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**A Preliminary Examination
of Health Insurers Participating
on Federally Facilitated Marketplaces**

Cassandra R. Cole, Ph.D.
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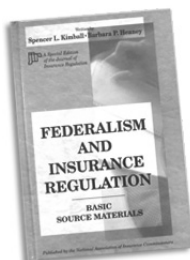
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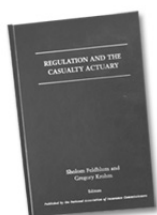
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A Preliminary Examination of Health Insurers Participating on Federally Facilitated Marketplaces

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Abstract

The federal Patient Protection and Affordable Care Act (ACA) mandated the creation of health insurance exchanges and 2014 marked the first year that coverage obtained through the exchanges takes effect. However, there currently exists little empirical evidence regarding the operational characteristics and financial performance of the insurers that have elected to participate on health insurance exchanges. As such, this paper examines the quarterly financial statement data reported to the NAIC of health insurers that elected to operate on health insurance exchanges in 2014. In the aggregate, the evidence presented in this paper suggests that insurers currently participating on exchanges are larger, well-established companies whose profits (expenses) are lower (higher) relative to previous time periods and other insurers not participating on exchanges. While data constraints preclude definitive conclusions regarding the effects of participation in insurance exchanges on insurer performance, the paper provides an important preliminary analysis that helps to inform regulators, policymakers and other health insurance market participants. Our analysis also highlights several areas of research that can be pursued by future researchers when data constraints become less binding.

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Introduction

The federal Patient Protection and Affordable Care Act of 2010 (ACA) enacted measures that will likely change the health insurance market in a dramatic fashion (Harrington, 2010). One of the most significant changes brought about by the ACA is the creation of health insurance exchanges that facilitate the individual mandate by providing a place where Americans can “one-stop shop for a health care plan, compare benefits and prices, and choose the plan that’s best for them.”¹ Through these exchanges, consumers can purchase health insurance policies from participating health insurers that cannot deny coverage, cannot discriminate against applicants based on pre-existing conditions and are limited to rating only on the four approved factors.² The policies sold on the exchanges must also comply with specific regulations outlined by the ACA, such as the minimum medical loss ratio rule,³ and must provide coverage for essential health benefits, including inpatient care, outpatient care, prescription drugs, mental health care and maternity.⁴ As a result, the marketplaces (health insurance exchanges) for the purchase of health insurance coverage created by the ACA are considerably different than the marketplaces in existence pre-ACA era, especially as it relates to individual health insurance policies.⁵

Given the economic and social implications of the ACA, it is not surprising that the literature considers a wide range of topics related to health insurance

1. Statement made by President Barak Obama in a June 2, 2009, letter to U.S. Sen. Edward M. Kennedy and U.S. Sen. Max Baucus. The letter can be found at www.whitehouse.gov/blog/The-President-Spells-Out-His-Vision-on-Health-Care-Reform.

2. The four approved rating factors are age, family size, tobacco use and geographic area. It should also be noted that the ACA limits the spread of premiums among insureds for age, tobacco use and geographic area. For example, for those 21 and older, the insurer cannot charge the oldest insured a rate greater than three times the rate charged to the youngest insured. For detailed information about the approved rating factors, see “Overview: Final Rule for Health Insurance Market Reforms,” available at www.cms.gov/CCIIO/Resources/Files/Downloads/market-rules-technical-summary-2-27-2013.pdf.

3. The ACA requires insurers to spend a minimum amount of premiums on medical care and health care quality improvement. If the minimum requirements are not met, insurers must rebate the difference to enrollees. Rules regarding the medical loss ratio can be found at www.cms.gov/CCIIO/Programs-and-Initiatives/Health-Insurance-Market-Reforms/Medical-Loss-Ratio.html.

4. More information regarding essential health benefits can be found at www.cms.gov/CCIIO/Resources/Data-Resources/ehb.html.

5. Prior to the creation of the health insurance marketplaces, if a consumer was in need of health insurance coverage, the individual would have to “search” for companies that provided coverage within the area, compare the types of policies available (in terms of price and coverage), make a decision as to which insurer had the policy that fit his/her needs at the best price and complete the application process with that particular insurer. Additionally, there was always the possibility that the insurer would not be willing to issue the policy. Health insurance exchanges are designed to simplify this process by creating standardization across policies (bronze, silver, gold, platinum and catastrophic), one-stop shopping and a less complicated application process. For more information on differences in buying coverage pre- and post-ACA, see <http://kff.org/health-reform/perspective/how-buying-insurance-will-change-under-obamacare/>.

exchanges. For example, Sommers and Rosenbaum (2011) examine enrollment levels and pricing in the marketplaces in the context of Medicaid eligibility. Using survey data, the authors find that the ACA would lead to changes in eligibility for Medicaid and result in a sizeable shift of adults from Medicaid to the health insurance exchanges, or vice versa, within the first year. Austin, Luan, Wang and Bhattacharya (2013) consider the cost of employer-sponsored health insurance and find that increasing the cost of coverage could lead to an influx of consumers into the exchanges, which would increase federal outlays by billions of dollars. Eibner Price, Vardavas, Cordova and Girosi (2012) consider the health insurance-related decisions of small employers as it relates to self-insurance or utilization of grandfathered plans on the cost of coverage for employers on the Small Business Health Options Program exchanges. Others areas considered by previous studies include consumer support (e.g., Day and Nadash, 2012; Sinaiko, Ross-Degnan, Soumerai, Lieu and Galbraith, 2013), issues that should be addressed in marketplace creation (e.g., Jost, 2010) and the structure/governance of health insurance exchanges (e.g., Kingsdale and Bertko, 2010; Cole, Karl and Wade, 2014).

