pass banks increase their CET1 capital by 0.7 percentage points on average. The difference is statistically significant at the 1% level. Taken together, we find empirical support for the notion that banks which are predicted to likely-to-fail a stress test (on the day after the stress test announcement) raise capital before the stress test release date to mitigate their loss from declining equity prices and widening credit spreads.

Note that these empirical results rely on the predictive regression models developed in Table 7 which are calibrated based on all individual stress tests from 2010 to 2018 in the US and Europe. Consequently, this model is not practically usable and suffers from a look-ahead bias when classifying institutions into likely-to-fail and likely-to-pass. To mitigate this bias, we perform a robustness test where we calibrate the regression models based on the first two tests in each individual regime and use this model to classify banks in the remaining stress

[35] In case there are up to two missing variables for a specific bank in a stress test, we use a reduced-form model (without these variables) to predict the corresponding fail-likelihood.

[36] The strategic option for raising equity is particularly pronounced for European banks as they can evaluate the results before the result release date. In line with this idea, we indeed find that the share of European likely-to-fail that raises equity before the result release date is higher than in the combined sample (29% vs. 18%). In addition, we also find that the correlation between the predicted fail probability and a dummy variable that takes on the value of one if the bank issued capital banks over the 180-days window is 0.27 for Europe and hence higher than in the combined sample.

tests. Results are similar as documented before: We find that 20.0% of the likely-to-fail banks announce capital increases over the 180-days window before the stress test release, whereas the share of capital increases among the likely-to-pass and non-tested banks is 5.5% and 4.1%, respectively.

In addition to banks themselves, informed investors could use the predictability of stress test outcomes to profit from the expected market impact at the release event. To do so, a possible trading strategy is to go long the (20% percentile) portfolio of likely-to-pass bank stocks and short the (20% percentile) portfolio of likely-to-fail bank stocks on the stress test release day. Panel A of Table 8 reports the hypothetical profits for this overall trading strategy when we classify banks according to their pass/fail likelihood based on the regression fitted to the whole sample period from 2010 to 2018. We do not take into account trading costs in this analysis.

[Insert Table 8 around here]

We find that this trading strategy earns economically large average profits of 70 basis points overall (60 basis points in the USA, 76 basis points in Europe) with corresponding *t*-statistics of 2.54 (1.81, 2.02) on the stress test release date. Interestingly, our results reveal that both the long- and the short side of the trading strategy earn statistically significant profits; hence, this trading strategy is also potentially suited for a long-only investor. In the same manner as for the analysis of the strategic options of affected banks, the results in Panel A are affected by a look-ahead bias since the classification model of banks is calibrated on the full sample from 2010 to 2018. When classifying the regression model on the first two tests in each individual regime and using it for prediction in the remaining stress tests, we obtain only slightly weaker results. Panel B of Table 8 documents that the trading strategy earns economically large average profits of 49 basis points with statistical significance at the 10% level.

The results displayed in Table 8 indicate that informed investors can profit from a trading strategy which is based on the predictability of stress test result releases. Finally, we want to obtain direct evidence that investors make use of this predictability in their investment decisions. To do so, we obtain monthly short selling data from Compustat and investigate short selling statistics of banks' equity in the US stock market.[37] Again, we first rank all observations (i.e., each bank for a specific stress test) according to the likelihood of failing a stress test in increasing order and classify banks into likely-to-fail, likely-to-pass, and non-tested banks (as before). In a second step, we look at the average unexpected short interest for

[37] Unfortunately, due to the lack of short selling data on European stock markets, this analysis is restricted to the US regime for stocks trading on the NYSE, AMEX, and NASDAQ. Starting in 2007, short interest data for US stocks is reported bi-monthly. We merge the Compustat short interest data with our stock market data file by firm identifiers and name.

each sample over the six-month (i.e., 180-days) window before the stress test release day. We compute unexpected short interest for a stock in month *t* as the difference between the realized value of short interest and its past 12-month rolling window mean, divided by the volatility of short interest over the past 12 months (following Lesnevski and Smajlbegovic, 2019).

[Insert Table 9 around here]

Panel A of Table 9 displays that average unexpected short interest is generally higher for likely-to-fail banks compared to likely-to-pass, and non-tested banks (when classified according to the whole sample from 2010 to 2018) from month *t*-6 up to the result release day. Moreover, we also find that average unexpected short interest for likely-to-fail banks is increasing from month *t*-6 to the result release day and statistically significantly higher than unexpected short interest for likely-to-pass and non-tested banks in the time period from month *t-4* up to the result release day. For example, the difference in average unexpected short interest between likely-to-fail stocks and likely-to-pass stocks is 0.009 in month *t-6*, while it is 0.092 in month *t-1-*

Similar results are obtained when we calibrate the predictive regression model based on the first two tests in each individual regime and use it for bank classification in the remaining stress tests. Panel B reports the results. These results strongly support the notion that some informed investors trade on the stress test outcome of a financial institution and anticipate its future stress test fail.

To summarize, we find empirical support for Hypothesis 5 of the paper. Both affected banks as well as informed investors use the predictability of stress test outcomes for strategic actions. Our results indicate that likely-to-fail banks issue new capital and that informed investors short likely-to-fail banks before the result release day.

6. Conclusion

In this paper we examine the impact of stress testing results and announcements on bank's equity and CDS performance using the up-to-date largest panel of twelve tests from the US CCAR and the European EBA regimes in the time period between 2010 and 2018.

For stress test result release events, we show that passing banks experience significantly positive abnormal equity returns of 50 basis points and tighter CDS spreads of -52 basis points, while, failing banks earn significantly negative abnormal equity returns of -174 basis points and widening CDS spreads of 83 basis points. Taken together, the overall effect of stress test releases is performance positive: Tested banks experience significantly positive abnormal equity returns of 33 basis points and significantly tighter CDS spreads of -51 basis points.

For stress tests announcements, we obtain a different picture: Banks, that are going to be stress tested, experience significantly negative abnormal equity returns of -21 basis points and significantly wider CDS spreads of 52 basis points on the announcement day. Hence, the positive effect of stress tests on bank`s equity and CDS spreads on the result release day is subsumed by the negative effect realized on the stress test announcement day. As a consequence, we document that an investigation of the market-moving impact of stress tests has to take into account the results of both the release and the announcement effect to be viewed as complete. Interestingly, this holds both for the US and the EU stress test regimes.

