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Risk pricing of wholesale funds and the behavior of retail deposit rates[☆]



Ruby P. Kishan^{a,*}, Timothy P. Opiela^b

^a Department of Finance and Economics, Texas State University, San Marcos, TX 78666, United States

^b Kellstadt Graduate School of Business and The Department of Economics, DePaul University, Chicago, IL 60604, United States

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ABSTRACT

We explore the relationship between bank risk and retail deposits. Predicted risk premiums on wholesale funds explain retail rate heterogeneity through two channels. First, increased bank risk premiums encourage the bank to substitute from wholesale funds to small certificates of deposits (CD) by increasing small CD rates. Second, increased rival risk premiums in a local market require the bank to increase small CD rates even more. Our results are consistent with risk encouraging the use of small CDs as a marginal source of funds and promoting local market competition for small CDs. As risk premiums rise, banks also reduce rates on other retail deposits. Our approach has implications for regulatory and monetary policies and financial stability.

1. Introduction

Understanding how bank-specific risk affects bank liability management has implications for antitrust policy, monetary transmission, and regulations focused on financial stability. This paper explores risk-induced substitution between wholesale and retail deposits and the implications it has for retail rate behavior. We argue that the bank's own risk and the risk of its rivals in a local market affect the pricing of the bank's retail deposit and determine the ability of the bank to use retail deposits as a marginal source of funds. We show that an increase in the bank's forecasted own-risk premium encourages substitution into interest-sensitive retail certificates of deposits (CDs) through raising retail CD rates, while an increase in local-market rival-risk premium inhibits substitution.

We first assume a bank's predicted risk-priced premium on wholesale funds incentivizes it to substitute between wholesale and retail deposits by altering retail rates. We argue that this risk-induced substitution creates two channels – own-bank and rival-bank effects. Through the first channel, an increase in the bank's predicted risk-priced premium induces the bank to substitute away from more expensive uninsured wholesale funds towards cheaper insured retail deposits, by raising retail rates. The larger this predicted risk premium the greater is the pressure for the bank to increase retail rates, all else equal. This pricing pressure is bank specific and is independent of the market in which the bank operates. Through the second channel, increased risk of the bank's local market rivals incentivizes those rivals to raise their retail rates. Consequently, the bank faces greater deposit rate pressure in a local market where its predicted rival-risk premiums are high. This rival-risk pricing pressure is bank-market specific. The increased rival-risk pricing pressure affects the bank's retail rate by decreasing its supply for retail deposits in that market, incentivizing the bank to raise retail

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* Corresponding author.

E-mail address: rk02@txstate.edu (R.P. Kishan).

rates. This risk pressure is a second component of the bank's retail deposit pricing decision. Thus, we model the bank's retail rate decision as dependent on its predicted own-risk premium associated with its wholesale funding and the deposit-weighted predicted risk premiums associated with the wholesale funding of its rivals in a local market. Both of these channels are driven by the single mechanism of risk pricing of bank-specific risk in the uninsured wholesale market and the substitution into insured retail deposits it implies.

Most studies on retail pricing emphasize two themes – substitution between wholesale and retail funds (due to changes in the costs of wholesale funds), and competition in local markets (measured by market-specific characteristics). In those studies employing substitution, it is often unclear whether rates change due to variation in bank-specific risk or changes in policy-induced rates or both. Studies that explicitly include risk do not isolate a market-discipline mechanism. Papers characterizing competition often use market-specific concentration ratios, which do not focus on the competitive mechanism. Those that include rival rates use contemporaneous competitor rates as regressors, inconsistent with microeconomic theory where own-bank and rival-bank rates are jointly determined. These studies also include a small percentage of total local-market rivals, limited by survey data. Thus, previous approaches to modeling competition raise theoretical and empirical concerns that could yield biased results.