Despite the abundance of research related to the ACA and health insurance exchanges, less is known about the operational characteristics of health insurance companies participating on the exchanges. For example, McCue and Hall (2013) find that the ACA's regulations influence health insurers' medical loss ratios and expense ratios. In addition, while Dafny, Gruber and Ody (2014) examine insurers participating in health insurance marketplaces, the focus of their study is competition and pricing issues. Finally, while existing studies (i.e., Gunja and Gee, 2014; Cox, Claxton, Levitt and Khosla, 2013; Cox, Levitt, Claxton, Ma and Duddy-Tenbrunsel, 2014; and Holahan, Peters, Lucia and Monahan, 2013) provide information on the number of insurers participating on exchanges, what the states are doing to encourage participation by insurers and how participation has changed from 2014 to 2015, some of these studies include information on only some states and none provide any information on the financial and operational characteristics of the insurers participating on exchanges.⁶

The lack of empirical evidence on the subject represents a large void in the literature. Health insurance exchanges are vital for achieving the long-term objectives of the ACA, and the viability of the exchanges will be largely influenced by the financial characteristics and performance of the participating insurers. For example, financial characteristics such as size, capitalization and product mixes of insurers participating on exchanges are associated with a variety of consequences related to solvency, economies of scale and scope, market competition and the ability to adequately meet policyholders' needs. Similarly, information regarding the financial performance of participating health insurers

6. There is a specific process that insurers must follow in order to participate on an exchange. For those interested in participating on federally facilitated marketplaces, detailed information is provided on the Centers for Medicare & Medicaid Services' (CMS) website at www.cms.gov/CCIIO/Programs-and-Initiatives/Health-Insurance-Marketplaces/qhp.html.

provides insight into the firms' current and future ability to adapt to, and achieve operational success in, the newly created marketplaces. Empirical information regarding the characteristics of insurers that elect to participate on exchanges should, therefore, be of interest to a number of stakeholders—including regulators, policymakers, health insurers, policyholders and other economic agents—as they work to understand the economic and social consequences of the various provisions of the ACA.

Current data limitations present one of the most significant challenges to filling the void in the literature related to health insurers participating on health insurance exchanges.⁷ The first open enrollment period under the ACA began Oct. 1, 2013, and 2014 was the first year that coverage was provided through plans purchased on health insurance exchanges. As a result, there is limited data available on health insurance firms since insurers began operating on the exchanges. Many researchers are also unaware of the identities of the insurers that actively participate on the exchanges. This article attempts to overcome these data limitations and uses the most up-to-date data available in order to provide early insight into the financial performance and characteristics of health insurers participating on federally facilitated marketplaces and state partnership marketplaces.

Our analysis indicates that health insurers that have participated on health insurance exchanges are, on average, larger (in terms of assets) and better-capitalized insurers with more direct premiums and enrollees than non-participating insurers. To the extent that large, well-capitalized insurers are associated with positive market attributes such as lower default risk or economies of scale and scope, this finding helps to inform regulators and insurance consumers. Also, not surprising when considering the regulatory purpose of the exchanges, our analysis indicates participating insurers are heavily involved in individual health and Medicaid business. However, in terms of relative health enrollment, the average insurer participating on the exchange is most concentrated in group health insurance. We also believe this is an informative finding, as it suggests insurers participating on the exchanges did not go “all in” for the individual health insurance market but, rather, kept a significant degree of product diversification.

Because many policy debates on the consequences of the ACA for the insurance industry center on medical loss ratios, operating expenses and profitability, we specifically examine the extent to which these factors changed in the time period after health insurers began operating on exchanges. We find no evidence that insurers electing to participate on health insurance exchanges experienced any statistically meaningful change in medical loss ratios. However, we document a robust correlation between an insurer's decision to participate on a health insurance exchange and changes in expense ratios and return on assets

7. It should be noted that while some organizations, such as the Robert Wood Johnson Foundation, maintain plan-level data on insurers operating on exchanges, to our knowledge, no existing dataset also contains financial and organizational information on the insurers.

(ROA). In particular, we find evidence that insurers participating on health insurance exchanges experienced statistically significant increases (decreases) in expense ratios (ROAs). This change in financial performance from the pre-exchange period to the post-exchange period was greater than that experienced by insurers not participating on exchanges. Our difference-in-differences analysis indicates that the increase in expense ratios incurred by exchange insurers during the post-exchange period was approximately 2.6% to 3.1% greater than the increase incurred by insurers not participating on health insurance exchanges. A similar analysis indicates that ROAs of insurers participating on exchanges decreased by approximately 3.0% to 5.0% more than insurers not participating on exchanges.

It is important to note that we make no claims that exchanges caused expense ratios to rise and ROAs to fall. Many factors could be responsible for increasing expenses and decreasing profitability, such as differences across lines of business, regulatory constraints and high initial administrative costs associated with commencing operations on the exchanges. Expenses and profitability may also be impacted by higher utilization by consumers who have not previously had access to health insurance or changes in business mix. As such, the correlations we document do not imply that operating on a health insurance exchange is an unprofitable proposition for health insurers that is fraught with high expenses.

However, because higher levels of expenses and lower levels of profitability are generally undesirable in the private marketplace, the robust correlation we document should be of interest to policymakers and should be further investigated to determine if these differences persist over the long term. To the extent that the adverse changes in performance we document are due to high initial capital expenditures required to commence operations on exchanges and/or high initial utilization, the differences may be temporary. Alternatively, there could be regulatory-specific, firm-specific or market-specific factors associated with operating on exchanges that lead to higher expenses and lower profitability. If this is the case, regulators would likely want to enact measures to alleviate these problems and promote market stability for the millions of Americans that rely on health insurance exchanges to procure affordable health insurance coverage.

While our analysis is inherently limited by the nature of our data constraints, it nonetheless provides some of the first empirical insight into the operations of health insurers on exchanges. It is our hope that, when more data become available, future researchers will be able to examine, in more detail, whether the differences we document between exchange and non-exchange insurers—in terms of size, line of business mix and other operational characteristics—have any consequences for policyholders and the long-term stability of the health insurance marketplace. We also hope that regulators take note of the fact that, at least initially, operation on health insurance exchanges is correlated with significant reductions in financial performance, as investigating the cause and persistency of this observation will be important for determining appropriate measures for ensuring the success of health insurance exchanges.

In the next section, we provide more detail on the data and sample used in our analysis. The following section provides information on the financial characteristics and performance of the firms in our sample. The last section concludes with a discussion of the results and of future areas of research.

