

NOTES AND COMMUNICATION

The Effectiveness of Debt Insurance as a Valid Signal of Bond Quality: Comment

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The Market Signaling Phenomenon

The “lemons” principle, as delineated by Akerlof (1970), predicts that “bad” products drive “good” products from the marketplace when knowledge is asymmetrically distributed between buyers and sellers. Various theories of market signaling, based on Spence’s (1973, 1978) insights, predict that sellers of “good” products in such an environment undertake some costly activities designed specifically to signal buyers that they offer products of high quality. Such a phenomenon is presumed to occur in the market for municipal bond insurance, where bond issuers with a relatively low probability of default exit from the debt insurance market, while bond issuers with a relatively high probability of default enter the insurance market and obtain debt insurance to enhance the marketability and credit quality of the issue. Although market signaling is now widely accepted as a consequence of hidden knowledge, empirical tests for this phenomenon are rare. Thus, the article in this journal by Hsueh and Liu (1990) was prospectively a welcome contribution.

The article, however, mistakenly mixed the “how to” literature of identifying high probability of default issuers of municipal debt with the “what is” literature of insurance markets theory. On the one hand, the authors state that their primary contribution is to test the signaling role of private debt insurance, where signaling is defined in the context of Thakor (1982) as that activity which is undertaken by issuers with high default probabilities who want to signal to outside investors a quality higher than if they remained out of the debt insurance market. On the other hand, the authors conclude that neither a separating nor a pooling equilibrium exists in the market for debt insurance.

This comment aims to disentangle the definition of signaling proposed by Hsueh and Liu from that commonly associated with equilibrium configurations in insurance markets with asymmetric information. I argue that their

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findings are not inconsistent with a signaling equilibrium configuration and suggest a methodology to explore this phenomenon more precisely.

Hidden Knowledge in the Debt Insurance Market

Asymmetric information about product quality arises in insurance markets when insurers have difficulty judging the riskiness of those who demand insurance coverage. To partially remedy this asymmetry of information, insurers screen, categorize, and sort insurance applicants; that is, they engage in the underwriting process. In the market for debt insurance, municipal insurers engage in screening activities by assigning insurance applicants (municipalities) to a particular risk category on the basis of observable traits.¹ The insurer offers the premium-coverage menu appropriate to the issuer's risk category, with profitable classes identified by the insurer given the observable characteristics defining the category. Each issuer, faced with a single menu, chooses a premium-coverage pair on the basis of traits that cannot be observed by the insurer. In this fashion, issuers within a given risk category may further sort through a self-selection mechanism.

The distinctive feature of the signaling phenomenon in bond insurance markets is that with hidden knowledge the insurer does not know and cannot infer prior to the implementation of the contract a payoff-relevant variable known to the bond issuer (the insured). In the presence of hidden knowledge and unobservable heterogeneity, issuers with a relatively low default probability have an incentive to signal their quality by selecting less than full coverage. Insurers, recognizing this incentive, are predicted to charge a higher per unit price for insurance as the amount of coverage increases. The equilibrium result of such activities is that a monotonic signaling property holds: Within a given risk category of observably similar risks, issuers with a lower default probability choose a premium-coverage arrangement with a lower amount of coverage and a lower price per dollar of coverage. Thus, market signaling theories generate two testable predictions for the debt insurance market: that the level of insurance coverage is positively related to unobservable riskiness and that the price of coverage is positively related to the amount of coverage chosen.

Hsueh and Liu point out that insurance coverage may not be an informative signal of quality because "all municipal bond insurers provide complete coverage against default on principal and interest payments, and borrowers do not have a choice as to how much coverage to purchase for their debt issues" (Hsueh and Liu, 1990, p. 693). That is, they argue that there does not exist a menu from which insureds can self-select. I argue,

¹ For example, according to Cole and Officer (1981), the insurance underwriting process in debt insurance is undertaken by the Municipal Issuers Service Corporation who acts as an agent for the Municipal Bond Insurance Association. Underwriting activities include initial screening of issuer applications, credit analysis, and a financial review.

however, that those issuers who have elected zero insurance coverage have made a choice consistent with market signaling, albeit such a choice is implicit to the manner in which we think of selecting insurance coverages. By analogy, the individual who chooses to not buy collision insurance on an automobile has elected a level of insurance coverage that has an associated price, that is, the cost of the vehicle weighted by the probability that an accident will occur plus the psychic costs of risk retention.

The Hsueh and Liu Problem

Hsueh and Liu's hypothesis is: "If the intrinsic default risk of an insured bond is still priced by investors, the null hypothesis that complete bond insurance acts as a valid signal in the municipal bond market is rejected" (p. 695). In essence, Hsueh and Liu test for a yield differential between insured bonds rated Moody's single A and insured bonds rated Moody's Baa from 1981 and 1983. Their results provide conclusive evidence that single A municipal bonds have a lower net interest cost than Baa municipal bonds, and they conclude that "this finding strongly suggests that insured bonds with differing intrinsic default risks are not priced equally as they should be if the complete insurance coverage is a valid signal of bond quality" (p. 696). And they surmise that neither a separating nor a pooling equilibrium exists in this market.

