

Discussion 1

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The topic of this year's conference was particularly appropriate given the award of the Nobel prize to three economists who have been recognized for their contributions to the treatment of information and its role in the economy. Before turning to the conference itself, I would like to reflect for a moment on the way in which economists treated information in the years BG—that is, the years before George Stigler, the first economist to receive the Nobel prize for economics of information.

For many, recognition of information costs was a reflection of market failure, not a recognition that real resources are required to produce, process, and transfer information among those who need it. This treatment was completely at odds with transportation costs. We recognized that it is costly to move productive inputs or goods and services from place to place and that businesses continually sought to minimize these costs. We also recognized that transport costs could prevent transactions from taking place, but that these transactions would be possible in the absence of transport costs. Interestingly, we never regarded such a possibility as a market failure. Rather, we viewed the economy as continually seeking the most efficient means of providing information. Transportation costs never gained the mythical status that often placed information costs outside economic analysis. Fortunately, economists have demystified them. We now study the ways in which the costs of information influence the way households and businesses act and the ways they organize their activities. This conference is especially welcome because it illustrates so vividly the ways in which the operations and organization of financial markets can be understood only from an appreciation of their role in the collecting, interpreting, and conveying of information.

Before going further, I would like to drive home the consequences of the information revolution in economics in a way that is particularly relevant today. At the early stages of the revolution, Grossman, Stiglitz, and Hart made the startling claim in a variety of papers, that free access to costly information could impair the workings of a market. They characterized information as being much like the public good of the fabled commons. If investors can free ride on the efforts of others in finding information, no one will be willing to seek out the information needed for efficient markets. A competitive information market could then resemble a frictionless world—imagine the chaos if we could not stop our cars, something everyone in Ottawa could easily envision. Of course, we might be saved by the fact that we could never start them either. A little bit of grit goes a long way in this world. Similarly, a little bit of grit permitting private access to information may go a long way in making financial markets work properly. But, as in the real world, all grit is not equal. Some can retard machinery and prevent its effective working, whereas other grit provides the traction that makes everything work. Much of this conference gives reality to these points.

My comments will address two issues: first, what is the nature of a central bank's stake in issues of financial structure and dynamics? Second, in what ways do the papers presented at this conference benefit central banks by providing better understanding related to their stake?

Let's look at a central bank's stake in financial structure and dynamics. The Bank of Canada, like many other central banks, is identified with two primary goals: the achievement of low, stable inflation and the maintenance of financial stability. An important common element of these goals is that central banks try to achieve them using market operations of one type or another. The quality of financial markets will affect the quality of the central bank's performance.

Without going into the transmission mechanism in great detail, monetary policy directed towards price stability works through the diffusion of the Bank's actions from the short-term financial markets, where the Bank operates, through to the markets that determine those longer-term interest rates and credit flows most relevant for the spending decisions of households and enterprises.

Well-functioning financial markets aid the working of monetary policy directed towards price stability in a number of ways. Less liquid financial markets are more likely to be subject to noise, requiring market participants to devote time and effort to distinguish the central bank's actions from that noise. To the extent that monetary actions change market fundamentals, the signals to market participants will be clearer and will permeate through markets more quickly when these markets function well. Effective financial

markets will also help to ensure that monetary policy is not targeted specifically towards any one sector over others. The generality of monetary policy is achieved by affecting expenditures everywhere in the economy according to their interest rate sensitivity. In the absence of a well-functioning market, this generality will not be achieved. Rather, monetary policy will bear more heavily on those gaining financing from markets that fail to operate smoothly in the face of changing monetary conditions.

In what ways have the papers of this conference contributed to an understanding of financial markets that would be helpful to central banks in carrying out monetary policy under normal conditions?

Markets are changing rapidly and will continue to do so. But there is a great difference between proclaiming change in financial markets and describing the ways they are changing and analyzing the implications of these changes. Here, the Domowitz paper made the important point that markets are not changing just through finding electronic means of doing things in the same ways that they are done now. It is the roles, as well as the modes of operation, of exchanges and brokers that are being radically redefined. Recognizing this is absolutely vital for central banks and regulators responsible for policies directed at markets. And it is important to keep it in context. Policy-makers must be concerned with the key functions of financial markets and how they are being performed. The restructuring of financial markets identified by Domowitz requires that policy-makers keep their eye on the functions and not be distracted by changes in packaging.

Increasingly, economists are attaching significance to the role of institutions to such a degree that it is often difficult to appreciate the difference that some make between theory and the study of institutions. Theory makes little sense without a context. Theory properly embedded in an appreciation of institutions and their structure can go a long way in helping to understand the subtle features of real-world institutions, and often these subtle differences matter. An appreciation of these differences leads to an important principle: be careful about altering institutions unless you understand them. This principle applies to many areas where economists were prone to identify inefficiencies in the functioning of markets, and for that matter, of governments and their agencies. This principle does not suggest that institutional arrangements should never be questioned. But it does reflect a simple lesson from George Stigler: survival may be an indicator of efficiency in an evolutionary environment. Enduring market arrangements have passed the test of time and should be given the benefit of the doubt even though some features many seem intuitively wrong.

