

Memorial Lecture: Contributions of John Kuszczak

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I am grateful for this opportunity to share some of my recollections about John Kuszczak. The Bank is to be commended for dedicating this year's conference to John's memory, and for arranging an ongoing tribute in the form of the John Kuszczak memorial lectures that will be part of future annual conferences.

I deeply value my association with John. At the personal level, he epitomized the balance that I admire. As John's Ph.D. supervisor, I witnessed first-hand his tireless commitment to thorough and rigorous analysis. He avoided simplifying assumptions that would advance a study if he felt that, by invoking these assumptions, the applicability of the research might be compromised. It takes a person with a deep sense of peace to be truly comfortable with the adage "virtue is its own reward." John had that inner calm. By being a perfectionist, he missed out on some of the perks that others enjoy—such as receiving a Ph.D. John did not submit a thesis, since he felt that his work was not "significant enough." I disagreed and feared that his decision might hurt his career. Happily, my concern was unnecessary, since John's colleagues here at the Bank were quite capable of appreciating John's worth. But my point is that, before John knew his career would not suffer, he still made the choice to risk that cost. For John, it was more important to focus on core issues, high standards, and friends. He was satisfied when he met his own goals; he was not distracted by a need for external recognition. This quiet self-confidence is what made John such a perfect colleague. With his own inner peace, concern about recognition never impeded his generosity and supportive nature. Thus, both personally and professionally, John was an inspiration.

Before I comment on some of John's work, I would like to tell you a little more about his experience as a graduate student. You are, of course, aware of John's organizing the season's tickets here in Ottawa for Senators' games. John displayed the same interest in hockey back at McMaster. Indeed, he stood out in our annual hockey playoff pool. Ours was tailor-made for economists. Each participant was given \$100 of play "money," and then 128 NHL players were auctioned off in random order. The participant whose players scored the most points by the end of the playoffs won the pot of real money. Participants could opt for many different strategies—from having a long list of cheaply priced, less skilled players to having a short list of expensive, particularly gifted players. The contest required exceptional forecasting ability: which teams were likely to play in many series? which players would better avoid the tighter checking in the playoffs? and so on. Participants could not prepare a set of what they judged to be a maximum sensible price for each player in advance, since without prior knowledge of the number of participants, they did not know the aggregate money supply until the last minute. John won this pool several times. Eventually, other players figured out a new strategy; they decided to outbid John for every player he expressed interest in. John was not able to revise his strategy quickly enough during the auction and so he did terribly that year. The auction ended with John having bought almost no players. I have wondered whether that is why John went to the Bank of Canada. After all, that experience in the hockey pool had identified a gap in his skills. While he excelled when he was a price-taker, he did not when he was a price-maker. Perhaps John was determined to repair this deficiency, and what better way to do so than by going to work for—and therefore to learn from—the institution that is a price-maker in important financial markets. People at the Bank quickly realized John's forecasting skills could be transferred from hockey to macroeconomics. One of his contributions over the years here at the Bank was in this very area.

I enjoyed discussing monetary economics with John when he was at McMaster. The paradigm of the day was the first generation of rational-expectations models—involving descriptive structural equations (each with some micro-foundations but provided only on an equation-by-equation basis). One particular application of the Lucas critique captured John's attention. Central banks were shifting from a strategy of interest rate smoothing to one of monetary aggregate targeting, and macroeconomists were exploring the implications of this change in policy regime for output and price volatility. John felt that the linearity of these models suppressed an important issue. Standard portfolio theory (à la Tobin) leads to the proposition that the interest elasticity of money demand is a function of the variance of the interest rate. This dependence was ignored in the literature,

and John wanted to highlight this effect, since he thought it was central. After all, the regime change to money supply targeting was certainly raising the observed interest rate volatility. But the execution of this task was difficult, since it involved using the solution equation for interest rate variance to determine the size of one of the model's slope coefficients. John was wrestling with how to make this connection in a tractable way, when a working paper authored by a young assistant professor from Princeton appeared. Carl Walsh's paper entitled "Interest Rate Volatility and Monetary Policy" had answered this challenge in a particular way, and this paper later appeared in a 1984 volume of the *Journal of Money, Credit and Banking*. John felt that the existence of Walsh's paper had lowered the importance of his own work.

Was it sensible for John to withdraw from this particular line of research so quickly? The fact that there have been relatively few related papers suggests that many macroeconomists have implicitly responded to this question in the affirmative. Nevertheless, there have been other studies on this topic (for example, McCafferty and Driskill 1980a; Eaton and Turnovsky 1983; and Turnovsky 1989, 1995), and I think that it is worth briefly reviewing this work.