These conclusions, however, cannot be stretched to a statement about equilibrium in the context of insurance markets theory. What Hsueh and Liu have found is that participants in the bond market price observable riskiness differently. By analogy to the collision insurance market, Hsueh and Liu have found that 17-year-old male drivers pay more than 50-year-old female drivers for the same quantity of insurance coverage. A sound hypothesis consistent with the results of the data would have been whether only observable, relatively high risk municipalities choose full coverage municipal bond insurance. This is a "how to" question. But this hypothesis is not consistent with a signaling phenomenon as it occurs in insurance markets with asymmetric information. This "what is" question could be addressed, for example, by examining only municipal issues that are Moody's single A rated and finding that unobservable low-risk municipalities remain out of the market, and unobservable high-risk municipalities buy full coverage, *ceteris paribus*. This does present, however, a conundrum to the researcher: How does one specify an unobservable high-risk and low-risk identifying trait that was not known *a priori* to the insurance underwriters?

Potential Solutions

Two potential solutions to this problem might shed light on whether market signaling is active in insurance markets when contracting involves an interim informational asymmetry. First, one could employ the method of Beliveau (1984), who examined insurance data for the presence of *a priori*

pricing by the insurer in the life insurance market. This approach is somewhat problematic in debt insurance because of the absence of multiple premium-coverage pairs. Still, if one could assess the implicit costs paid by bond issuers who choose not to purchase any explicit insurance coverage, then one could employ Beliveau's procedure.

Second, one could use the ex post criterion of Puelz (1990) and Puelz and Snow (1991) as an identifier of an issuer's unobservable default probability. This method begins by considering a set of data where each exposure unit is observably homogeneous to all other exposure units. Then one identifies exposures within the risk category who are of different unobservable risk types by asserting, for instance, that all exposures that incurred a loss during the contracting period are high-risk types, and all exposures that did not incur a loss are low-risk types. The result is a proxy variable for the unalterable trait known only to insureds at contracting with the insurer that gives the researcher an opportunity to test for equilibrium according to traditional insurance markets theory.

In the context of the data used by Hsueh and Liu, one would look within observable categories of riskiness—only bonds that had a Moody's single A rating or only bonds that had a Moody's Baa rating—and consider a set of data that included municipalities that did and did not purchase debt insurance. Specify as high-risk municipalities those that had a loss or disruption in principal and coupon payments, and specify as low-risk those municipalities that did not have a loss or disruption in principal or coupon payments. If high-risk municipalities were more likely, on average, to purchase debt insurance, the hypothesis of market signaling would be confirmed.

Conclusion

Hsueh and Liu's findings are not inconsistent with signaling in the debt insurance market. These results indicate the need for empiricists to assess a bond issue's ex ante intrinsic credit quality while accounting for all other observable variables captured in the municipal bond insurer's pricing scheme. Only by looking within an observably homogeneous category of risks can it be determined whether a signaling phenomenon exists in the market for debt insurance.

References

- Akerlof, George, 1970, The Market for Lemons: Qualitative Uncertainty and the Market Mechanism, *Quarterly Journal of Economics*, 84: 488-500.
- Beliveau, Barbara C., 1984, Theoretical and Empirical Aspects of Implicit Information in the Market for Life Insurance, *Journal of Risk and Insurance*, 51: 286-307.
- Cole, Charles W. and Dennis T. Officer, 1981, The Interest Cost Effect of Private Municipal Bond Insurance, *Journal of Risk and Insurance*, 48: 435-439.

- Hsueh, L. Paul and Y. Angela Liu, 1990, The Effectiveness of Debt Insurance as a Valid Signal of Bond Quality, *Journal of Risk and Insurance*, 57: 691-700.
- Puelz, Robert, 1990, Signaling and Adverse Selection in the Automobile Insurance Market, Unpublished Ph.D. dissertation, University of Georgia.
- Puelz, Robert and Arthur Snow, 1991, Evidence on Adverse Selection: Equilibrium Signalling and Cross-Subsidization in the Collision Insurance Market, Working Paper 91-315E, Department of Economics, University of Georgia.
- Spence, A. Michael, 1973, Job Market Signalling, *Quarterly Journal of Economics*, 87: 355-374.
- Spence, A. Michael, 1978, Product Differentiation and Performance in Insurance Markets, *Journal of Public Economics*, 10: 427-447.
- Thakor, Anjan V., 1982, An Exploration of Competitive Signaling Equilibria with "Third Party" Information Production: The Case of Debt Insurance, *Journal of Finance*, 37: 717-739.
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