Sample Selection

The sample of insurers examined in this analysis is selected based on several criteria, the first of which relates to the type of exchange in which a given health insurer participates. As discussed in various prior studies (e.g., CMS, 2013; Dafny et al, 2014; Cole et al., 2014), the states had three options in their development of health insurance exchanges: a state-based marketplace, a state partnership marketplace or a federally facilitated marketplace.⁸ Dafny et al. (2014) examines only the insurers participating in federally facilitated marketplaces or state partnership marketplaces, and our study utilizes the same strategy. In addition to being consistent with prior literature, there are several additional advantages of this approach, the first being that it creates homogeneity within our sample regarding the operational and managerial characteristics of the exchange. That is, excluding firms operating on state-based marketplaces allows for a cleaner analysis of insurer operations on exchanges that is not biased by state-specific features related to the design and management a particular state-based marketplace, which vary widely by state.⁹ Another advantage of our approach is that, as discussed in more detail below, we need only rely on one data source (HealthCare.gov) to identify insurers participating on exchanges, which helps to ensure that an exchange insurer is not incorrectly classified as a non-exchange insurer (and vice versa). Further, because 34 states opted for federally facilitated marketplaces or state partnership marketplaces, the total number of insurers participating in both exchange types is sufficient for reliable statistical analysis.

8. If a state-based marketplace is chosen, a given state uniquely designs the characteristics of the exchange, including governance structure, the selection method of plans, mandated insurer participation and consumer assistance. Sixteen states and the District of Columbia elected to create a state-based marketplace. In contrast, seven states selected the second option of creating a state partnership marketplace, which is a hybrid exchange whereby a state enters into a partnership with the federal government to run the exchange. Finally, 27 states selected the federally facilitated marketplace, which allows the federal government to design and operate the exchange. For more information regarding the states' decisions regarding health insurance exchanges, see CMS (2013), Dafny et al. (2014) and Cole et al. (2014).

9. For example, Colorado's state-based marketplace utilizes a clearinghouse model to select plans and is governed by a quasi-governmental entity, while Kentucky's state-based marketplace utilizes a market organizer approach to select health plans and is governed by an existing state agency. See the Commonwealth Fund's Web page, "Health Insurance Marketplaces," for more information on the characteristics of a given state's state-based marketplace: www.commonwealthfund.org/interactives-and-data/maps-and-data/state-exchange-map.

Additionally, the analysis focuses on the health insurance exchanges for individual policies. As noted in Dafny et al. (2014), while marketplaces for small-group policies exist (e.g., Small Business Health Options Program exchanges), they are not yet compliant with various ACA requirements and data pertaining to the plans are not available. As a result, it is not possible to include the marketplaces for small groups in the sample. In addition, recent studies of the effects of ACA regulations on health insurer financial performance indicate that the effects are greatest for individual health insurers (McCue and Hall, 2013), suggesting that the greatest policy relevance is derived from an analysis of the individual market.

The federal website, HealthCare.gov, lists the names of all individual health plans participating in the states where the federal government operates the marketplace.¹⁰ Using this data, 144 unique insurers are identified as participating in at least one of the 34 federally facilitated marketplaces or state partnership marketplaces during calendar year 2014. Next, the names of the insurers identified on HealthCare.gov are matched, by hand, to the names of insurers filing quarterly health insurance financial statements with the NAIC during 2014, as well as the first two quarters of 2015.¹¹ The intersection of the NAIC health insurance database and the plan information on HealthCare.gov results in 122 unique insurers, or approximately 85% of the exchange-participating insurers.¹²

Once a health insurer identified on HealthCare.gov is matched with its NAIC company code, additional financial data pertaining to the firm's operations are gathered from the NAIC health insurance database. Because the aim of this article is to examine insurers that operated on the health insurance exchanges since their existence, analysis of annual reporting data will not suffice, as the 2014 annual statement data is the only available source of annual data as of the writing of this article. However, health insurers have reported quarterly statements for all of 2014 and the first and second quarters of 2015, and this data is available via SNL Financial. While the quarterly data does not contain as much detail as the annual

10. This information is found at www.healthcare.gov/health-plan-information/.

11. Great care was taken to ensure the names were matched correctly. The majority of the names in each database were extremely similar. For those few cases where there were discrepancies, cross-referencing the geographic data in each database helped to confirm the correct matches. As such, it is unlikely that the analysis is biased due to error in matching.

12. There are two reasons why not all insurers listed on HealthCare.gov are included in the final sample. First, insurers' whose names could not be accurately identified in the NAIC health insurance database were excluded. Second, some the insurers offering individual health insurance plans may report to the NAIC as life insurers and are, therefore, not captured in the health insurance database. However, because many reporting lines do not match between the two databases (e.g., reported health lines of business are different from reported life lines of business), it is not feasible to include data from the life insurance database. Further, the health insurer database includes those insurers classified as health insurers by the NAIC, meaning the overwhelming majority of business is derived from health lines. Because life insurers could potentially have significant amounts of non-health business, the financial characteristics and performance of NAIC-classified life insurers participating on health insurance exchanges may be different than those classified as health insurers, potentially biasing the analysis.

filings, it is the best source available for providing insight into the attributes and financial performance of health insurers operating on the newly created health insurance exchanges.

The appropriate sample period of this analysis is the time immediately surrounding the opening of exchanges and, as a result, financial data reported for each quarter beginning in the first quarter of 2012 through the second quarter of 2015 are utilized. While some of the analysis in this article utilizes quarterly data for 2014 and 2015 only, other analysis utilizes pre-2014/2015 quarterly data, and the sample time period used in each part of the analysis is specifically reported. Data elements used in the analysis include balance sheet information, income statement information and line of business-specific information reported each quarter.¹³ The ensuing sections of this article discuss the summary statistics and provide analyses of the data.