One issue is that tractability challenges are an even larger concern within the current generation of macro-models. In the modern approach, micro-foundations for the *entire set* of structural equations are derived from one integrated intertemporal optimization. In this more structured framework, it is even more difficult to derive closed-form solutions that allow slope coefficients to depend on the variances of endogenous variables. These issues are avoided when researchers such as McCallum and Nelson (1999), in their paper on an optimization-based IS curve, follow the standard practice of taking a linear approximation of the household Euler condition. This excludes the covariance terms that are necessary to highlight the effects of risk aversion.

Another consideration is that we almost always assume that agents have access to bonds that mature in one period (so there is no uncertainty about the holding-period yield on bonds). Walsh makes clear that his analysis collapses if it is not assumed that the term to maturity of the bond does not exceed one period. More generally, Walsh is forced to simplify in other ways. For example, he assumes that individuals know the value of all current disturbances before making their portfolio-allocation decision. He regards this assumption about information structure as a "compromise." He is uncomfortable with allowing agents this much access to current information, but he feels that this assumption is nevertheless acceptable, since it makes relatively simple solutions possible. I recommend a tolerant

attitude on such matters, since—whether it is often appreciated or not—standard results in much simpler settings often depend on rather unappealing assumptions concerning information availability. For example, in the original “policy relevance” paper by Sargent and Wallace (1976), that startling conclusion does not follow if the information available to agents when deciding how much to spend is the same as what is now usually assumed (for example, in McCallum and Nelson’s paper). It is also the case that if the McCallum and Nelson analysis is reworked with the information-availability assumption used by Sargent and Wallace, the entire solution procedure breaks down. The identifying conditions involved in the undetermined coefficient solution method impose restrictions on some of the structural—not reduced-form—parameters. As noted, therefore, a tolerance for convenient assumptions regarding information availability appears to be already implicitly involved in modern macroeconomics.

Turnovsky (1995, chapters 14 and 15) keeps his analysis from depending on arbitrary differences in discrete timing by working in a continuous-time setting. He studies an endogenous growth model with infinitely lived agents who intertemporally optimize in a system of stochastic differential equations. He notes that this continuous-time approach is not common, because such specifications are tractable only when strong assumptions are made. But Turnovsky argues that when these simplifying conditions are imposed, the solutions turn out to be “highly transparent,” and the analysis then provides substantial intuitive understanding. Turnovsky applies this approach to tax policy and growth. One result bears directly on the methodological issue that intrigued John as a graduate student.

A standard result in endogenous growth theory is that a tax on the earnings of capital lowers the growth rate. But in Turnovsky’s analysis, there are competing effects. On the one hand, the tax reduces the after-tax return on capital, and this is growth-decreasing. On the other hand, the tax reduces the variance of that return, and this induces savers to hold a higher proportion of their portfolios in capital. This latter effect is growth-increasing. Turnovsky’s formal integration of macroeconomic growth equilibrium and finance theory is not the first to stress the possibility that higher taxes on capital can stimulate growth. Nevertheless, he has demonstrated this possibility in precisely the setting (stochastic intertemporal optimization) that is now regarded as the proper basis for analysis of business cycles. Since inflation interacting with a non-indexed tax system is like a tax on capital, I take Turnovsky’s analysis as an indication that it may be worthwhile to examine similar models that focus on monetary policy issues. (Turnovsky reports some progress on this agenda in the second edition (2000) of his book.) It appears that we may now be better equipped to follow up on John Kuszczak’s interest in giving the assumption of risk aversion a

more central role in monetary policy analysis. The Walsh and Turnovsky analyses suggest that there may be a significant payoff in pursuing this topic, thereby proving that John may have been too quick to set his thesis topic to one side.

Of course, we should not presume that this work will lead to major changes in policy conclusions. When I insert what I regard as plausible parameter values into the inequality that must hold for Turnovsky's analysis to support the proposition that a higher capital tax raises growth, I conclude that there is no way that this condition is satisfied. Nevertheless, we now have the software (thanks to Gaspar and Judd 1997) to pursue models of this sort that are much less stylized, so Turnovsky's analysis should be interpreted as a template for further work.

It is also worth noting that Gaspar and Judd are not the only ones to explore the implications of second-order Taylor expansions. Campbell and Viceira's (1999) partial-equilibrium model involves the simultaneous derivation of optimal consumption over time and portfolio allocation. They conclude that the intertemporal hedging that becomes a feature of their analysis has a quantitatively important effect on portfolio choice. In related work, Wolman and Couper (2003) update McCafferty and Driskill (1980b) and highlight another risk that follows from taking linear approximations—that, even in very simple macro models, this standard practice can lead to erroneous results about the existence and uniqueness of equilibrium.

