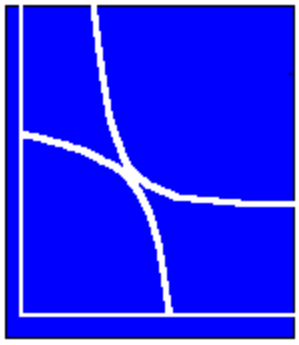

Tradeoffs

Department of Economics
University of Toronto

Fall 2003

In this Issue

Message from the Chair

by Michael Berkowitz

This past year saw the Department make great strides toward reaching our goal of becoming one of the top five publicly funded economics departments in the world. The accomplishments of our faculty, the realization of our new building, the new funding formula instituted for graduate students, the expansion of course offerings for our undergraduate students, the success of our recently launched Master of Financial Economics Program, and our recruiting achievements have all contributed to a very successful year.

Faculty recruiting is undoubtedly the most important and arduous activity for the Department each year. Like any other organization, a successful recruiting program is fundamental to the future success of the organization. The Department devotes enormous energy and resources each

year to recruit new faculty that will shine both in the classroom and on the international research stage. This year, we increased the stock of talented junior colleagues within the Department by three. At the assistant professorship level, we hired **Gueorgui Kambourov**, a macroeconomist from the University of Western Ontario, and **Andreas Park** from Cambridge University, who works in the area of financial economics. Also joining the Department is **Gustavo Indart**, a University of Toronto Ph.D., who will be our first full-time lecturer. Aside from teaching in the undergraduate program, Gustavo's responsibilities will be as a teaching resource to our junior faculty. Congratulations to our faculty for their tireless effort, and a special debt of gratitude to **Martin Osborne**, Chair of the Recruiting Committee.

This year also saw our faculty deservedly win a number of prestigious awards. **Shouyong Shi**, our Canada Research Chair, was awarded the first Bank of Canada Fellowship, **Gerry Helleiner** was inducted as an Officer of the Order of Canada and **Mark Stabile** won the Polanyi Prize, an annual award given to an exceptional Ontario economist in the early stages of his/her career. As a testament to the success of our recruiting efforts and the future of the Department, one of our junior faculty members has won the Polanyi Prize in five of the last six years.

I would also like to thank **François Casas** who served this past year as Associate Chair for Undergraduate Studies during a hectic time of increasing enrollments as we readied ourselves for the double cohort. This year, **Jon Cohen** completed his term as Associate Chair of Graduate Studies. Jon's success in developing our new graduate funding initiative will have an impact on the Department and the quality of our graduate program for many years to come. I thoroughly enjoyed working with both François and Jon. The challenges and decisions that we faced at both the undergraduate and graduate levels this past year were made that much easier because of their dedication and concern for the Department. Taking over for Jon as Associate Chair for Graduate Studies is **Dwayne Benjamin**. Dwayne's background with graduate students over the years will allow him to continue the progress made by Jon in further strengthening the quality of our graduate program.

We also said goodbye to two colleagues this year through retirement and alternative opportunities. Although **John Munro** reached the age of retirement, there is certainly no stopping this tireless colleague who will continue his research and teaching as an emeritus professor. This year also saw **Mike Peters** leave the University after a very successful career in Toronto to join the Economics Department at the University of British Columbia. We wish Mike continued success in his new home.

Last year, I wrote that the achievement that rang personally closest to my heart was the launch of our new Master of Financial Economics Program which is a joint initiative with the Rotman School of Management. I continue to be proud of the MFE Program and the work done by joint directors, **Greg Jump** and **Varouj Aivazian**, together with program coordinator, **Lisa Cernivivo**. The program can now be officially described as a major success as we continue to be flooded with highly qualified applicants and the first class works toward completing the program in December.