Finally, we check whether bank fundamentals are able to forecast the final stress test outcome as well as corresponding abnormal equity and CDS performance based on data available on the announcement day. We find empirical support for such predictability which opens the door for strategic options for stress-tested banks and informed investors. Indeed, we provide empirical evidence that likely-to-fail banks optimize their capital structure and that short interest of likely-to-fail banks strongly increases in the months before the stress test release.

Overall, our study provides new insights into the effects of stress test disclosures in the US and Europe. On the one hand, we document that stress test announcements and disclosures give rise to significant market movements. On the other hand, we observe that some affected banks and informed investors make use of the predictability of stress test outcomes by the stress test announcement return and bank variables. A question that naturally arises for the regulator is to which extent this higher degree of stress test predictability is harmful to the stress testing process, the stress tested banks and the broader economy. We leave this question open for future research on the topic.

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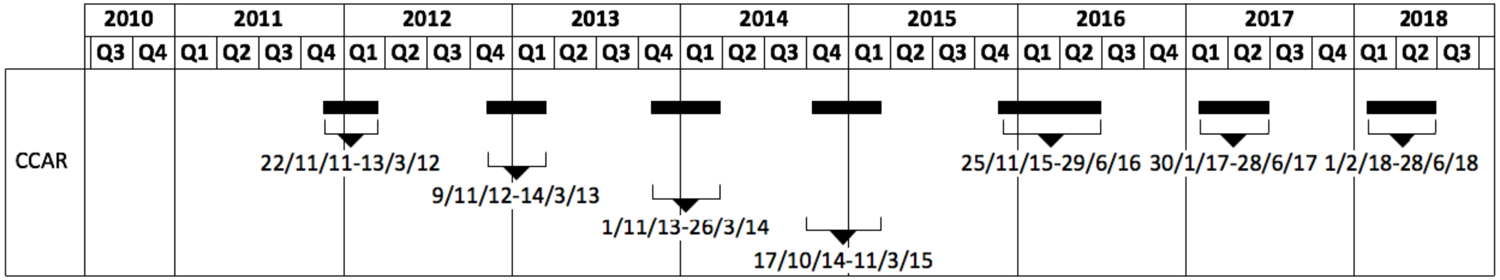
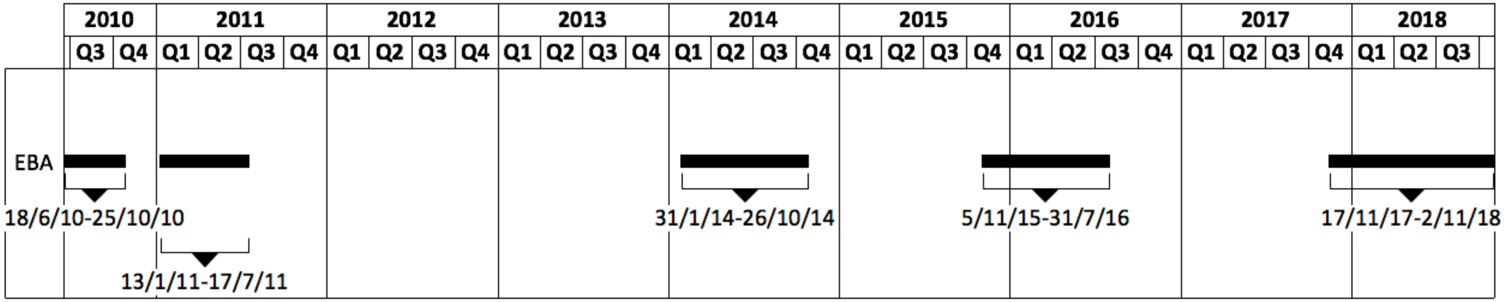
Figures

Figure 1: Timeline of Stress Tests

Panel A: US CCAR Stress Tests

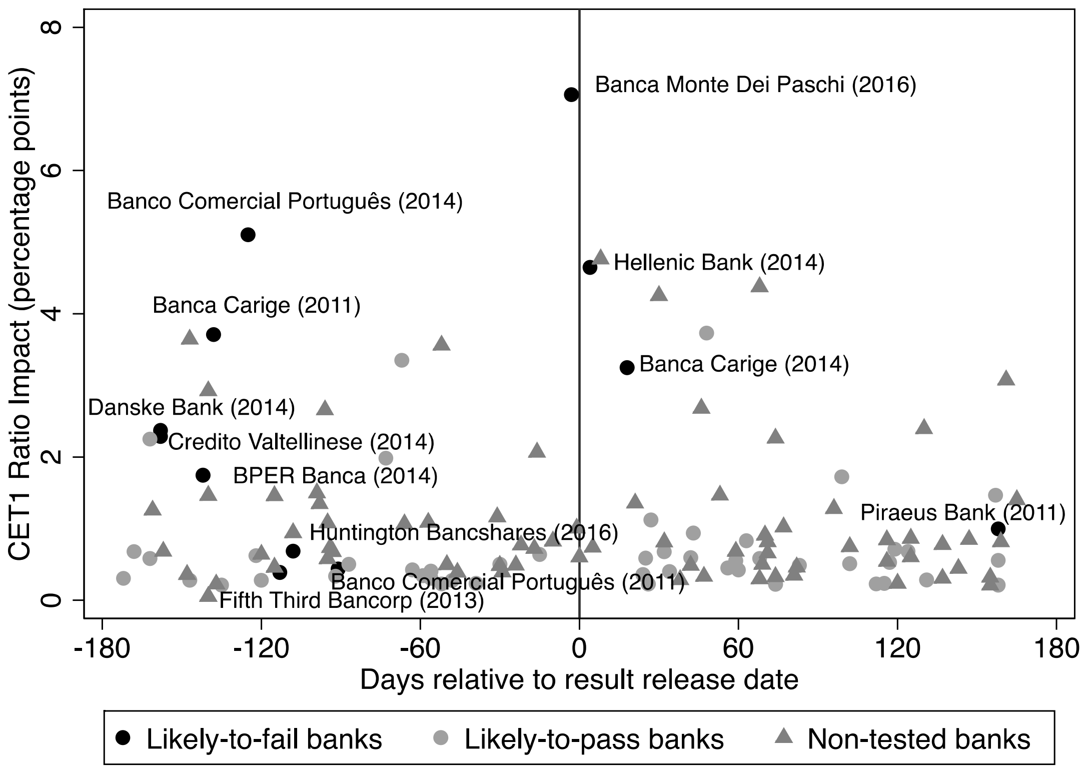


Panel B: EBA Stress Tests



This figure illustrates the timeline of stress tests considered in this study. We cover all twelve stress tests conducted in the US (Panel A) and Europe (Panel B) in the time period from 2010 to 2018. The stress test announcement date is defined as the first communication of supervisors to the public in a stress testing cycle. The result release date is defined as the next available trading day after stress test results are published. All data from the US is taken from the official stress test reports available on the Fed website. All data from Europe is taken from the official stress test reports available on the CEBS and EBA website.

