General Discussion*

Alexandra Lai began by thanking the discussant for supplying the authors with the caveats that they might have included in the paper. She added that all of the comments and criticisms were valid. Lai explained that this had been a very partial-equilibrium exercise, and it starts with a constrained equilibrium. It does not solve for the optimal overall capital a bank chooses to hold, but assumes that to be a given in the form of capital requirements based on the overall risk of a bank. She said that while there are many ways to generalize this framework, the paper suggests a new way of thinking about the issue of consolidation and capital allocation with respect to the behaviour of dealers and equilibrium in dealership markets.

Richard Lyons said that he considered the spirit of the discussant's comment when banks buy dealers as vertical integration, as opposed to horizontal integration. However, his reading of the paper was more on the horizontal side, and he applied it to the foreign exchange (FX) market. For example, he said, J.P. Morgan and Chase get together and now there is one FX spot trader rather than two, and that is much more of a horizontal integration point.

Lyons went on to say that there is a lot to assume in equation 1,[1] which specifies that the expected cash flow or the expected return is a function of the variance of the returns to that division. He suggested, from a finance perspective, that we teach the CAPM[2] and other models where return is not a function of own variance; it is a function of covariance with the market. So, he continued, if one thinks of this as a proprietary trading desk rather

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1. From Bank of Canada Working Paper No. 2002–5. Equation 1 is $E(y_j) = \mu_j(\sigma_j^2), j \in K$, where E is expectations operator; y_j is cashflow of division j; σ_j^2 is variance of cashflow of division j; K is total set of activities that the bank engages in; and μ_j is profit function of division j.

2. Capital asset pricing model.

* Prepared by Nicolas Parent.

than as a market-maker (which he thought the model is general enough to consider), why should one think of return as a function of own variance rather than covariance as the starting point for the model?

Chris D'Souza responded that there are two types of covariance, one across business lines and one within business lines. The authors wanted to do a controlled experiment and focus first on these covariances between business lines, as opposed to within specific business lines, to see what that impact was on market liquidity. Therefore, equation (1) is the positive relationship between returns and risk, but the bank would take into account a correlation across all the different business lines and then decide on capital allocation.

Asani Sarkar suggested that this is basically a two-stage model, where the first stage is the model of capital allocation and the second is the dealership model. He asked if the model is solved as a sub-imperfect equilibrium. In other words, when the capital-allocation decision is taken in the first stage, does it take into account what will happen in the dealership market in the subsequent stage?

Lai replied that these two stages of the model are still a bit disjointed, but that the authors do intend to solve it in that way—first the final stage, then the first stage.

Randall Powley reiterated that if the negative correlation is satisfied and if the reduction of the number of dealers is not too great, there could be a net positive result. He asked—using hypothetical numbers of six banks reduced to three—whether there would still be a positive impact.

Lai responded that anything is possible. Market liquidity can improve if there is a reduction in risk aversion and if the initial pool of dealers is large enough. In this exercise, they had considered reducing the pool of dealers by one. Obviously, she added, one is very small compared to 1,000, but it's large when compared to six. So, the effects of the reduction in the number of dealers and the consequence for risk-sharing in that market would be quite large if one started with five dealers. However, she added, it is possible that the end result is positive if that consolidated dealer had a lot of risk capital behind him.

Allison Holland addressed the idea of horizontal dealer integration. She said that a policy-maker's a priori expectation would be that mergers would reduce the total amount of capital allocated in the market. She thought it comforting that this was demonstrated to not necessarily be the case. However, she had two related thoughts. The first, concerning a point in the Audet, Gravelle, Yang paper, was whether dealer consolidation leads to a more homogeneous set of dealers and what would the impacts of that be for market liquidity. Second, she asked whether a consolidation in the number

of dealers could lead to more implicit collusion, and how could the aspect of collusion be incorporated into the model.

Lai responded to the first point by indicating that when there are two dealers being consolidated, it is not so important that the consolidated dealer have more capital than the sum of those two dealers previously, but simply that he have more capital allocated to him than either of those dealers did initially. In this case, it was not necessary for one plus one to equal two or more. If, for example, there were two initial dealers with one unit of capital each, the new dealer ending up with one-and-a-half units of capital would still have a positive impact on the risk-absorbing capacity of the market.

Responding to the second question regarding whether collusion would become more likely with consolidation, Lai suggested that a dynamic model would be needed to look at that issue, but that it was an interesting point.

D'Souza noted that with respect to homogeneity and heterogeneity, the authors had wanted to show that even though dealers may operate in a specific market and do things in a very similar way, they could be considered heterogeneous because of how the bank itself is structured.