This year, the achievement in which I take most delight is the progress we have made toward our new building complex at 150 St. George Street. The planned structure will provide the necessary

space for our undergraduate and graduate students to become more integrated within the Department and office space for new faculty that must be hired to meet the growing demand in economics courses. The firm of Hariri Pontarini Architects is busy designing the project with construction scheduled to begin in 2004. The planned development has been separated into two phases with Phase I fully funded through internally generated university funds while funding for Phase II is currently being sought from external donors. An exciting possibility exists for a naming opportunity of the entire complex at 150 St. George while only providing the funding for Phase II of the project. We invite all our alumnae to work with us on fund raising events and to discuss possible sources of funding so that we can achieve our goals together. We are confident that such an opportunity will attract private partners who want their name(s) associated with our highly rated Department and that the entire project will go forward in 2004.

Although my term as Chair ends in June 2004, I have had to take a leave from my duties because of illness. As he always has done, **Don Dewees** stepped up to the plate on short notice and seamlessly took over in July as Acting Chair. Don is doing a remarkable job and I cannot adequately express my sincere appreciation to him on behalf of myself and our colleagues within the Department. Since this is also my last opportunity to write this piece in the Newsletter as Chair, I would also like to thank a number of other people within the Department who have worked so hard and have been so supportive over my term. **Margaret Abouhaidar**, our Business Officer, keeps track of all financial and personel matters while **Nada Ghantous**, the Chair's secretary, organizes meetings, correspondence and information flow. Between them they make every chair seem like he/she knows what they are doing...thanks, Margaret and Nada! Thanks again to François, Jon and Dwayne for keeping the Departmental wheels greased and running so efficiently. Thanks to all the wonderful support staff who were instrumental in meeting the needs of faculty and students alike within this large Department. Thanks to **John Floyd** who agreed with only a little arm twisting to edit this Newsletter even after his retirement. Finally, thanks to the best group of scholars and friends that comprise our faculty for their support and encouragement throughout my term. It has truly been a delight to have served as Chair of this great Department.

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Message from the Acting Chair

by Don Dewees

Serving as Acting Chair since July has given me an opportunity to realize how impressive our colleagues are both in their professional accomplishments and in their support of the Department in Michael's absence. I want to thank all of them for their help and guidance during this period. I have also realized what tremendous work Michael did during the past years, not only in handling the demanding day-to-day affairs of the Department, but in promoting new initiatives such as the MFE program and the new building project.

The Building Design Committee has been developing the plans for additional structures and for the renovation of the existing ones. The architects from Hariri Pontarini have been creative in preserving the beautiful aspects of our old buildings while adding new space with features that will make both our old and new buildings a joy to work in. The parking lot will be replaced with landscaping that blends with the Innis garden and we will have our own small courtyard in front of the Coach House, for an al fresco lunch or conversation. And we will have improved accommodations for our PhD and MFE students.

Recently we secured some temporary space on the 14th floor of Robarts Library, which we are furnishing for 18 PhD students and 30 MFE students. The PhD students will have shared offices with access to four computers in a common area opposite a lounge. The MFE area will feature two workrooms for group projects, a set of computers, and some general study space. The entire area will be served by a wireless network so students can bring their own computers. Student input was helpful in planning the project. We hope to move into these new accommodations this December.

The University is developing a five-year plan. I have begun meeting with the Department's Advisory Committee to discuss our goals and initiatives. This is an opportunity to re-evaluate what we do and how we do it, as well as a chance to make the case for more resources to support our most important priorities for the next half-decade.

The vitality of the Department is evident in the astonishing variety of our workshops, in the dynamism of the graduate students going to class or preparing to present their 2nd year papers to their classmates and professors, in the presentations by our colleagues of papers at conferences and seminars around the world, and in the discussion of current issues in economics in the lunchroom and corridors and offices. We want to build for the future in this recruiting season, augmenting our faculty with up to five new members. We are enjoying another very successful year.