Examination and Comparison of Characteristics and Performance

An important objective of this paper is to examine the characteristics of health insurers participating on health insurance exchanges and compare these characteristics to those not participating. This information is reported in Table 1. Mean values of various measures of insurer financial operations are presented for firms participating on exchanges and, for a given measure, the value reported represents the average value during all four quarters of 2014, as well as the first and second quarters of 2015. For comparison purposes, Table 1 also includes information regarding firms not participating on health insurance exchanges.¹⁴

The table suggests that insurers participating on exchanges are relatively large insurers. Firms selling policies on exchanges have, on average, approximately \$348 million in direct health insurance premiums written (DPW), \$306 million in surplus, \$631 million in assets, \$325 million in liabilities and more than 365,000 enrollees. All of these mean values are larger than those of insurers not participating on exchanges and a t-test of means indicates that the differences are

13. If, for a given firm-quarter observation, a negative or similarly illogical value was reported for premiums, liabilities, assets, enrollment or expenses, the firm-quarter observation was dropped. The imposition of these filters slightly reduced the number of insurers operating in a given quarter.

14. The sample of firms not participating on health insurance exchanges consists of firms filing quarterly reports to the NAIC but not identified by HealthCare.gov as an exchange participant.

significant at the 1% level.¹⁵ While it is currently unclear if the larger size of exchange-participating insurers is associated with economies of scale and scope, future research on the subject would likely be of economic and policy relevance. Furthermore, Table 1 indicates that firms participating on exchanges are well-established, with an average age of approximately 26 years, which is only slightly larger than the age of those firms not participating on exchanges. This difference is also statistically significant.

Table 1 also reports the mean values of variables capturing insurer organizational structure and extent of geographic diversification. The value reported for the “group” variable suggests that approximately 79% of exchange-participating insurers are affiliated with an insurer group, while the value reported in “licenses” indicates these insurers, on average, are licensed to operate in approximately three states. Results of t-tests do not indicate that participating and non-participating insurers differ in terms of organizational structure and geographic diversification.

Table 2 provides information on the proportion of a firm’s total enrollees that are attributable to a given line of business in all four quarters of 2014 and the first and second quarters of 2015.¹⁶ Given the Medicaid expansion provision of the ACA, as well as the fact that exchanges were established to facilitate individual health insurance purchases, it is not surprising that Medicaid and individual comprehensive health enrollments comprise a large majority of the average firm’s total enrollees. What is noteworthy is that, on average, group health insurance represents the largest line of business for firms in terms of relative enrollment. In particular, the information in Table 2 suggests that, of all the enrollees in a given firm, on average approximately 30% of those enrollees are in group health insurance. This may be due to the fact that health insurers heavily involved in the group health insurance market elect to provide individual coverage on health insurance exchanges because the limitations on rating factors now make providing this coverage more similar to providing group insurance coverage. More specifically, health insurers providing coverages on exchanges can only vary premiums among insureds on four factors: age; family size; tobacco use; and geographic location. This is similar to group insurance, which is typically experience-rated and coverage for members of the same group generally varies

15. In unreported tests, we also find similar statistically significant differences in these characteristics are present in the years before the exchanges were operational. This suggests that the differences reported in Table 1 are not solely attributable to the fact that ACA insurers play a role in two markets (i.e., traditional insurance markets and insurance exchanges) while the non-ACA insurers only play a role in the traditional insurance market.

16. There are a total of 11 lines of business in which health insurers operate: individual comprehensive; group comprehensive; Medicaid; Medicare; Medicare supplement; Federal Employees Health Benefits Program; dental; vision; disability; stop-loss; and long-term care. For the purposes of this analysis, the disability, stop-loss and long-term care lines are combined into the “other” category, as these are relatively small lines of business for almost all health insurers.

based on whether a person elects individual or family coverage and, in some cases, whether the insured is a smoker.¹⁷

While there are potential benefits associated with operating in group, individual and Medicaid lines of business, there is evidence of a diversification discount in the insurance industry (e.g., Liebenberg and Sommer, 2008). Given the relative concentration in group, individual and Medicaid lines of business among participating health insurers found in this article, future analysis could consider the costs and benefits of product line diversification from the perspectives of both the firms and the policyholders participating on health insurance exchanges. Additional perspective on the extent to which group health insurance operations complement individual health insurance business provided on insurance exchanges would also be beneficial.

From a broader perspective, Table 2 suggests that insurers participating on health insurance exchanges have a different mix of products relative to non-participating insurers. In fact, t-tests indicate statistically significant differences in mean enrollment between participating and non-participating insurers in every line except Medicare supplement. While part of these differences are no doubt attributable to the fact that exchanges facilitate coverage under Medicaid and individual policies, the summary analysis in Table 2 indicates insurers participating on health insurance exchanges are significantly more (less) concentrated in individual and group (Medicare and dental) lines of business relative to their non-participating counterparts. This suggests that only the subset of firms that had prior expertise in individual or group lines, or that made a strategic decision to focus on exchange business, elected to participate on health exchanges. Whether this has any implications for market competition, efficiency of operations, policyholder efficacy and similar topics, therefore appears to be an important area of future research.

Table 3 explores differences in three ratios related to the financial performance of participating and non-participating health insurers in the time periods before and after the exchanges began operations.¹⁸ This table allows us to examine the extent to which the financial performance of participating insurers changed after entering health insurance exchanges, relative to non-participating insurers, via a simple difference-in-differences analysis. For insurers that participated on exchanges, the often-discussed medical loss ratio was around 86% before participation on exchanges and did not change much in the post-exchange period. This suggests that the average participating firm is in compliance with the

17. For additional information on factors affecting group health insurance policies and differences in costs of single versus family coverage, see www.shrm.org/legalissues/federalresources/pages/link-health-insurance-rates-smoking.aspx and <http://kff.org/state-category/health-costs-budgets/employer-based-health-premiums/>.

18. Note that the pre-exchange time period in our sample includes the eight quarters of 2012 and 2013, while the post-exchange time period includes the four quarters of 2014 and the first two quarters of 2015. Participating health insurers are the same as previously defined. Also, the financial ratios are winsorized at the 1st percentile and 99th percentile to reduce the impact of outliers.

ACA's minimum medical loss ratio rule for group and individual health insurers.^{19, 20} Further, while the difference between mean medical loss ratios of participating and non-participating health insurers was statistically different both before and after the exchanges opened, the difference in these differences is not statistically significant. That is, the slight increase in medical loss ratios of exchange insurers in the post-exchange time period was not statistically greater than the change in medical loss ratios of non-exchange insurers.