I am pleased that some of the research presented at this conference stresses open-economy aspects of risk aversion. In Devereux and Yetman's (2003) menu-cost model of endogenous price stickiness, a higher variance of the nominal exchange rate leads to a more volatile marginal cost schedule for firms. The result is that firms find it profitable to incur the menu cost more frequently, so prices are less sticky and the degree of exchange rate pass-through is higher. Since a more aggressive inflation-targeting policy on the part of the central bank limits exchange rate volatility, monetary policy affects a number of slope coefficients (such as the slope of the short-run Phillips curve and the degree of exchange rate pass-through). This set of results is an open-economy analogue of what interested both John Kuszczak and Carl Walsh years ago. In this instance, it is the variance of the exchange rate affecting key supply-side slope parameters, instead of the interest rate variance affecting demand-side slope parameters.

In another paper at this conference, Bowman and Doyle (2003) explain the implications of introducing stochastic shocks into what is now the core model for international macroeconomics. As in the earlier work noted above, simplifying assumptions (such as a unitary elasticity of substitution in consumption between domestically produced and foreign goods) keep the

analysis tractable. Bowman and Doyle direct our attention to several recent papers that show how the variance of some of the variables affects the mean values of other endogenous variables. Since this is precisely the feature that John Kuzszczak regarded as important if a macro model is to be useful for studying monetary policy, I am pleased that this aspect of modern work is being highlighted here.

While I have emphasized the payoff that appears to accompany further study of the macroeconomic implications of risk aversion, I do not wish to leave the impression that I resist the development of the “new neoclassical synthesis” model. I think we have made fundamental progress when both new classicals and New Keynesians embrace a compact structure that has appealing intertemporal optimization underpinnings and that can be discussed at the same aggregation level as older-generation, policy-oriented models. Bob King (2000) has reminded us that the new compact framework should be questioned to determine under what conditions the equations are truly structural. Thus, we must continue to explore how the properties of the core model are affected by sensitivity tests such as the one John and others I have just mentioned have pursued.

Since time does not permit doing justice to John’s contributions at the Bank, I will mention just a few. The 1994 conference here at the Bank included a paper (Kuzszczak and Orcheson 1995) that investigated the existence of differences across firms in their responses to changes in monetary conditions. John and Peter considered firm size and different industrial sectors. One indicator was the slope of the yield curve.

When rereading this study, I couldn’t help relating it to one of the Turnovsky papers (1989). That analysis of the yield curve allows for risk aversion, so the parameter in the standard asset-pricing relationship depends (as it should, according to portfolio theory) on the variance of the long-term interest rate. This model does not involve the “new” expectational IS relationship. Nevertheless, it is straightforward to show that the term-structure equation and the old-fashioned IS function involving the long rate (that is part of Turnovsky’s model) can be combined to yield the new expectational IS function involving the short rate.

One of Turnovsky’s results is that unanticipated permanent fiscal changes initially affect the long rate more than the short rate. Such results help explain the observed volatility in long rates, and they suggest caution when interpreting the slope of the yield curve as a monetary policy indicator.

The breadth of John’s work can be illustrated by just a few other references. With John Murray (Kuzszczak and Murray 1987), he completed a valuable VAR study on the interdependence of the Canadian and American

economies—that tested for differences across the fixed and flexible exchange rate periods. Five years ago (Kuszczak and Dion 1997–1998), John turned his attention to such things as the aging population as he prepared predictions of potential GDP. Changing research topics once again, in association with others who presented their work at last year’s workshop (Côté et al. 2002), John critically reviewed all the applied macro-econometric models of Canada.

In addition to these publications, John provided much-appreciated guidance to some of the former Soviet republics as they were designing new central banks. It is particularly significant that John was the first at the Bank to recommend zero chartered bank reserves. His well-reasoned study (Kuszczak 1986) gave equal attention to second-best public-finance issues and to macro-stability concerns. When this study was circulated, I gather it was regarded as almost revolutionary. But John’s analysis stood the tests of time and scrutiny, and as we all know, his conclusion was later adopted as the new policy.

Even if I had more time to describe all the projects that John worked on, I would not be stressing what needs to be said most. John’s most important contribution was in his role as wise counsellor—helping everyone else sort out their problems and perspective. I last talked to John at a previous Bank conference. He would not let our conversation shift to a discussion of his health. He was much more comfortable exploring the issues that had emerged in the day’s discussions—helping me to understand and enjoy economics. His insights and his spirit continue to help me.

The word “gentleman” was invented for people like John. He was a truly gentle man who—by simply pursuing his work in a careful and unassuming fashion—generated the many positive externalities and inspiration that we are celebrating by dedicating this conference to him.

Thank you for letting me take part in this tribute.

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