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Undergraduate Report: Adjusting to Larger Enrollments

by François Casas

A couple of years ago, the Department faced the challenge of a major restructuring of the Commerce Program which has traditionally supplied a large proportion of our students in upper years. In the past large numbers of newly admitted Arts and Science students took our introductory course in the hope of being admitting into the B.Com program in their second year. Starting in Fall 2002, a smaller number of high school students were offered guaranteed admission into that program, thereby eliminating the intense competition that took place each Spring to gain admission into the prized commerce stream. Somewhat unexpectedly, as I reported last Fall, this did not affect our enrollments in ECO100Y and in ECO105Y, both of which increased slightly compared with the previous year.

The next challenge we had to face was the increased admissions expected across Ontario universities in Fall 2003 resulting from the double cohort. While the U of T decided that it could accommodate substantially more students on the Mississauga and Scarborough campuses, the St. George campus was to take only slightly more applicants than in the past. The actual number of newly admitted Ontario high school students on the St. George campus jumped from 3767 in September 2002 to 4380 in September 2003, an increase of 16% compared to 35% at UTSc and 58% at UTM. This was somewhat mitigated by fewer admissions of students from outside Ontario. Considering that the Faculty of Arts and Science took in 3,072 Ontario high school applicants in September 2000, one can understand why we expect our upper year classes to grow very rapidly in the coming years.

However, despite this very large jump in the number of first year registrations, our total enrollment in ECO100Y actually declined by approximately 100 compared to Fall 2002 (there was a small increase in ECO105Y, a course intended for non-specialists). This may be offset by more students completing the introductory course in the summer session, which is growing by leaps and bounds. Elsewhere, our enrollments this year remained stable, largely because we have reached our capacity in most courses and could not accommodate more students unless our teaching resources expanded commensurately. Across all years, the average class size in ECO courses has steadily risen from 100 in 1997-98 to 124 in the current academic session. I am very grateful to my colleagues and to our teaching assistants for making sure that students enrolled in economics programs have access to a full range of courses and are able to complete their program requirements on a timely basis, with virtually all students able to enrol in the courses in which they are interested.

As a final note in this year's report, I would like to offer my warmest wishes for a speedy and complete recovery to my colleague and friend **Michael Berkowitz** who has worked tirelessly to secure the funding needed for the expansion of our physical space. We all look forward to his return to active duty (including more fundraising!).

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Graduate Report

by Dwayne Benjamin

I began my term as Graduate Director in July, taking over from **Jon Cohen** and inherited a healthy and growing graduate program. One positive reflection of the past efforts of Jon and his predecessor **Angelo Melino** is the number of applicants: last year (as before) we had a record number of applications to both the MA and PhD programs. There were 387 applications to the MA program, which were winnowed to 84 offers of which 49 were accepted. Included in this were forty students in the professional stream of the MA, and nine students in the new PhD stream. Students in the PhD stream receive full fellowship support of $18,000 or $22,000, according to whether they are domestic or foreign students. The new streaming recognizes the dual nature of the MA, being both a terminal degree for students planning careers as economists,

or a stepping stone to further research-oriented graduate work in a PhD program. This year, all our MA students were offered Teaching Assistantships (TA's). One by-product of the double cohort was a significant increase in demand for TA's to support our undergraduate teaching. So while it is harder than ever to be admitted to our program, the level of funding for those admitted has never been better. The regular PhD program was even more selective: we had 183 applications for 12 spaces. As Jon reported last year, all of our new PhD students are guaranteed funding by the University of Toronto, and a significant fraction also receive support from a variety of external sources--Ontario Graduate Scholarships, Federal Government sponsored fellowships such as the SSHRC awards, and individual faculty Research Assistantships. While we hope that the enhanced graduate fellowships will attract the best graduate students, one challenge in the future will be keeping up with the competition from other schools trying to match or exceed funding offers to our star PhD candidates. But one thing is clear at this point--we have outstanding graduate students at both the MA and PhD levels. Our immediate challenge is in delivering a quality graduate education and providing a rich research environment where students can pursue a diversity of interests in economics.