However, Table 3 indicates that, relative to firms that did not participate on health insurance exchanges, participating insurers incurred higher expense ratios in the post-exchange time period. This is evidenced by the fact that mean levels of expense ratios for participating insurers increased from 11.33% in the pre-exchange period to 16.77% in the post-exchange period. Non-participating insurers, on the other hand, experienced a less modest increase of slightly more than 2% in the post-exchange period. The difference-in-differences value is statistically significant at the 1% level and indicates that the increase in mean expense ratios of participating insurers from the pre-exchange period to the post-exchange period was 3.14% greater than the increase in expense ratios of non-participating insurers. That is, relative to their counterparts that did not participate on health insurance exchanges, firms participating on health insurance exchanges saw larger increases in expense ratios in the post-exchange time period.

Table 3 also suggests that insurers participating on health insurance exchanges experienced a reduction in profitability, as proxied by ROA. While it is evident that mean ROA levels were lower for both participating and non-participating insurers in the post-exchange time period, the reduction in ROA is greatest for insurers that elected to participate on exchanges. In particular, mean ROA for participating insurers fell from 3.44% in the pre-exchange period to -3.47% in the post-exchange period while non-exchange insurers ROA fell from 4.46% to .56%. The statically significant difference-in-differences value indicates that the decrease in mean ROA of participating insurers from the pre-exchange period to the post-exchange period was 3.01% greater than the decrease in ROA of non-participating insurers.

19. The minimum medical loss ratio rule requires insurers operating in the individual and small group markets to spend a minimum of 80% of premiums collected on claims costs and quality improvements, while large group insurers are required to spend 85%. Those not meeting these requirements must rebate the excess to insureds. This requirement went into effect in 2011. Information on the minimum medical loss ratio rule, as well as the specifics on calculating medical loss ratio for the purpose of rebating, is available at www.cms.gov/ccio/resources/Regulations-and-Guidance/index.html#Medical Loss Ratio.

20. Because the medical loss ratio requirements differ by the particular line of business, it is difficult to determine the exact number of insurers in our sample that will be required to provide rebates. However, of the firms operating on exchanges in our sample, 31 had a medical loss ratio of less than 80% in the first quarter of 2014 and that number dropped to 19 in the second quarter of 2014, suggesting that the majority of the firms are in compliance with the individual lines' minimum medical loss ratio requirement. It is left to future researchers to provide more information on insurers' compliance with medical loss ratio requirements when operating on health insurance exchanges.

Given that other firm-specific factors may distort the differences in medical loss ratios, expense ratios and ROAs observed in the simple difference-in-difference analysis, it is important to consider a multivariate approach that holds such factors constant. As such, Table 4 and Table 5 present the results of a multivariate regression approach.²¹ In the regression models, the sample period includes the first quarter of 2012 through the second quarter of 2015 and the observational unit is the insurer-quarter level (i.e., 14 time panels). The sample of firms analyzed is the same as those previously analyzed in the simple difference-in-differences approach and therefore includes firms both participating and not participating on health insurance exchanges. Variables included to control for other characteristics of the firm that could impact financial performance are organizational form, size, capitalization, enrollment, product and geographic diversification.

The regression results presented in Table 4 are a multivariate difference-in-differences regression with standard errors clustered at the firm level. The variable of interest is *DD Estimator*, which is equal to one for participating firms in the post-exchange period.²² The magnitude of this variable's coefficient indicates the degree to which the financial performance of exchange insurers changed from the pre-exchange period to the post-exchange period relative to the change in performance of non-participating insurers from the pre-exchange period to the post-exchange period.

As given in Table 4, *DD Estimator* is not statistically significant when medical loss ratio is the dependent variable, confirming the results of the previous univariate analysis that the medical loss ratios of exchange insurers did not change more than non-exchange insurers when operations on the exchange began. However, *DD Estimator* is statistically significant in the regression models in which expense ratio and ROA are the dependent variables, indicating a significant correlation between participation on exchanges and changes in performance. More specifically, the coefficient of 2.74 indicates that insurers participating on health insurance exchanges experienced an average increase in loss ratios that was 2.74% greater than insurers not participating on exchanges. Similarly, we find that the reduction in ROA from the pre-exchange period to the post-exchange period for participating insurers was, on average, 2.70% greater than the change in ROA experienced by non-exchange insurers.

Table 5 also identifies the differences in financial performance of exchange and non-exchange insurers in the pre- and post-exchange periods, but uses a

21. The financial performance variables in these regressions are winsorized at the 1st percentile and 99th percentile to reduce the impact of outliers on the results. In addition, standard errors are clustered at the firm level for all models.

22. Besides the firm-level control variables, *Post-2014 Indicator* and *Exchange Indicator* are also included, which properly specifies the difference-in-differences approach. *Post-2014 Indicator* is equal to one for all quarters during which exchanges were operational (i.e., the first quarter of 2014 to the second quarter of 2015) and zero otherwise, for a given firm. *Exchange Indicator* is equal to one for firms that were identified as participating on health insurance exchanges in 2014 and zero otherwise.

different multivariate regression specification. Here, the variable of interest is also *DD Estimator*. But, by also including firm-level control variables, firm fixed-effects and quarter fixed-effects in the model, the magnitude of the coefficient indicates how firm performance changed in the post-exchange period, while holding many other potentially confounding effects constant. The results in Table 5 are consistent with those reported in Table 4. Specifically, we find that insurers participating on exchanges experienced statistically significant increases (decreases) in expense ratios (ROAs). This is evidenced by the positive and statistically significant coefficient of *DD Estimator* in the expense ratio regression and the negative and statistically significant coefficient on the same variable in the ROA regression.

In addition, several of the firm-specific controls had varying statistically significant effects on the dependent variables. Specifically, firms that are members of insurer groups have lower expense ratios and medical loss ratios but higher ROAs. The results also indicate that insurer size is significantly correlated with medical loss ratios and ROAs, suggesting that size may be positively associated with operational benefits such as economies of scale and scope. Firms with higher levels of premiums to surplus, on average, have higher medical loss ratios and lower ROAs, suggesting that the financial strength of the firm has non-trivial implications for financial performance. Also, levels of enrollment appear to be significantly correlated with medical loss ratios and ROAs, although the coefficient suggests the magnitude of this correlation is negligible. Finally, the degree of product concentration has mixed effects on the financial performance of health insurers in our sample.