Figure 2: Likelihood to Fail and Capital Issuances



This figure illustrates the timing and CET1 ratio impact of capital issuances of likely-to-fail, likely-to-pass, and non-tested banks over the 180-days window before and 180-days after the stress test release day. We cover data from all twelve stress tests conducted in the US and Europe in the time period from 2010 to 2018. All data from the US is taken from the official stress test reports available on the Fed website. All data from Europe is taken from the official stress test reports available on the CEBS and EBA website.

Tables

Table 1: Key Features of Stress Tests Studied

Panel A: CCAR

	CCAR						
	2012	2013	2014	2015	2016	2017	2018
Announcement Date	22/11/2011	09/11/2012	01/11/2013	17/10/2014	25/11/2015	31/01/2017	02/02/2018
Release Date	14/03/2012	15/03/2013	27/03/2014	12/03/2015	30/06/2016	29/06/2017	29/06/2018
Competent authority	Fed	Fed	Fed	Fed	Fed	Fed	Fed
# banks tested (of which in sample*)	19 (18)	18 (18)	30 (30)	31 (31)	34 (34)	34 (34)	34 (30)
# banks failed (of which in sample)	4 (4)	2 (2)	5 (5)	2 (2)	2 (2)	-	1 (1)
Hurdle rate**	4% T1	5% T1	4.5% CET1	4.5% CET1	4.5% CET1	4.5% CET1	4.5% CET1
Regulatory follow-up	Failed institutions must not pursue their current capital plan, typically this includes freezing dividends and share repurchases for a period of at least 12 months.						
Scenarios	Three scenarios on a nine-quarter horizon. More recently, CCAR tests have switched to a five-scenario approach, of which two are generated by the bank.						

Panel B: EBA

	EBA				
	2010	2011	2014	2016	2018
Announcement Date	18/06/2010	13/01/2011	31/01/2014	05/11/2015	17/11/2017
Release Date	26/07/2010	18/07/2011	27/10/2014	01/08/2016	05/11/2018
Competent authority	CEBS	CEBS	EBA	EBA	EBA
# banks tested (of which in sample*)	91 (48)	90 (49)	130 (73)	51 (42)	48 (40)
# banks failed (of which in sample)	7 (0)	8 (4)	25 (16)	1*** (1***)	-
Hurdle rate**	6% T1	5% CET1	5.5% CET1	5.5% CET1***	5.5% CET1***
Regulatory follow-up	None	Up to nat. supervisors	Compulsory capital increase	None; Results inform Pillar 2	None; Results inform Pillar 2
Scenarios	Two scenarios on a three-year horizon.				

Table 1: Key Features of Stress Tests Studied

This table reports key features of the stress tests investigated in this study. We cover all twelve stress tests conducted in the US and Europe in the time period from 2010 to 2018. For each stress test, we report the announcement date, the release date, the competent authority, the number of banks tested, the number of banks failed, the hurdle rate, the regulatory follow-up, and the stress test scenarios. Note that the announcement and release day refer to the actual days that were used in the estimation approach (i.e., accounting for after-market releases). *denotes the number of banks with equity and/or CDS spreads available in that specific year. **This study focuses on the hurdle rate regarding the lowest tier of regulatory capital (typically CET1) which represents the key hurdle for banks to pass. ***We assign an implicit hurdle rate of 5.5 CET1 (as applied in the EBA 2014 stress test) also to the stress tests in 2016 and 2018. All data from the US is taken from the official stress test reports available on the Fed website. All data from Europe is taken from the official stress test reports available on the CEBS and EBA website.

Table 2: Stress Test Release Effects: Pass vs. Fail

Panel A: Passing vs. Failing Banks

	Pass				Fail			
	EQ AR	*EQ CAR*	*CDS AR*	*CDS CAR*	*EQ AR*	*EQ CAR*	*CDS AR*	*CDS CAR*
CCAR 2012	0.66	-0.16	-3.84***	-3.97***	-2.35	-3.90	-1.09	-0.57
	(1.04)	(0.26)	(-4.48)	(-2.83)				
CCAR 2013	1.17***	0.28	0.62	-3.15***	-1.97	-2.12	-0.99	-5.48
	(2.80)	(0.66)	(0.92)	(-2.86)				
CCAR 2014	-0.41*	-0.23	1.17**	1.95**	-1.40	-0.72	3.04	2.22
	(-1.79)	(-0.74)	(2.32)	(2.25)				
CCAR 2015	1.63***	-0.07	0.04	-1.93***	-1.10	-0.45	1.84	5.36
	(6.94)	(-0.25)	(0.07)	(-2.99)				
CCAR 2016	0.18	1.05**	-0.66	-8.22***	-4.22	-1.33	3.47	7.26
	(0.53)	(2.52)	(-1.19)	(-6.16)				
CCAR 2017	0.74***	0.78***	-1.12**	2.50	-	-	-	-
	(3.05)	(2.89)	(-2.50)	(0.87)				
CCAR 2018	0.10	-0.21	0.24	-0.35	2.27	-1.54	-1.33	4.97
	(0.46)	(-0.38)	(0.07)	(-1.18)				
CCAR Total	0.55***	0.27**	-0.41	-1.72**	-1.73**	-1.90	2.34***	1.73
	(4.44)	(1.95)	(-1.66)	(-2.63)	(-2.19)	(-1.50)	(3.20)	(1.21)
N	180	180	89	89	14	14	12	12
EBA 2010	1.14***	2.04***	-0.41	-1.72			no data	
	(2.73)	(2.80)	(-0.97)	(-1.21)				
EBA 2011	0.06	0.16	0.91**	1.35	0.85	1.40	0.17	0.58
	(0.14)	(0.38)	(1.99)	(1.62)				
EBA 2014	0.70**	0.31	-2.14***	-2.02**	-2.76	-1.54	0.89	1.04
	(2.21)	(0.70)	(-3.07)	(-2.07)				
EBA 2016	-0.01	-0.95	-0.26	-1.8***	3.58	-5.27	-1.73	-2.31
	(0.02)	(-1.28)	(-0.67)	(-4.11)				
EBA 2018	0.02	0.38	-0.04	-0.04	-	-	-	-
	(0.13)	(1.05)	(0.18)	(-0.09)				
EBA Total	0.46**	0.51*	-0.58**	-1.04***	-1.75	-1.06	0.49	0.32
	(2.5)	(1.95)	(-2.37)	(-2.63)	(-1.09)	(-0.8)	(0.66)	(0.51)
N	181	181	167	166	17	17	9	9
Combined	0.50***	0.39**	-0.52***	-1.28**	-1.74*	-1.44*	0.83*	0.71*
	(4.57)	(2.63)	(-2.88)	(-3.53)	(-1.8)	(-1.46)	(1.78)	(1.70)
	361	361	256	255	31	31	21	21

