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Comments on
**Endogenous Product Differentiation in Credit Markets:
What Do Borrowers Pay for?**

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The paper investigates whether banks choose “quality” to differentiate between them in an effort to reduce price competition. It proceeds on the basis of the *duopoly model of vertical integration*.¹ Borrowers are endowed with the same preferences but have income differences characterized by a variable “willingness to pay” quality attributes (R_f in the terminology of the paper). Banks, on the other hand, have convex costs in quality and compete in a two-stage game, determining first quality and then lending rates. The main dimensions along which strategic interactions take place are the extent of diversification, as measured by size, the ability to screen and monitor, as measured by loan loss provisions, and the capacity to withstand adverse liquidity shocks, as measured by the capital ratio. A panel of Norwegian bank data is then used to check whether interest rates on credit lines are sensitive to the chosen bank quality variables. The paper finds that the ability to screen and monitor is the most important strategic variable. This is interpreted as evidence that some borrowers are willing to pay higher rates for a correct evaluation of future loan applications.

The paper is interesting, as it brings a theory with clear-cut predictions to bear on a large and heterogeneous sample of banks in the period following the banking crisis in Norway. On the other hand, the theoretical model seems too simple for drawing substantive policy conclusions and its translation into the empirical model of Section 3 raises some questions about the interpretation of the results.

1. Theoretical model

Borrowers are not subject to *moral hazard*, even though one of the basic motivations of the paper is relationship banking. Consider for example the *lock-in effects* discussed from the introduction. One is the *hold up* problem. Banks with an informational advantage can use their monopoly power to extract rents, thus reducing entrepreneurial effort. A solution advocated by Padilla and Pagano (RFS, 1997) is to share proprietary information as a way to compete monopoly rents away. A second is the *soft budget* constraint, which refers to banks’ inability to commit not to extend credit lines in future periods. Dewatripont and Maskin (RES, 1995) show that multiple banking restores banks’ commitment not to refinance unprofitable projects *ex post*, thus raising entrepreneurial effort. In both cases, lock-in effects give rise to responses in the bank industry that stand in stark contrast with product differentiation along screening and monitoring.

Another limitation is that externalities are not modeled, as consumption of a particular loan of given quality only affects the utility of the individual borrower. But credit lines have important external impacts which justify minimum quality standards relative to the management of risk, such as “norms of conduct.” Even though externalities play an important role in the design of bank regulation, the model describes an unregulated equilibrium. It is likely that free differentiation is excessive, insofar as low-quality banks may be constrained by regulation in the choice of quality dictated by their best response functions.

¹ Important references for this model are, e.g., Gabzewicz and Thisse, JET (1979), Shaked and Sutton, RES (1982) and Ronnan, Rand J. of E (1991).

One could also find fault with some details of the model. For example, what is the role of the present value of the project, noted V ? If V is sufficiently small, some borrowers will exit the credit market, inducing shifts in the demand functions faced by the two types of banks. The paper should accordingly state whether the desired conclusions are robust to the calibration of V . Note also that the model considers only one quality attribute, as banks do not differentiate along many dimensions in the same time. With several quality attributes, banks cannot be ranked uniformly according to the level of quality they provide.

2. Empirical model

The thrust of the empirical model is to ascertain whether borrowers are willing to pay for certain dimensions of quality. The test is twofold. The first is based on the sensitivity of interest rates with respect to the *quality gap*. If borrowers pay more by borrowing from high-quality banks, then

$\frac{\partial r}{\partial v(q)} > 0$, where $v(q)$ indicates where the bank is located on the quality scale (e.g., the deviation

from the median of the distribution). The second is based on the sensitivity of interest rates with respect to the *quality dispersion*. If borrowers pay more when banks are more differentiated, then

$\frac{\partial r}{\partial g(q)} > 0$, where $g(q)$ measures the dispersion in quality (e.g., the Gini coefficient of the

distribution). In the theoretical model of Section 2, there is only one quality attribute and the difference $q_A - q_B$ represents both the quality gap between a given bank and the cross sectional median and the quality dispersion characterizing the degree of competition.

When several quality attributes coexist, the two indicators are no more congruent. As a general rule, interest rates should be an increasing function of quality dispersion, as more dispersion implies less competition and thus higher prices. By contrast, the sign of the relation between interest rates and the quality gap depends on whether the bank is high or low-quality. For the high-quality bank, increasing quality leads to *more* differentiation, thus less competition and higher prices. By contrast, increasing quality for the low-quality bank *reduces* differentiation, which implies more competition and lower prices. This is borne out by equation (2.2) in the paper, which shows that a change in the quality gap has opposite effects on banks A and B.²

From this it can be concluded that the coefficient on the quality dispersion variable, noted $g(q)$, should be positive if that variable is significant, but that the coefficient on the quality gap variable, noted $v(q)$, can be of any sign. In the present framework, tests of the relevance of quality variables based on the joint significance of $g(q)$ and $v(q)$ do not seem to be warranted.

Finally, the empirical part of the paper would gain in providing further insights into the robustness of the results. First, a bank could credibly commit to a given quality level only if there were relatively large fixed costs of changing quality levels, and this would seem to imply relatively low volatility on the part of quality variables. Second, results may be questioned due to the possibility of omitted variables. One test given checks the absence of serial correlation which, if present, would invalidate the use of lagged values of endogenous variables as instruments. The paper could also check instrument validity by use of a Sargent/Hansen test. Finally, the “control variables” are necessary for the coefficients called β and γ to be significant. This result may be due to collinearity or strong correlation between $v(q)$, $g(q)$ and the control variables, a feature which should be examined more thoroughly.

² Note that the above argument assumes quality variables are independent of each other. This is not correct in a simultaneous move game, where qualities are strategic complements. However, this does not invalidate the conclusions obtained about the direction of change.