Taken in their entirety, the results of our univariate and multivariate difference-in-differences analysis suggests that, relative to non-participating insurers, firms participating on health insurance exchanges experienced an increase in expense ratios and a decrease in ROAs. Given the short amount of time that the exchanges have been operating and the inherent data limitations, it is difficult to identify the exchanges as the cause of higher expenses and lower returns. Thus, it should be clear that our analysis does not make any definitive claims of causality as it relates to the effects of exchanges on health insurer performance. Rather, our analysis identifies a robust correlation between changes in financial performance and the decision to participate on a health insurance exchange. To our knowledge, no other research has identified this correlation and our hope is that future research can shed more light on the causes, or persistence, of the correlation identified in this article.

For example, if individual, group and Medicaid lines are associated with higher expenses and lower profitability, then the previously discussed differences in line of business operations between the two groups is a potential explanation that could be explored. Other possibilities include regulatory constraints, high initial administrative costs associated with commencing operations on the

exchanges and/or higher initial utilization.²³ As more time passes and more data become available, it will be important to consider whether the higher expense ratios and lower ROAs persist and to work to identify the potential cause(s) of the differences in performance among insurers participating on health insurance exchanges in comparison to insurers that are not.

Conclusion

Health insurance exchanges are one of the most significant changes to the health insurance market brought about by the ACA. While they present insurers with a new platform to sell certain health insurance products, the operations and regulations of exchanges represent a different marketplace than that which existed in the pre-ACA era. However, largely due in part to data limitations, little is known regarding the characteristics of the insurers participating on health insurance exchanges and the extent to which they have found success. This lack of evidence on the subject represents a large void in the literature, as the viability of the exchanges will be largely influenced by the financial characteristics and performance of the health insurers participating. Our study helps to fill this void in the literature by examining quarterly financial statement data reported to the NAIC by the health insurers participating on health insurance exchanges and, thus, helps to inform policymakers, regulators and other participants in the U.S. health insurance marketplace.

Our univariate analysis indicates that insurers participating on health insurance exchanges have significantly higher levels of premiums, surplus, assets and liabilities, and have more enrollees when compared to insurers not participating on health insurance exchanges. To the extent that large, well-capitalized insurers are associated with positive operational benefits, this finding helps to inform regulators and insurance consumers. We also provide evidence that insurers participating on exchanges have a different mix of business relative to those that do not. Specifically, these firms operate more in the individual health, group health and Medicaid lines. This finding, too, helps inform policymakers and other health insurance market participants in that it suggests insurers participating on health insurance exchanges retained a degree of product diversification.

23. As it relates specifically to initial costs of commencing business on exchanges, this is another important area of future research. That is, the differences in expense ratio and ROA we observe with our limited data may be due to a variety of factors—including investments in software development, underwriting research and marketing efforts—all of which are likely required to enter into the new exchange marketplace. If, when more data becomes available, researchers can support or refute the notion that high initial investment costs explain the inferior financial performance of exchange firms, this would help to provide valuable perspective on whether some insurers have more advantages in the ACA markets than others.

We also conduct univariate and multivariate difference-in-differences analyses to investigate whether the expense ratios, medical loss ratios and profitability of insurers changed when commencing operations on health insurance exchanges. We find no evidence that insurers participating on health insurance exchanges experienced any statistically meaningful changes in medical loss ratios. However, we document a robust correlation between an insurer's decision to participate on a health insurance exchange and changes in expense ratios and ROAs. In particular, our analysis suggests that the increase in expense ratios incurred by exchange insurers during the post-exchange period was approximately 2.6% to 3.1% greater than the increase incurred by insurers not participating on health insurance exchanges. Similarly, we find that the ROAs of insurers participating on exchanges decreased by approximately 3.0% to 5.0% more than insurers not participating on exchanges. While we are not able to determine whether exchanges caused the changes in performance, the robust correlation document in our analysis is likely of interest to regulators and policymakers attempting to ensure the viability of health insurance exchanges that millions of Americans rely on for obtaining health insurance.

Our research also highlights several areas of future research that are likely of interest to regulators and academics alike. Researchers could consider whether the large, well-capitalized insurers found to participate on the exchanges enjoy any economies of scale/scope or efficiency gains that help to ensure solvency or result in benefits to policyholders. Areas related to market conduct of the insurers on the exchanges—such as collusive behavior, product differentiation, comparative advantages and consequences for competition/concentration of these insurers—could also be considered. Whether differences in product line operations or geographic focus influence firm performance or have consequences for policyholders is another topic that could be studied when more data is available.

Other potentially fruitful areas of research relate to the long-term effects of exchange participation on health insurer performance. The initial evidence presented in this paper suggests that participation on health insurance exchanges adversely affected the expense ratios and ROAs of health insurers. However, due to the short sample period, it is important for future researchers to determine if this continues to be the case beyond the initial operating period. More specifically, it is particularly important to consider the long-term implications for financial performance for insurers participating on the exchanges, including a detailed examination of the initial costs incurred by insurers to commence operations on the exchanges and the extent to which, if at all, these costs persist as time passes. Further, it is important for future researchers to consider if the financial performance of insurers on the exchanges has any consequences for policyholders as it relates to overall satisfaction and potentially the quality of care provided.