Table 2: Stress Test Release Effects: Pass vs. Fail

Panel B: First-Time Tests vs. All Subsequent Tests

Passes

	First-Time Tests				All Subsequent Tests			
	EQ AR	*EQ CAR*	*CDS AR*	*CDS CAR*	*EQ AR*	*EQ CAR*	*CDS AR*	*CDS CAR*
Combined	0.71***	0.58**	-0.81**	-1.41***	0.42**	0.29**	-0.39	-0.82**
	(3.59)	(2.01)	(-2.01)	(-3.37)	(2.38)	(2.11)	(-1.51)	(-2.15)

Fails

	First-Time Tests				All Subsequent Tests			
	EQ AR	*EQ CAR*	*CDS AR*	*CDS CAR*	*EQ AR*	*EQ CAR*	*CDS AR*	*CDS CAR*
Combined	-1.98*	-1.74*	1.49*	1.28	-1.29	-1.41	0.58	0.59
	(-1.79)	(-1.87)	(1.92)	(1.53)	(-1.18)	(-1.05)	(1.01)	(0.76)

Panel C: Quantitative vs. Qualitative Fails

	Quantitative				Qualitative			
	EQ AR	*EQ CAR*	*CDS AR*	*CDS CAR*	*EQ AR*	*EQ CAR*	*CDS AR*	*CDS CAR*
Combined	-1.71	-1.21	1.34	0.75	-1.96	-0.67	0.65	0.93
	(-1.08)	(-0.67)	(1.64)	(1.12)	(-1.04)	(-0.89)	(0.89)	(1.41)

This table provides the results of the impact of the stress test release outcome on banks' equity and CDS performance for passing and failing banks. We estimate average abnormal equity and CDS performance for passing and failing banks according to the description in Section 4.2. *AR* refers to the abnormal returns computed using a 1-day estimation window. *CAR* refers to the abnormal returns computed using a 3-day (-1,+1) estimation window. Panel A reports results for passing and failing banks for all stress tests conducted in the US and Europe in the time period from 2010 to 2018. Panel B reports the results for releases of banks which are tested for the first time (*First-Time Tests*) and releases of banks which are assessed subsequently after their first stress test (*All Subsequent Tests*). Panel C separates the impact of US bank failures into quantitative and qualitative fails. We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. In all significance tests of a pooled sample, we account for stress test fixed effects and adjust standard errors using the Newey and West (1987) method to account for serial correlation of abnormal equity returns / CDS spreads. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% level, respectively.

Table 3: Stress Test Release Effects: Tested vs. Non-Tested

Panel A: Tested vs. Non-Tested Banks

	Tested				**Non-Tested**			
	EQ AR	EQ CAR	CDS AR	CDS CAR	EQ AR	EQ CAR	CDS AR	CDS CAR
CCAR 2012	0.17	-0.79	-1.09*	-2.04**	0.42	-0.71	-1.40**	2.05**
	(0.23)	(-1.06)	(-1.94)	(-2.52)	(1.04)	(-1.61)	(-2.25)	(2.12)
CCAR 2013	0.99**	0.14	0.48	-3.36***	0.29	-0.04	-1.02**	0.29
	(2.27)	(0.33)	(0.76)	(-3.30)	(1.67)	(-0.17)	(-2.28)	(0.15)
CCAR 2014	-0.58**	-0.31	1.57***	2.01**	-1.51***	-1.88***	0.62	-0.27
	(-2.26)	(-0.84)	(3.04)	(2.41)	(-4.30)	(-4.05)	(1.22)	(-0.35)
CCAR 2015	1.46***	-0.09	0.28	-2.39***	0.92***	-0.85**	0.83	-1.99
	(4.74)	(-0.37)	(0.51)	(-3.72)	(4.71)	(-2.60)	(0.93)	(-1.45)
CCAR 2016	-0.08	0.91**	-0.17	-2.11***	0.67***	1.07***	1.10	-4.75***
	(-0.21)	(2.19)	(-0.29)	(-3.86)	(2.92)	(2.93)	(0.56)	(-3.66)
CCAR 2017	0.74***	0.78***	-1.12**	2.50	1.46***	1.45***	-2.85	0.42
	(3.05)	(2.90)	(-2.50)	(0.87)	(4.24)	(4.37)	(-1.48)	(0.26)
CCAR 2018	0.18	-0.15	0.13	-0.01	-0.45***	-1.07***	-0.7	0.32
	(1.26)	(-0.54)	(0.33)	(-0.03)	(-3.86)	(-4.36)	(-1.33)	(0.25)
CCAR Total	0.39***	0.15	-0.22	-1.72**	0.14	-0.13	-0.44	-0.29
	(2.88)	(1.02)	(-0.92)	(-2.59)	(1.10)	(-0.39)	(-1.22)	(-0.48)
N	194	194	101	101	181	181	24	24
EBA 2010	1.14***	2.04***	-0.41	-1.72	0.19	0.04	-0.87	-1.31
	(2.73)	(2.80)	(-0.97)	(-1.21)	(1.03)	(0.09)	(-0.69)	(-0.52)
EBA 2011	0.11	0.32	0.85**	-1.20	-0.49*	-0.91**	-1.05	-0.29
	(0.29)	(0.78)	(2.01)	(-1.54)	(-1.94)	(-2.16)	(-1.36)	(-0.22)
EBA 2014	-0.12	-0.12	-1.78***	-2.11**	0.42	-0.17	-2.13	-2.14
	(-0.21)	(-0.24)	(-2.78)	(-2.14)	(1.50)	(-0.39)	(-1.01)	(-0.94)
EBA 2016	0.11	-1.10	-0.48	-2.05***	0.08	-0.18	3.65**	2.50
	(0.18)	(-1.50)	(-1.11)	(-4.14)	(0.31)	(0.31)	(2.03)	(1.23)
EBA 2018	0.10	0.45	-0.04	-0.34	0.01	0.28	0.02	-0.14
	(0.59)	(1.28)	(-0.18)	(-0.09)	(0.01)	(0.63)	(0.08)	(-0.37)
EBA Total	0.27	0.38	-0.67**	-1.16***	0.03	-0.15	0.96	0.49
	(1.21)	(1.41)	(-2.58)	(-2.84)	(0.26)	(-0.67)	(1.32)	(0.60)
N	198	198	176	175	227	227	67	67
Total	0.33**	0.27*	-0.51***	-1.11***	0.06	-0.15	0.59	0.29
	(2.51)	(1.74)	(-2.71)	(-2.85)	(0.68)	(-0.71)	(1.08)	(0.49)
N	392	392	277	276	408	408	91	91