Two particular initiatives should help us meet this challenge. First, building on revitalized strength in macroeconomics, and continuing a recent tradition, we are offering special mini-courses in monetary theory and macroeconomics, taught by distinguished visitors, and generously sponsored by the Bank of Nova Scotia. For 2003, we are pleased to have **Randy Wright** (University of Pennsylvania), **Richard Rogerson** (Arizona State University), **Neil Wallace** (Penn State University), **Marty Eichenbaum** (Northwestern University), and **Jeremy Greenwood** (University of Rochester), teaching specialized classes that have helped spur student interest in monetary economics. Based on past experience, we expect the courses will inspire students to undertake dissertation research with our new and relatively young macroeconomics faculty.

The second initiative is a newly established research center, the Centre for Economics and Public Affairs, which will be a focal point for empirical work on public policy, especially in the areas of health, labour, development, and public economics. This empirical micro group started a lunch-seminar series this year, with the specific objective of motivating and supporting graduate students at the dissertation stage of their PhDs. The hope is that the casual and collegial setting of a (catered, but as yet unsponsored!) brown-bag workshop will help students as they progress through what can be a difficult stage of their work--formulating empirical hypotheses and developing credible and interesting research strategies.

Both initiatives highlight the tight nexus between research and teaching at the graduate level, and represent specific examples of ways that we can improve the quality of our graduate program. That said, I do not want to dwell on plans for improvement, as we have come a long way already. One reflection of this is the considerable success we have had in placing our most recent cohort of graduating PhD students:

- Constantine Angyridis (Ryerson University)
- Catherine Deri (University of Ottawa)
- Xinhua Gu (Nanjing University)
- Seungjin Han (McMaster University)
- Alla Lileeva (York University)

- Angela No (Carnegie-Mellon University)
- Jiaping Qiu (Wilfrid Laurier Business School)
- Jun Yang (Bank of Canada)

This year, the Department writes another five-year plan which, despite its inevitable bureaucratic dimension, affords us an opportunity as a Department to evaluate everything we do. Included in this process will be an evaluation of the role and structure of the graduate program. This entails addressing a number of important questions that strike at the heart of the mission of our Department, and I look forward to discussions with colleagues and students alike.

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Department News at the University of Toronto at Mississauga

by Miguel Faig

The University of Toronto at Mississauga (UTM) has gone through a major administrative restructuring during the last year. Gone are the Associate Deans and the Discipline Representatives. In their place, the UTM campus has now a Vice-Principal for Academic Affairs, and the departments have chairs and associate chairs. The new Vice-Principal Academic is **Cheryl Misak** from the Philosophy Department. Her duties at UTM are of similar nature to those of the Dean of Arts and Sciences on the St. George campus. Our Department at UTM is now lead by **Varouj Aivazian** (Chair) and **Miquel Faig** (Associate Chair).

We welcome two new faculty members to our Department at UTM: **Gueorgui Kambourov** and **Andreas Park**. Gueorgui is a recent Ph.D. graduate from the University of Western Ontario. His fields of specialty are macroeconomics and international finance. Andreas is a Ph.D. graduate from Cambridge University specializing in game theory and financial economics. These two excellent hires add to our recruiting successes of the recent past (eight hires in five years). This year we continue our recruiting efforts with one position in the area of industrial organization.

We also welcome new support staff to our Department at UTM. Our new student counselor is **Ruby Mack** and our new temporary secretary is **Audrey Wi**. They are both providing us with very valuable help.

With the arrival of the double cohort, UTM has experienced a major increase in the enrollment of first year students. The enrollment in our Introduction to Economics course has gone from 964 students last year to 1316 students this year. To accommodate this increased demand, we have expanded the number of sections of this course from three to four. Also, to accommodate the increased demand at the second-year level, we have added fifth sections to our Intermediate Microeconomics and Quantitative Methods courses. At the third- and fourth-year levels we have introduced three new half-year courses: Money, Banking and Financial Markets, Financial

Economics I, and Financial Economics II. The first of these courses is taught by **Miquel Faig** and the other two are taught by **Andreas Park**. These courses are currently given as special topics courses but next year they will become part of our regular offering.