We focus on these same themes of substitution and competition in our two-channel pricing model where the bank uses information in time $t-1$ to forecast risk-pricing premiums for itself and for its local-market rivals in time t . These two predicted premiums proxy for wholesale pricing pressures used by the bank to set retail rates at the bank-market level in time t in response to its own risk and that of its rivals. This approach is consistent with the Bertrand-Nash equilibrium, where competitors assess all available information in period $t-1$ on each other to set prices in period t . We emphasize bank-market competition, which differs among banks in a given market as well as across markets for a given bank. We circumvent the problem of limited data on competitor rates by including predicted risk-priced premiums on all rivals in each market (from the *Call Reports* and *Summary of Deposits*).

Our empirical results show that as the bank's predicted risk premium increases it raises rates on small CDs, and lowers rates on MMDAs, small Savings and interest-bearing Demand Deposits. Additionally, our deposit quantity results reveal that as the bank's predicted risk premium increases the quantity of small CDs rise and the quantities of MMDAs and small Saving and Checking Accounts fall. These rate and quantity results are consistent with our arguments that the bank treats small CDs as substitutes, and uses other retail deposits as complements to wholesale funds. The results also show that banks respond to predicted rival-risk pressure by raising rates on small CDs, consistent with risk promoting competition in local markets.

Our results have implications for competition, financial stability, and monetary policy. The inclusion of risk in a framework with rival banks defines a risk-induced local-market price competition. On the one hand, the effects of risk pricing on retail rates can produce competitive rate contagion across markets, encouraging local instability to spread nationally. On the other hand, a critical instability in a local market can be defused by spreading competitive rate pressures across markets. Understanding how this risk contagion operates is important for policies used to improve financial stability. The existence of a lending channel depends on the extent to which a bank can move from insured to uninsured funds as policy tightens. Kishan and Opiela (2012) show that policy rates intensify bank risk, producing a lending channel. Our bank-market results, in conjunction with that study, imply that a bank that manages its risk and operates in certain markets is able to bypass the lending channel.

Section 2 lays out an argument for how an increase in predicted risk premiums result in retail-pricing components for own-bank risk pressure and rival-bank risk pressure, in addition to an argument for both substitutability and complementarity of retail deposits with wholesale funds. Section 3 lists the hypotheses tested and presents the empirical models used to test those hypotheses. Section 4 presents the data and results. Section 5 outlines some policy implications.

2. The risk pricing of wholesale funds and the retail deposit rate behavior

2.1. The Risk-Pricing Mechanism, Substitution, Complementarity, and retail rate behavior

In this section, we explain how bank-specific risk working through predicted risk-priced premiums in the wholesale funds market sets up an own-risk and rival-risk retail rate decision. Our argument relies on the presence of a market for uninsured funds (wholesale deposit market) and a market for insured funds (retail deposit market). Wholesale deposits are purchased in a national (or large regional) market and are subject to risk-pricing/market-discipline. Retail deposits are purchased in a local market (e.g., an MSA) where the bank has some market power. Market power is embodied in the supply function of retail funds facing the bank, and is determined by bank-market conditions, including the competitive behavior of the bank's rivals in a local market. The bank uses these two markets to manage its liabilities.

We initially focus on a substitution argument, often referred to in the retail deposit rate literature, to illustrate two channels by which risk affects the bank's retail rate. Substitution not only explains the bank's rate reaction to its own risk, but when that substitution is applied to its rivals, it produces a competitive rate reaction by the bank that treats rival deposits as strategic complements. The literature shows evidence of both substitution and complementarity between wholesale and retail funds.

We start with a pricing argument where changes in predicted risk-priced premiums across banks are exogenous shocks driving pricing behavior in the current period.¹ For expositional purposes, we initially assume that each bank operates in a single retail deposit market. Assume that bank-specific default risk rises, as proxied by past financial statement variables available in period t .

¹ Other papers assume the cost-of-funds, mix-of-liabilities or competition determine risk-taking behavior (Boyd et al. see Craig & Dinger, 2010). Because quarter-to-quarter measures of risk are quite volatile, we assume that fluctuations in risk are exogenous. Consequently, we use risk to explain retail rate heterogeneity.

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