Table 3: Stress Test Release Effects: Tested vs. Non-Tested

Panel B: Tested minus Non-Tested Banks

	EQ AR	EQ CAR	CDS AR	CDS CAR
Tested	0.33**	0.27*	-0.51***	-1.16***
First-Time Tests	0.41**	0.37**	-0.62***	-1.25***
All Subsequent Tests	0.22*	0.19	-0.38*	-0.78*
Non-Tested	0.06	-0.15	0.59	0.29
Tested minus Non-Tested	0.27*	0.42**	-1.10***	-1.60***
	(1.81)	(2.34)	(-2.81)	(-3.61)
First-Time Tests minus All Subsequent Tests	0.19*	0.28	-0.24	-0.47**
	(1.76)	(1.42)	(-1.33)	(-2.08)

Panel C: Five nearest Financial Institutions above and below the Threshold Line

	Tested				**Non-Tested**			
	EQ AR	*EQ CAR*	*CDS AR*	*CDS CAR*	*EQ AR*	*EQ CAR*	*CDS AR*	*CDS CAR*
Combined	0.38**	0.36*	-0.62**	-1.21***	0.05	-0.02	0.24	0.35
	(2.41)	(1.84)	(-2.51)	(-3.23)	(0.36)	(-0.37)	(0.45)	(0.40)

This table provides the results of the impact of the stress test release outcome on banks' equity and CDS performance for tested and non-tested banks. We estimate average abnormal equity and CDS performance for passing and failing banks according to the description in Section 4.2. *AR* refers to the abnormal returns computed using a 1-day estimation window. *CAR* refers to the abnormal returns computed using a 3-day (-1,+1) estimation window. Panel A reports results for tested and non-tested banks for all stress tests conducted in the US and Europe in the time period from 2010 to 2018. Panel B displays the spread in abnormal equity and CDS performance between tested and non-tested banks as well as first-time and subsequent tests. We differentiate tested bank tests between first-time tests and all subsequent tests. Panel C reports the impact of the stress test release outcome on banks' equity and CDS performance for tested and non-tested banks for the five financial institutions which are closest to the size-related threshold of being tested. We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. In all significance tests of a pooled sample, we account for stress test fixed effects and adjust standard errors using the Newey and West (1987) method to account for serial correlation of abnormal equity returns / CDS spreads. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% level, respectively.

Table 4: Stress Test Announcement Effects: Tested vs. Non-Tested

Panel A: Tested vs. Non-Tested Banks

	Tested				**Non-Tested**			
	EQ AR	EQ CAR	CDS AR	CDS CAR	EQ AR	EQ CAR	CDS AR	CDS CAR
CCAR 2012	0.23	-0.63**	1.13***	0.30	0.04	1.54***	3.32**	1.20**
	(1.46)	(-2.24)	(3.15)	(0.53)	(0.16)	(3.05)	(2.40)	(2.33)
CCAR 2013	-0.52***	-0.02	-1.72***	-1.38	-0.26	-0.37*	1.37**	0.34
	(-3.29)	(-0.09)	(-2.94)	(-1.26)	(-1.37)	(-1.82)	(2.15)	(0.21)
CCAR 2014	-0.96***	-1.75***	-0.13	-0.31	-0.71***	-1.32***	-0.91	-2.32
	(-2.94)	(-4.37)	(-0.26)	(-0.46)	(-3.33)	(-3.36)	(-0.95)	(-1.26)
CCAR 2015	-0.34	-0.39	0.28	1.24	0.41	1.10***	-3.63**	0.17
	(-1.14)	(-1.11)	(0.95)	(1.44)	(1.65)	(4.18)	(-2.64)	(0.09)
CCAR 2016	-0.37	0.34**	0.11	1.50**	0.12	0.85***	-0.68	0.21
	(-0.61)	(2.60)	(0.34)	(2.07)	(0.82)	(4.32)	(-1.87)	(0.33)
CCAR 2017	0.64**	0.24	0.91	-0.70	1.34*	-0.55	-0.50***	-0.14
	(2.34)	(0.58)	(1.62)	(-0.77)	(1.78)	(-1.63)	(-3.48)	(-0.04)
CCAR 2018	0.05	1.01**	0.09	0.02	-0.89**	-1.67**	1.07	0.20
	(0.19)	(2.09)	(0.29)	(0.07)	(-2.33)	(-2.29)	(1.21)	(1.37)
CCAR Total	-0.20	-0.13	0.39**	0.28	-0.04	-0.03	0.12	0.07
	(-0.95)	(-0.87)	(2.07)	(0.90)	(-0.51)	(-0.07)	(0.50)	(0.15)
N	193	193	101	100	181	181	24	24
EBA 2010	0.57	0.64	-0.78*	-0.51	-0.09	-0.47	-0.35	0.78
	(1.30)	(1.25)	(-1.71)	(0.46)	(-0.25)	(-1.10)	(-0.57)	(0.66)
EBA 2011	-1.01***	-1.74***	-0.53	-0.87	-0.41	1.66***	-1.42**	0.42
	(-3.76)	(-2.70)	(-0.68)	(-0.79)	(-1.46)	(3.22)	(-3.78)	(1.03)
EBA 2014	0.04	0.16	1.67***	1.70***	0.28	0.30	0.91*	1.17**
	(0.21)	(0.22)	(3.90)	(3.42)	(0.97)	(0.69)	(1.78)	(2.34)
EBA 2016	-0.82**	0.07	2.61***	3.14***	0.55*	-1.78**	0.78***	-1.48***
	(-2.04)	(0.13)	(3.86)	(3.84)	(1.74)	(-1.99)	(3.48)	(-4.17)
EBA 2018	-0.07	-0.18	-0.48	-2.49	0.26	0.02	-0.01	-0.39
	(-0.40)	(-0.64)	(-0.56)	(-0.58)	(0.47)	(0.02)	(-0.02)	(-0.47)
EBA Total	-0.21	-0.23	0.73***	0.58	0.09	0.10	0.16	0.22
	(-1.46)	(-0.70)	(2.86)	(1.39)	(0.23)	(0.19)	(0.90)	(0.26)
N	197	197	175	174	226	226	68	64
Total	-0.21*	-0.16*	0.52*	0.47*	0.05	0.05	0.12	0.09
	(-1.85)	(-1.97)	(1.79)	(1.69)	(0.56)	(0.35)	(0.61)	(0.51)
N	390	390	276	274	407	407	92	88