Issues related to these principles were explored and illustrated during the first day of the conference. The difference in the order flow between equity

and fixed-income markets may appear rather insubstantial. Gravelle's paper on microstructure of dealerships suggests otherwise: current structures of equity and government securities markets appear to differ for good reasons. It is a fine illustration of the Grossman-Hart-Stiglitz principle about the consequences of excessive information. Existing market arrangements may preserve the value of information for market intermediaries and make possible their functioning in the market in ways that provide liquidity to other participants. The idea is taken further in the Audet, Gravelle, and Yang paper, which examines the underlying factors that favour different market structures. Both papers emphasize an appreciation that large, lumpy, infrequent order flows may require different institutions than fine, frequent ones. It will be interesting to see whether the extension of the paper's analysis can lead to the coexistence of the two types of markets under reasonable cost assumptions. The D'Souza and Lai paper develops a closely related theme by showing how changing the structure of market participants can change the workings of that market and alter the outcomes it produces. These papers use theory to make their points, but the points they make are not just theoretical possibilities—they are also empirically relevant.

The Madhavan, Porter, and Weaver paper examines a natural experiment that would clearly be conclusive and predictable—indeed one so obvious that many would not even bother considering it. The increase in the TSE's transparency arising from greater disclosure would surely improve liquidity of the market. Their findings to the contrary, however, lend great credibility to the theoretical work of the preceding papers. Holland's paper nicely rounds out this group by introducing a more practical dimension through a discussion of the choices faced by policy-makers when confronted by change. Standing still was not an option: the paper illustrates well the balancing of objectives undertaken by the U.K. authorities in dealing with change.

Let me now turn to a second objective of many central banks: the maintenance of financial stability. It too is supported by well-functioning markets. Such markets are more likely to digest changes in information without disruptions to trading or excessive swings in prices. Such markets are able, when under stress, to provide liquidity to market participants that lessens their need to be first out, reducing the prospects of runs that turn on such uncertainties. Problems of instability, therefore, seem less likely when markets are broad and deep.

The quality of markets affects the objective of financial stability in another important way. The effectiveness of the means at the disposal of central banks to overcome market instability—namely the provision of liquidity—depends on the quality of markets. This is well illustrated by the controversy

regarding the lender of last resort. Some argue that central banks can maintain financial stability by doing no more than supplying general liquidity to markets under stress. Institutions that are illiquid but solvent will escape their problems by gaining access to the greater general liquidity wherever it enters the market. Taken to its extreme, this position denies any distinction between insolvency and illiquidity. The inability to meet current claims is simply a sign of insolvency. Others, certainly much more numerous, believe that central banks must have the power to lend directly to troubled institutions to protect against and overcome financial instability. They believe that supplying general liquidity to markets may not be sufficient to preserve illiquid, yet solvent enterprises. The lending must be done directly if it is to reach troubled, yet solvent, firms.

These polar positions are derived from distinctly different views on the quality of markets. But there is another key dimension: the quality of markets at any time may not be a reliable indicator of their quality under stress. Just as financial instability is a low-frequency event, the relevant market conditions faced in dealing with financial instability are also low-frequency conditions. Here, the papers contributed useful knowledge for central bankers.

Contagion is a frequently used term and refers to the changes in the relationship among entities—institutions or countries—in times of stress. Yet it is not always clear what authors mean by the term. Surely it means something more than the fact that different economies or institutions are hit by the same forces at the same time. The Gravelle, Kichian, and Morley paper advanced our understanding of the issue by giving us a workable definition of contagion, and they demonstrated its usefulness for understanding the possibility of the international transmission of contagion in response to shocks. Similarly, the Furfine and Remolona paper shows that the response of financial markets to trading is different during periods of stress. Central bankers need to know that relationships that hold in normal times may not be dependable when markets are facing shocks. This research constitutes an early step in advancing our understanding of the way that market relationships respond under pressure.

The conference's final paper, by Evans and Lyons, bridges the two strands of analysis in the papers discussed so far, but is, in a sense, distinct from both. It is distinct in its motivation to examine the evidence for the portfolio-balance model of exchange rates, a macroeconomic issue, but it does so in a micromarket setting that has links with the papers dealing with market structure and its consequences. The authors model a two-stage trading process in the foreign exchange market where trading takes place at the first stage between dealers on the one hand and the public and central bank on

the other, and at the second stage exclusively between dealers. Attention is directed at the micromarket issue of how the trading process leads to two information effects: a purely intra-day effect reflecting the risk aversion of traders and an inter-day effect reflecting portfolio rebalancing by the other market participants. The paper links with the group of papers dealing with market responses under stress in its conclusion that the impact of order flows on markets, rather than being invariant, depends on market conditions, especially on the flow of macroeconomic announcements into the market.

In summary, what has this conference achieved? It has dealt with issues of vital concern to central banks in their roles as protector of price stability and guardian of financial stability. In doing so, it has provided a balanced mix of theoretical, empirical, and practical insights on critical issues that central bankers need to understand. There is one further dimension that I especially applaud: the conference has brought home the importance of micro-economic questions to the practice of central banking by showing that both the pattern of institutions that make up a market and the conditions within a market matter for the way that it responds to external forces. Central banks must be concerned not only with their levers of policy, but also with the linkages through which these policies shape the conditions and responses of financial markets.