Table 1:
Financial Characteristics

Variable	Exchange Insurers		Non-Exchange Insurers		Difference
	Mean	Std. Dev.	Mean	Std. Dev.	
DPW	\$348,706.00	\$652,467.70	\$145,568.60	\$364,091.90	\$203,137.40 ***
Surplus	\$306,214.20	\$619,419.20	\$118,507.60	\$459,327.50	\$187,706.60 ***
Assets	\$631,464.10	\$1,194,038.00	\$250,313.30	\$878,710.70	\$381,150.80 ***
Liabilities	\$325,249.90	\$623,010.80	\$131,812.10	\$435,339.80	\$193,437.80 ***
Enrollment	365,297.90	877,526.20	229,080.10	671,636.90	136,217.80 ***
Age	26.43	21.30	23.66	18.20	2.77 ***
Group	0.79	0.41	0.77	0.42	0.02
Licenses	2.94	7.42	3.09	7.81	-0.15

This table examines differences in financial characteristics between firms participating on exchanges and those not participating during all four quarters of 2014 and the first two quarters of 2015. Information in the column “Exchange Insurers” pertains to insurers identified by HealthCare.gov as participating on exchanges in 2014. Information in the column “Non-Exchange Insurers” refers to all other insurers in the NAIC health insurance database not classified as an “Exchange Insurer.” There are 695 insurer-quarter observations for “Exchange Insurers” and 3,824 insurer-quarter observations for “Non-Exchange Insurers.” The column titled “Difference” represents the difference in mean values of a given financial characteristic between “Exchange Insurers” and “Non-Exchange Insurers” and indicates whether the difference is statistically significant using a t-test of means. Here, * indicates significance at the 10% level, ** indicates significance at the 5% level and *** indicates significance at the 1% level.

The definitions of the variables in this table are as follows: *DPW* is the direct premiums written across all health insurance in a given quarter for a given insurer. *Surplus* is the amount of policyholder surplus for a particular firm in a particular quarter. *Assets* is the amount of net admitted assets reported by a given insurer in a given quarter. *Liabilities* is the amount of liabilities reported by a given insurer in a given quarter. *Enrollment* is the total number of health enrollees across all lines of business for a given insurer in a given quarter. *Age* is defined as the calendar year minus the year a given firm commenced operations. *Group* is an indicator variable equal to one if a given firm is a member of an insurance group in a given quarter and zero otherwise. *Licenses* is the number of states a given insurer is licensed to operate in during a given quarter. All dollar figures are scaled by 1000.

Table 2:
Line of Business Operations

Variable	<i>Exchange Insurers</i>		<i>Non-Exchange Insurers</i>		Difference
	Mean	Std. Dev.	Mean	Std. Dev.	
Individual	25.86%	30.98%	6.78%	18.00%	19.08% ***
Group	30.74%	29.77%	21.43%	33.11%	9.31% ***
Medicaid	22.19%	35.43%	18.14%	35.46%	4.05% ***
Medicare	9.19%	19.00%	19.00%	34.78%	-9.81% ***
Medicare Supplement	1.93%	5.07%	1.52%	8.76%	0.41%
FEHBP	3.96%	11.06%	1.37%	6.25%	2.59% ***
Dental	2.26%	7.54%	21.97%	40.03%	-19.72% ***
Vision	0.83%	3.37%	5.21%	20.79%	-4.38% ***
Other	3.04%	9.97%	4.58%	17.08%	-1.54% ***

This table examines differences in line of business operations between firms participating on exchanges and those not participating during all four quarters of 2014 and the first two quarters of 2015. Information in the column “Exchange Insurers” pertains to insurers identified by HealthCare.gov as participating on exchanges in 2014. Information in the column “Non-Exchange Insurers” refers to all other insurers in the NAIC health insurance database not classified as an “Exchange Insurer.” There are 695 insurer-quarter observations for “Exchange Insurers” and 3,824 insurer-quarter observations for “Non-Exchange Insurers.” The column titled “Difference” represents the difference in mean values of a given financial characteristic between “Exchange Insurers” and “Non-Exchange Insurers” and also indicates whether the difference is statistically significant using a t-test of means. Here, * indicates significance at the 10% level, ** indicates significance at the 5% level and *** indicates significance at the 1% level.

All values in this table reflect the proportion of a firm’s level of enrollment in a particular line of business relative to the total enrollment across all lines of business during a given quarter. The definitions of the lines of business are as follows: *Individual* is individual comprehensive health insurance. *Group* is group comprehensive health insurance. *Medicaid* is Title XIX Medicaid insurance. *Medicare* is Title XVIII Medicare insurance. *Medicare Supplement* is Medicare supplement insurance. *FEHBP* is Federal Employee Health Benefits Program insurance. *Dental* is dental insurance. *Vision* is vision insurance. *Other* is other types of insurance with health-related features such as stop-loss, disability and/or long-term care insurance.

Table 3:
Univariate Analysis of Various Financial Performance Ratios

Panel A: Medical Loss Ratios

	Variable	<i>Exchange Insurers</i>		<i>Non-Exchange Insurers</i>		Difference
		Mean	Std. Dev.	Mean	Std. Dev.	
Pre-ACA	MLR	86.10%	8.23%	81.92%	17.54%	4.17% ***
Post-ACA	MLR	86.37%	10.54%	81.84%	18.49%	4.53% ***
DD=						-0.36%

Panel B: Expense Ratios

	Variable	<i>Exchange Insurers</i>		<i>Non-Exchange Insurers</i>		Difference
		Mean	Std. Dev.	Mean	Std. Dev.	
Pre-ACA	ER	11.33%	17.77%	15.38%	19.28%	-4.05% ***
Post-ACA	ER	16.73%	24.10%	17.64%	20.85%	-0.91% ***
DD=						-3.14% ***

Panel C: Return on Assets

	Variable	<i>Exchange Insurers</i>		<i>Non-Exchange Insurers</i>		Difference
		Mean	Std. Dev.	Mean	Std. Dev.	
Pre-ACA	ROA	3.44%	16.87%	4.46%	23.94%	-1.02%
Post-ACA	ROA	-3.47%	22.57%	0.56%	25.84%	-4.03% ***
DD=						3.01% **

This table examines differences in various financial ratios between firms participating on exchanges and those not participating during the time period of the first quarter of 2012 to the second quarter of 2015. The unit of observation is the firm-quarter level and, in total, there are 10,508 firm-quarter observations in the sample. Information in the column "Exchange Insurers" pertains to insurers identified by HealthCare.gov as participating on exchanges in 2014. Information in the column "Non-Exchange Insurers" refers to all other insurers in the NAIC health insurance database not classified as an "Exchange Insurer." "Pre-ACA" refers to the time period in our sample before exchanges went into effect, which is the eight quarters of 2012 and 2013. Similarly, "Post-ACA" refers to the time in our sample after the exchanges went into effect, which is all four quarters of 2014 and the first two quarters of 2015. The column titled "Difference" represents the difference in mean values of a given financial ratio between "Exchange Insurers" and "Non-Exchange Insurers" and indicates whether the difference is statistically significant using a t-test of means. The column titled "DD" is the "Pre-ACA" difference in a given financial loss ratio between "Exchange Insurer" and "Non-Exchange Insurers" minus the "Post-ACA" difference in a given financial loss ratio between the two groups. Here, * indicates significance at the 10% level, ** indicates significance at the 5% level and *** indicates significance at the 1% level.