Table 4: Stress Test Announcement Effects: Tested vs. Non-Tested

Panel B: Tested minus Non-Tested Banks

	EQ AR	EQ CAR	CDS AR	CDS CAR
Tested	-0.21*	-0.16*	0.52*	0.47*
First-Time Tests	-0.34**	-0.30*	0.72*	0.66*
All Subsequent Tests	-0.09	-0.07	0.35*	0.35
Non-Tested	0.05	0.05	0.12	0.09
Tested minus Non-Tested	-0.26*	-0.21*	0.40*	0.38*
	(-1.85)	(-1.76)	(1.84)	(1.70)
First-Time Tests minus All Subsequent Tests	-0.25*	0.23*	0.37**	0.31**
	(1.73)	(1.81)	(1.99)	(1.85)

Panel C: Five nearest Financial Institutions above and below the Threshold Line

	Tested				**Non-Tested**			
	EQ AR	*EQ CAR*	*CDS AR*	*CDS CAR*	*EQ AR*	*EQ CAR*	*CDS AR*	*CDS CAR*
Combined	-0.42***	-0.30*	0.71*	0.67*	-0.08	0.12	0.18	-0.12
	(-2.85)	(-1.97)	(1.79)	(1.69)	(-0.26)	(0.32)	(0.49)	(-0.28)

This table provides the results of the impact of the stress test announcement on banks' equity and CDS performance for tested and non-tested banks. We estimate average abnormal equity and CDS performance for passing and failing banks according to the description in Section 4.2. *AR* refers to the abnormal returns computed using a 1-day estimation window. *CAR* refers to the abnormal returns computed using a 3-day (-1,+1) estimation window. Panel A reports results for tested and non-tested banks for all stress tests conducted in the US and Europe in the time period from 2010 to 2018. Panel B displays the spread in abnormal equity and CDS performance between tested and non-tested banks as well as first-time and subsequent tests. We differentiate tested bank tests between first-time tests and all subsequent tests. Panel C reports the impact of the stress test release announcement on banks' equity and CDS performance for tested and non-tested banks for the five financial institutions which are closest to the size-related threshold of being tested. We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. In all significance tests of a pooled sample, we account for stress test fixed effects and adjust standard errors using the Newey and West (1987) method to account for serial correlation of abnormal equity returns / CDS spreads. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% level, respectively.

Table 5: Stress Test Release and Announcement Effects

	Tested				Non-Tested			
	EQ AR	EQ CAR	CDS AR	CDS CAR	EQ AR	EQ CAR	CDS AR	CDS CAR
CCAR 2012	0.40	-1.42***	0.04	-1.74*	0.46	0.83	1.92	3.25***
	(1.69)	(-3.30)	(1.21)	(-1.99)	(1.20)	(1.44)	(0.25)	(3.45)
CCAR 2013	0.47	0.12	-1.24**	-4.74***	0.03	-0.41	0.35	0.63
	(1.02)	(0.24)	(-2.18)	(-4.56)	(0.03)	(-1.44)	(0.13)	(0.36)
CCAR 2014	-1.54**	-2.06***	1.44**	1.70*	-2.22***	-3.20***	-0.29	-2.59
	(-2.20)	(-5.21)	(2.78)	(1.95)	(-2.63)	(-4.41)	(-0.27)	(-1.61)
CCAR 2015	1.12***	-0.48	0.56	-1.15**	1.33**	0.25	-2.80	-1.82
	(3.60)	(-1.48)	(1.46)	(-2.28)	(2.36)	(1.38)	(-1.41)	(-1.36)
CCAR 2016	-0,45	1.25***	-0.06	-0.61**	0.79*	1.92***	0.42	-4.54
	(-0.82)	(4.79)	(-0.05)	(-2.93)	(1.74)	(3.25)	(0.31)	(-1.33)
CCAR 2017	1.38***	1.02	-0.21	1.80	2.80*	0.90	-3.35**	0.28
	(3.39)	(1.48)	(-0.88)	(0.10)	(2.02)	(1.14)	(-2.96)	(0.22)
CCAR 2018	0.23	0.86	0.22	0.01	-1.34**	-2.74	0.37	0.52
	(1.45)	(1.55)	(0.62)	(0.04)	(-2.19)	(-1.55)	(0.12)	(0.62)
CCAR Total	0.19	0.02	0.17	-0.78	0.10	-0.16	-0.32	-0.22
	(1.12)	(0.15)	(1.15)	(-1.24)	(0.59)	(-0.46)	(-0.72)	(-0.33)
N	193	193	101	100	181	181	24	24
EBA 2010	1.71	2.68	-1.19	-2.23	0.10	-0.43	-1.22	-0.53
	(3.03)	(3.05)	(-2.68)	(-1.67)	(0.78)	(-1.01)	(-1.26)	(-0.14)
EBA 2011	-0.90	-1.42	0.32	-2.07	-0.90	0.75	-2.47***	0.13
	(-3.17)	(-1.82)	(1.33)	(-2.33)	(-1.40)	(1.06)	(-3.14)	(0.18)
EBA 2014	-0.08	0.04	-0.11	-0.41	0.70	0.13	-1.22	-0.97
	(-0.01)	(0.02)	(-0.12)	(-1.28)	(1.47)	(0.96)	(-0.77)	(-1.40)
EBA 2016	-0.71	-1.02	2.13	1.09	0.63	-1.96	4.43***	1.02
	(-1.66)	(-1.37)	(2.75)	(0.30)	(1.05)	(-1.30)	(3.51)	(0.94)
EBA 2018	0.03	0.27	-0.52	-2.83	0.27	0.30	0.01	-0.53
	(0.19)	(0.64)	(-0.75)	(-0.67)	(0.48)	(0.65)	(0.06)	(-0.84)
EBA Total	0.06	0.15	0.06	-0.58	0.12	-0.05	0.78	0.71
	(0.05)	(0.11)	(0.08)	(-1.35)	(0.49)	(-0.48)	(1.32)	(0.86)
N	197	197	175	174	226	226	68	64
Total	0.12	0.11	0.01	-0.35	0.11	-0.10	0.34	0.38
	(0.66)	(0.23)	(0.02)	(-1.16)	(0.24)	(-0.36)	(0.90)	(1.00)
N	390	390	276	274	407	407	92	88