We plan to continue our expansion of upper-level courses in the coming years. The new courses we have introduced in the last two years have eased the extreme enrollment pressures we were experiencing. However, we anticipate a sharp increase in the demand for third and fourth year courses once the students currently in their first and second year reach the final stages of their undergraduate studies.

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News about the Masters Program in Financial Economics

by Varouj Aivazian

Applications for admission to the Master of Financial Economics Program (MFE) for the 2003-2004 academic year rose by about 25 percent from last year. Admission to the program is very selective, and sixteen highly qualified students began studies in the program in September, 2003. We expect applications to the program to steadily increase as the program grows and receives further recognition, and the number of students admitted to grow progressively until we reach our ultimate goal of 22 to 25 students.

This year the program will grant our first MFE degrees to the eleven students completing their studies in December, 2003. Graduates of the earlier small pilot program with the same curriculum as the current MFE Program were awarded the MA degree in Economics.

The program has been well received by employers in both the public and private sectors, and the program director and administrative coordinator continue to promote it with potential employers. This past summer nearly 60 percent of the MFE students secured summer internships with companies in the financial industry or with government institutions; the remaining students worked as research assistants for various professors within the Department of Economics. The feedback on the performance of the students has been very positive.

This year the incoming MFE students formed the Master of Financial Economics Student Association. The objective of the Association is to serve the interests of the MFE students by providing them with information, by organizing events, and by helping promote the program with the business community.

The MFE Program is a joint offering of the Department of Economics and Rotman School of Management. Administration of the program is the responsibility of the Department of Economics. For further information about the MFE Program visit the program's website at www.economics.utoronto.ca/mfe.

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Larry Summers on the Global Development Challenge

Larry Summers

On May 22 we were delighted to be able to have Lawrence H. Summers, President of Harvard University, give a talk to a large audience that extended beyond the confines of our Department. Larry Summers is a well-known and distinguished economist, a Harvard Ph.D, a John Bates Clark Award winner, and was the youngest professor (in any discipline) ever to receive tenure at Harvard University. Before his appointment as President of Harvard, he served as a member of the Council of Economic Advisors under President Ronald Reagan, as Chief Economist at the World Bank, and as Secretary of the Treasury under President Bill Clinton. While Larry has given talks at the Economics Department on previous occasions, this was his first address to our wider University community.

His presentation was thought-provoking, inspiring, and crystal clear. He began by noting that since the fall of communism the big challenge facing the western world is managing global integration with the developing world. His focus was to reflect on what we know about this global development challenge and about our ability to help in this area.

Larry then asserted and defended what he described as a currently unfashionable argument--that economic growth is overwhelmingly the single best indicator for development success in all its dimensions including those that affect human well-being, no matter how broadly defined. The point is controversial in that it is currently fashionable to condemn the mindless pursuit of economic growth on the grounds that growth brings dislocations such as migrations from the country-side to teeming slums where individuals are exposed to occupational injuries, bad environments, poverty and disease. Is economic growth really worth these costs?

In defense of his assertion, Larry presented important evidence. He noted that the number of people in the world that live on under one dollar per day, in current purchasing power, has declined from about 20 percent in 1970 to around 5 percent in 1998. It turns out that policies that are successful in increasing overall average income are the same as those that raise the income of the lower fifth of the income distribution. Moreover, the basic human indicators also improve with economic growth. Higher income levels are associated with lower child-mortality rates, higher literacy, more rights for women, and a better environment in terms of both air quality and clean water for human use and consumption. Also, economically successful countries are more likely to be democratic and there has been no observed example of rich developed countries back-sliding into dictatorship. The best predictors of civil war turn out to be the absence of natural resources, the absence of economic growth in the past 5 years, and the presence of an environment in which rebels can find good cover. These factors matter much more than the income distribution and other measures of quality of life. Nearly 90 percent of variations in

medical outcomes can be predicted by countries' incomes and only a very small percentage by health spending. As to the tendency of western intellectuals to idealize rural life, Larry simply reminded us that people choose to move from rural areas to city slums because that improves their lives as they see it!