The definitions of the variables in this table are as follows: *MLR* is the medical loss ratio for a given firm in a given quarter, which calculated as total hospital and medical losses, less reinsurance recoveries, scaled by net premium income. *ER* is the expense ratio for a given firm in a given quarter and is calculated as general admitted assets scaled by premiums earned. *ROA* is return on assets for a given firm in a given quarter. The variable is computed as a firm's net income scaled by net admitted assets. All ratios in this table are calculated by SNL Financial using quarterly health insurance statement data reported to the NAIC.

Table 4:
Multivariate Analysis A

	MLR	ER	ROA
DD Estimator	0.3198 [0.654]	2.7425** [1.133]	-2.6975** [1.157]
Post-2014 Indicator	-0.3281 [0.373]	2.7105*** [0.409]	-3.9664*** [0.536]
Exchange Indicator	0.8721** [0.399]	1.3507* [0.701]	-1.5130** [0.695]
Group Indicator	-3.5844*** [0.398]	-2.0580*** [0.537]	5.5606*** [0.654]
Size	2.2216*** [0.126]	-3.2507*** [0.146]	0.2502 [0.161]
Premiums to Surplus	0.0186** [0.009]	-0.0131* [0.008]	-0.0685*** [0.022]
Total Enrollment	-0.0000*** [0.000]	0.0000 [0.000]	0.0000*** [0.000]
Product HHI	-2.6362*** [0.645]	2.8228*** [0.712]	3.0547*** [1.022]
Number of States	-0.1950*** [0.033]	0.2944*** [0.037]	-0.1193*** [0.030]
Constant	63.9267*** [1.734]	48.3226*** [1.983]	-4.9162** [2.344]
Observations	10,208	10,208	10,208
R-squared	0.0861	0.1304	0.0273

Firm-clustered standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

The definitions of the variables in this table are as follows: *MLR* is the medical loss ratio for a given firm in a given quarter, which calculated as total hospital and medical losses, less reinsurance recoveries, scaled by net premium income. *ER* is the expense ratio for a given firm in a given quarter and is calculated as general admitted assets scaled by premiums earned. *ROA* is computed as a firm's net income scaled by net admitted assets. *DD Estimator* is equal to one for firms participating on health insurance exchanges in the post-exchange period. *Post-2014 Indicator* is equal to one for all quarters during which exchanges were operational (i.e., the first quarter of 2014 to the second quarter of 2015) and zero otherwise, for a given firm. *Exchange Indicator* is equal to one for firms that were identified as participating on health insurance exchanges in 2014 and zero otherwise. *Group Indicator* is equal to one for affiliated firms and zero otherwise. *Size* is natural logarithm of net admitted assets. *Premiums to Surplus* is the ratio of direct premiums written across all health insurance scaled by the amount of policyholder surplus for a particular firm in a particular quarter. *Total Enrollment* is the total number of health enrollees across all lines of business for a given firm in a given quarter. *Product HHI* is the Herfindahl-Hirschman Index based on a firm's enrollment levels in a given line of business in a given year during a given quarter. *Number of States* is the number of states a given insurer is licensed to operate in during a given quarter. The sample of insurers examined here is the same as is described in the footnote for Table 3.

Table 5:
Multivariate Analysis B

	MLR	ER	ROA
DD Estimator	-0.0665 [0.650]	2.6559** [1.180]	-4.9904*** [1.152]
Group Indicator	0.8457 [0.858]	-2.2085* [1.282]	-1.6973 [2.138]
Size	-2.6707*** [0.988]	-6.4472*** [1.477]	6.9864*** [1.564]
Premiums to Surplus	0.0175*** [0.005]	-0.0008 [0.003]	-0.0638*** [0.018]
Total Enrollment	0.0000*** [0.000]	-0.0000 [0.000]	-0.0000*** [0.000]
Product HHI	-1.3753 [2.987]	7.2427 [4.778]	12.2061** [5.233]
Number of States	0.1158 [0.145]	0.0682 [0.115]	-0.3483 [0.295]
Constant	109.4854*** [11.000]	82.7861*** [14.911]	-78.4183*** [16.573]
Observations	10,208	10,208	10,208
R-squared	0.0090	0.0284	0.0155
Company Effects Included	Yes	Yes	Yes
Quarter Effects Included	Yes	Yes	Yes

Firm-clustered standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

The definitions of the variables in this table are as follows: *MLR* is the medical loss ratio for a given firm in a given quarter, which calculated as total hospital and medical losses, less reinsurance recoveries, scaled by net premium income. *ER* is the expense ratio for a given firm in a given quarter and is calculated as general admitted assets scaled by premiums earned. *ROA* is computed as a firm's net income scaled by net admitted assets. *DD Estimator* is equal to one for firms participating on health insurance exchanges in the post-exchange period. *Group Indicator* is equal to one for affiliated firms and zero otherwise. *Size* is natural logarithm of net admitted assets. *Premiums to Surplus* is the ratio of direct premiums written across all health insurance scaled by the amount of policyholder surplus for a particular firm in a particular quarter. *Total Enrollment* is the total number of health enrollees across all lines of business for a given firm in a given quarter. *Product HHI* is the Herfindahl-Hirschman Index based on a firm's enrollment levels in a given line of business in a given year during a given quarter. *Number of States* is the number of states a given insurer is licensed to operate in during a given quarter. Note that firm and quarter effects are included in the regressions. Also, the sample of insurers examined here is the same as is described in the footnote for Table 3.

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Journal of Insurance Regulation

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References to published literature should be inserted into the text using the “author, date” format. Examples are: (1) “Manders et al. (1994) have shown. . .” and (2) “Interstate compacts have been researched extensively (Manders et al., 1994).” Cited literature should be shown in a “References” section, containing an alphabetical list of authors as shown below.

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