This table provides the results of the impact of the combined stress test announcement + release effect on banks' equity and CDS performance for tested and non-tested banks for all stress tests conducted in the US and Europe in the time period from 2010 to 2018. We estimate average abnormal equity and CDS performance for passing and failing banks according to the description in Section 4.2. *AR* refers to the abnormal returns computed using a 1-day estimation window. *CAR* refers to the abnormal returns computed using a 3-day (-1,+1) estimation window. We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. In all significance tests of a pooled sample, we account for stress test fixed effects and adjust standard errors using the Newey and West (1987) method to account for serial correlation of abnormal equity returns / CDS spreads. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6: Stress Test Effects across Regimes

Panel A: Passing Banks

	EQ AR	EQ CAR	CDS AR	CDS CAR
US	0.55***	0.27**	-0.41	-1.72**
Europe	0.46**	0.51*	-0.58**	-1.04***
Difference US vs. Europe	0.09	-0.24	-0.17	-0.68
	(0.56)	(-0.54)	(-0.87)	(-1.21)

Panel B: Failing Banks

	EQ AR	EQ CAR	CDS AR	CDS CAR
US	-1.73**	-1.90	2.34***	1.73
Europe	-1.75	-1.06	0.49	0.32
Difference US vs. Europe	0.02	-0.84	1.85	1.39
	(0.03)	(-1.01)	(1.44)	(1.27)

Panel C: Tested Banks: Result Release

	EQ AR	EQ CAR	CDS AR	CDS CAR
US	0.39***	0.15	-0.22	-1.72**
Europe	0.27	0.38	-0.67**	-1.16***
Difference US vs. Europe	0.12	-0.23	0.45	-0.56
	(0.61)	(-0.92)	(1.23)	(1.28)

Panel D: Tested Banks: Announcement

	EQ AR	EQ CAR	CDS AR	CDS CAR
US	-0.20	-0.13	0.39**	0.28
Europe	-0.21	-0.23	0.73***	0.58
Difference US vs. Europe	0.01	0.10	-0.34	-0.30
	(0.02)	(0.14)	(-1.32)	(-1.20)

Table 6: Stress Test Effects across Regimes

This table provides the results of the impact of the stress test release outcome and the stress test announcement on banks' equity and CDS performance between the US CCAR regime and the European EBA regime. We estimate average abnormal equity and CDS performance for passing and failing banks according to the description in Section 4.2. *AR* refers to the abnormal returns computed using a 1-day estimation window. *CAR* refers to the abnormal returns computed using a 3-day (-1,+1) estimation window. Panel A reports results of the impact of the stress test release outcome on banks' equity and CDS performance for passing banks, while Panel B reports results for failing banks. Panel C reports results of the impact of the stress test release outcome on banks' equity and CDS performance for tested banks, while Panel D reports results of the impact of the stress test announcement on banks' equity and CDS performance for tested banks. We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. In all significance tests of a pooled sample, we account for stress test fixed effects and adjust standard errors using the Newey and West (1987) method to account for serial correlation of abnormal equity returns / CDS spreads. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% level, respectively.

Table 7: Predictability of Stress Test Outcomes

MODEL	(1)	(2)		(3)	
Sample	US + Europe	US + Europe		US + Europe	
Regression approach	Logit	OLS	Economic Significance	OLS	Economic Significance
Dependent variable	PASS=1	EQ AR	Standard Deviation Increase	CDS AR	Standard Deviation Increase
EXCESS CAP	0.316*	0.0169	+0.0690	-0.0800	-0.3267
	(1.76)	(0.45)		(-1.03)	
NON-PERFORMING EXPOSURE	-0.00639*	-0.00405*	-0.2868	-0.00403	-0.2854
	(-1.70)	(-1.72)		(-0.80)	
RWA/A	-0.0111	0.00126	+0.0271	-0.00830	-0.1779
	(-0.45)	(0.19)		(-0.85)	
ROE	0.0369	-0.000666	-0.0111	-0.00132	-0.0220
	(1.48)	(-0.04)		(-0.07)	
ASSETS	0.204	-0.267**	-0.3442	-0.211	-0.27198
	(0.64)	(-2.15)		(-0.81)	
ANNOUNCEMENT AR	0.491*	0.0223	+0.0393	-0.0898	-0.1580
	(1.93)	(0.29)		(-0.63)	
Constant	-1.323	5.800**		5.176	
	(-0.19)	(2.17)		(0.92)	
N	228	203		122	
R-squared	0.30	0.05		0.02	

Table 7: Predictability of Stress Test Outcomes

This table reports the results of different regression models to predict the outcome of a bank's stress test with corresponding performance at the result release day. All measures are based on accounting data sourced from the S&P's SNL Financial database and available at the day after the stress test announcement. We use *EXCESS CAP*, *NON-PERFORMING EXPOSURE, RWA/A, ROE, ASSETS,* and *ANNOUNCEMENT AR* as predictive variables (exact definitions are provided in Section 5.4). Specification (1) reports the results of a logistic regression of the binary pass / fail stress test outcome on the predictive variables. Specification (2) reports the results of an OLS regression (with stress test and year fixed effects) of the abnormal equity release return on the predictive variables. Specification (3) reports the results of an OLS regression (with stress test and year fixed effects) of the abnormal CDS release spread on the predictive variables. We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. In the regression setup we apply time-fixed effects and cluster standard errors on the bank level. In addition, Specifications (2) and (3) of Table 7 are estimated using the Heckman (1979) correction adjustment for the selection bias that a bank's result performance is conditional of having passed / failed the stress test. Specification (1) reports McFadden's R2 as the appropriate measure of fit for a logistic regression. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% level, respectively.