Having established that developmental success occurs through economic growth, Larry then turned to his reading of the evidence from the social sciences on the determinants of economic growth. He argued that no country meeting the following three conditions has failed to achieve rapid economic growth. The first is significant openness to movements of goods, capital and ideas to and from the rest of the world. This enables developing countries to learn what is successful in rich countries and properly adopt those lessons. The second is sound money and prudent government finance. Borrowing abroad to finance government expenditures rather than levying domestic taxes simply postpones rather than deals with problems. And while economists might disagree as to whether the appropriate inflation rate in Canada or the U.S. should be 0 percent, 2 percent or 3 percent, there is no evidence that double-digit inflation is a useful method of financing government expenditure. The third condition is respect for property rights. Elaborate networks of contract enforcement exist in rich countries to make secure exchange between individuals possible and efficient--one does not find these conditions met in poor countries.

Larry's conclusion was that we need convergence--the poorer countries have to grow to equal the success observed by the rich countries. For this to happen, both human and physical capital must flow from the industrial world to the developing world. In fact, however, advanced economies typically have current account deficits and developing countries current account surpluses--that is, capital tends to flow from the less-developed to the developed parts of the world, in the opposite direction to what is needed. It turns out, for example, that about 40 percent of the capital held by people in Africa and the Middle East tends to be held outside those areas, and about 30 percent of Africans educated in the West work outside Africa. To get capital to stay in the developing world, those countries need access to products and ideas in the developed world, respect for property-rights and contract enforcement and sound monetary and fiscal policy.

A question period followed the talk. In response to a question regarding the effectiveness of the International Monetary Fund, World Bank and other international agencies in meeting the development challenge, Larry argued that international organizations have done, on balance, a good job. For example, countries seek to borrow from the International Monetary Fund when they find that they are unable to pay back loans from the rest of the world. They get in this situation mostly from bad domestic monetary and government finance policies. It is reasonable that the Fund require that these countries institute domestic financial reforms as a condition for providing help--otherwise, the bad policies that caused the trouble will simply be perpetuated. Larry went on to speculate that the most important contribution international agencies make to the developing world is the training of employees from those areas who later return home as ministers of finance and other government officials.

In response to a question about the efficacy of current levels of agricultural protection in developed countries Larry asserted that he saw no justification for such policies--they hurt home consumers as well as foreign producers. Such policies, he noted, result from the fact that narrow special interests in most countries have more weight in domestic policy formation than the

general interest. He added that they also reflect the enduring intuitive appeal of mercantilism as compared to the counter-intuitiveness of correct economic analysis. Having said all that, he then argued that the developing world's protectionism hurts it much more than the protectionism in developed countries, citing restrictions on the import of low-cost machinery and overvaluation of exchange rates that hurt local agriculture and marketing boards that restrict exports from these countries.

The large audience responded enthusiastically to Professor Summers' talk.

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Developments in Macroeconomics Since 1930

In this issue we present a brief survey of the important issues in Macroeconomics during the past three-quarters of a century by three of our colleagues in the field, Don Moggridge, Allan Hynes, and Diego Restuccia.

The Trials and Tribulations of Keynesianism

by Don Moggridge

In a little over a decade after the publication of the John Maynard Keynes's *General Theory of Employment, Interest and Money* a basic Keynesian model had been explored, consolidated and assimilated by economists. The form the standard version of the model took was the Hansen-Hicks IS-LM diagram. The relation of that formulation of Keynes's ideas to the *General Theory* itself has since become a matter of some controversy. However, one should note that virtually all of that controversy, with its distinction between Keynesian economics and the economics of Keynes as Axel Leijonhufvud put it in 1968, or between 'true' and bastard Keynesianism to use Joan Robinson's 1962 phrase, or between Keynesian and Post-Keynesian economics, was the product of a later era. Historically, the interesting phenomenon is that the bare bones of the IS-LM style of theorizing was remarkably ubiquitous among early 'students' of Keynes's work, including students who had gone to his undergraduate lectures or been involved in the creation of the General Theory. A list of these students reads like a who's who of early Keynesian economics in Britain: R.B. Bryce, David Champernowne, Roy Harrod, J.R. Hicks, Abba Lerner, James Meade, W.B. Reddaway and Joan Robinson. Subsequent critics of the new formulation were even amongst its earlier users as they tried to explain Keynes to his critics; the classic case is Nicholas Kaldor using IS-LM to explain to A. C. Pigou what Keynes really meant in 1937.

This commonality may not be all that surprising given that a system of equations that looks remarkably like IS-LM appears in students' lecture notes for Keynes's Cambridge lecture of November 1933. In these circumstances, it might not be so surprising to find that if one scours Keynes's correspondence with his early interpreters, one does not find substantial criticism of such an approach. One can even find positive published statements by Keynes of IS-LM presentations following "closely and accurately my line of thought".

Given this initial consensus, it is not surprising that IS-LM became the standard way of communicating Keynes in textbooks and in other early means of presenting Keynesian macroeconomics such as the 1950s hydraulic Phillips Machine developed at LSE. Filling out the components of the model was extremely fruitful. One need only think of early post-war work on the consumption function (Duesenberry, Friedman, Ando and Modigliani), the transactions and speculative demands for money (Baumol and Tobin) and the microfoundations of investment behavior (Jorgensen). Similarly productive was the extension of the analytical framework into international macroeconomics in the form of the well-known Mundell-Fleming model. Much of the post-war work on particular components of IS-LM was related to another development. The IS-LM framework also lay beneath the 1950s and 1960s large-scale econometric models of the economy, models that also reflected the interaction of Keynesian economics with the evolving conventions of national income accounting and structural econometrics. Macroeconomic model building came to dominate macroeconomic research in the 1960s. At the same time, A.W. Phillips's study (*Economica*, 1958) of the relationship between wage inflation and unemployment in the U.K. over the previous century opened another related line of controversy. With the estimation of the Phillips curve, for which economists provided some microeconomic foundations, the basic framework seemed to be in place to offer an explanation of inflation and the possibility that policy-makers could reduce unemployment by creating a higher level of inflation.

In the course of the 1960s, the basic model and its activist policy implications became subject to increasing criticism. This criticism came from several directions. One came to be called Post-Keynesian, a term which itself encompassed several strands of analysis. One strand, which eventually became dominant, took the line that in some sense the post-war orthodoxy did not represent the 'real' Keynes or the 'true spirit' of the *General Theory* . One of these, the 'fundamentalist' criticism associated with G.L.S. Shackle and Joan Robinson, argued that the 'orthodox bastard' model did not comprehend the importance of uncertainty to Keynes and devastating implications of this uncertainty and its associated conventions for the notion of equilibrium. Another, American stream of criticism concerned orthodoxy's treatment of the determination of the price level that ignored the aggregate supply and demand analysis of chapter 3 of the *General Theory* which was superior to the Phillips curve graft. Then there were critiques that took the line that to complete Keynes's revolutionary project he needed supplementation from the insights of others, most notably Michal Kalecki or Piero Sraffa. Over time, the Kaleckian and Sraffian elements have become less important to the general post-Keynesian macroeconomic discussion, which itself has become somewhat isolated from other discussions.