Table 8: Trading Strategy to Exploit the Predictability of Stress Test Outcomes

Panel A: Classification Based on All Stress Tests

	Likely-To-Pass		Likely-To-Fail		Likely-To-Pass minus Likely-To-Fail	
	EQ AR	EQ CAR	EQ AR	EQ CAR	EQ AR	EQ CAR
CCAR Total	0.45	0.42	-0.15	-0.12	0.60*	0.54
	(1.35)	(1.44)	(-0.66)	(-0.63)	(1.81)	(1.50)
EBA Total	0.46	0.54	-0.30	-0.54	0.76**	1.08**
	(1.34)	(1.42)	(-1.11)	(-1.03)	(2.02)	(2.39)
Total	0.45*	0.49**	-0.21*	-0.37	0.70**	0.86***
	(1.84)	(1.99)	(-1.71)	(-1.32)	(2.54)	(3.21)

Panel B: Classification Based on the First Two Tests in Each Regime

	Likely-To-Pass		Likely-To-Fail		Likely-To-Pass minus Likely-To-Fail	
	EQ AR	EQ CAR	EQ AR	EQ CAR	EQ AR	EQ CAR
CCAR Total	0.26	0.24	-0.24	-0.19	0.50*	0.43
	(1.02)	(0.98)	(-0.56)	(-0.52)	(1.71)	(1.21)
EBA Total	0.23	0.31	-0.19	-0.42	0.42*	-0.73
	(1.03)	(1.06)	(-0.46)	(-0.81)	(1.81)	(1.34)
Total	0.24	0.27	-0.21	-0.28	0.49*	0.55*
	(1.21)	(1.05)	(-0.87)	(-0.79)	(1.76)	(1.89)

This table reports the results of a trading strategy consisting of going long the (20% percentile) portfolio of likely-to-pass bank stocks and going short the (20% percentile) portfolio of likely-to-fail bank stocks on the stress test release day. In Panel A, we classify banks according to their pass- or fail likelihood based on regression specification (1) of Table 7 fitted to the whole sample period from 2010 to 2018. In Panel B, we classify banks according to their pass/fail likelihood based on regression specification (1) of Table 7 fitted to the first two tests in each individual regime. We use the remaining stress tests to document the profitability of the trading strategy. We do not take into account trading costs in this analysis. We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. In all significance tests of a pooled sample, we account for stress test fixed effects and adjust standard errors using the Newey and West (1987) method to account for serial correlation of abnormal equity returns / CDS spreads. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% level, respectively.

Table 9: Short Interest of US Bank Stocks

Panel A: Classification Based on All Stress Tests

	Average Unexpected Short Interest					
	t-6	t-5	t-4	t-3	t-2	t-1
Likely-To-Fail Bank Stocks (Bottom 20%)	0.198	0.206	0.217	0.228	0.233	0.251
Medium (Between Bottom 20% and Top 20%)	0.159	0.124	0.138	0.161	0.145	0.151
Likely-To-Pass Bank Stocks (Top 20%)	0.189	0.148	0.137	0.146	0.139	0.159
Non-Tested Bank Stocks	0.172	0.168	0.142	0.157	0.137	0.161
Difference Likely-to-Fail vs. Likely to Pass	0.009	0.058	0.080**	0.082***	0.094***	0.092***
	(0.41)	(1.54)	(2.31)	(2.41)	(3.14)	(3.20)
Difference Likely-to-Fail vs. Non-Tested	0.026	0.038	0.075*	0.071*	0.096**	0.090**
	(0.51)	(1.22)	(1.82)	(1.80)	(2.34)	(2.48)

Panel B: Classification Based on the First Two Tests in Each Regime

	Average Unexpected Short Interest					
	t-6	t-5	t-4	t-3	t-2	t-1
Likely-To-Fail Bank Stocks (Bottom 20%)	0.195	0.208	0.209	0.215	0.225	0.240
Medium (Between Bottom 20% and Top 20%)	0.165	0.135	0.143	0.164	0.154	0.159
Likely-To-Pass Bank Stocks (Top 20%)	0.191	0.156	0.150	0.154	0.143	0.156
Non-Tested Bank Stocks	0.175	0.175	0.153	0.156	0.142	0.157
Difference Likely-to-Fail vs. Likely to Pass	0.004	0.048	0.059	0.061	0.083**	0.084**
	(0.05)	(0.89)	(1.05)	(1.29)	(2.49)	(2.56)
Difference Likely-to-Fail vs. Non-Tested	0.020	0.033	0.056	0.059	0.083**	0.083**
	(0.61)	(0.78)	(1.12)	(1.27)	(2.37)	(2.40)

This table reports average unexpected short interest of the portfolios of stocks that are likely-to-fail a stress test (bottom 20%), stocks that are characterized to fail a stress test with medium likelihood (60%, between bottom 20% and top 20%), stocks that are characterized to pass a stress test (top 20%), and non-tested bank stocks in the months *t*-6 to *t*-1 up to the stress test release day. In Panel A, we classify banks according to their pass- or fail likelihood based on regression specification (1) of Table 7 fitted to the whole sample period from 2010 to 2018. In Panel B, we classify banks according to their pass- or fail likelihood based on regression specification (1) of Table 7 fitted to the first two tests in each individual regime. We compute unexpected short interest for a stock in month *t* as the difference between the realized value of short interest and its past 12-month rolling window mean, divided by the volatility of short interest over the past 12 months (following Lesnevski and Smajlbegovic, 2019). We obtain daily per-bank equity prices from Reuters Datastream and CDS spreads (5 year-senior) from Bloomberg, as well as from S&P SNL Financial. We adjust standard errors using the Newey and West (1987) method to account for serial correlation of abnormal equity returns / CDS spreads. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% level, respectively.