From the other side came a revival of the pre-General Theory quantity theory of money tradition in the hands of Milton Friedman, who revived the 'Cambridge' version of the quantity theory of money. In itself, Friedman's revived version of the demand for money was perfectly compatible with Keynesian analysis. The differences centred on assumptions about market clearing, the stability of the demand for money in terms of a few variables and the ability of the authorities to control the money supply. Initially, the argument was largely empirical and Friedman with his colleague Anna Schwartz won many converts with their 1963 *Monetary History of the United States*, with its account of the great depression as an unintended monetary contraction. Other arguments were equally empirical and methodological. The debate might have been regarded as a draw had it remained at this level, but expectations then entered the fray in terms of the

expectations augmented Phillips Curve and the natural rate of unemployment deployed in Friedman's 1968 Presidential Address to the American Economic Association. Even that would not have made much difference to the style of debate in that it could still be conducted over how long deviations from the natural rate lasted and whether aggregate demand policies could reliably and effectively counter such deviations. However, the grounds of the debate changed with the rational expectations challenge, which was originally directed at Friedman rather than the Keynesians. For the nature and subsequent history of that strand of analysis the interested reader should follow the article below by Allan Hynes.

The early work of Lucas and his colleagues threatened the Keynesian conception of the policy problem as one of sub-optimal output and employment that could be remedied by aggregate demand management. Moreover, the hypothesis of rational expectations was too intellectually attractive to dismiss. Therefore the Keynesian reactions took a number of tacks. Markets could not adjust rapidly to clear because of networks of pre-existing contracts. Later, in response to questions as to why rational individuals would enter into such sub-optimal contracts, the discussion moved to providing micro-economic explanations for sticky prices. However the discussions were always piecemeal; they never offered a systematic, comprehensive model of the economy analogous to the New Classical or Old Keynesian models. Nonetheless, given the difficulties on both sides, the result has been relative peace as most mainstream macro-economists have agreed on the need for appropriate microfoundations.

One result of the debate having moved on, combined with the passage of time, is a much livelier interest in the history of the development of macroeconomics in the middle four decades of the last century.

The Rational Expectations Revolution

by Allan Hynes

The implications of economic theory for many questions depend on how people form their expectations. Nowhere is this more important than in theories of the business cycle, and I will discuss rational expectations as it applies to one part of these theories---the role of monetary policy in determining changes in real economic activity. Modern analysis of this problem brought rational expectations into the mainstream of economics.

Readers may remember the following question from their undergraduate courses: what are the consequences of an increase in the nominal quantity of money? David Hume gave an answer in 1752. In the long run, all nominal prices increase by the same proportion as the money supply, and real output and relative prices are unchanged. In the short run, nominal prices rise by less and real economic activity improves. Trade quickens, to use an old phrase, because people interpret some of the changes in demand as arising from real sources and respond accordingly. As people learn, these short-run responses dissipate, and long-run neutrality holds.

In the late 1960s and early 1970s, macroeconomic theorists in the U.S. once again debated whether a central bank can control output and employment. The problem re-emerged because monetary economists, led by Milton Friedman, were challenging Keynesian orthodoxy. And, in the 1970s the American economy was experiencing high rates of inflation accompanied by

higher than normal rates of unemployment, a situation not easily encompassed by Keynesian theory of the time.

In his presidential address to the American Economics Association in 1968, Milton Friedman outlined a model in which workers and firms have good information about their local circumstances but poor information about current monetary policy. An unexpected increase in the money supply leads to an increase in real economic activity that dissipates as people learn the real structure of the economy is unchanged. The logic is symmetrical for an unanticipated reduction in the money supply.

From Hume to Friedman, explanations of short run real effects of changes in the money supply depended on people having incomplete information in the short run but also having the ability to learn from experience. This problem is not unique to monetary theory, and after World War II, as formal modeling became the standard approach when analyzing theory and policy, an operational way to deal with expectations was required. The common strategy was to assume that people revise their expectations of a variable by a fixed fraction of the difference between the current and previously expected value, implying that the expected value of the price level or rate of inflation, for example, is a weighted average of current and past values. This model is easy to apply, but an important problem is that adaptive expectations assumes that the only knowledge people have about a variable is contained in observations of current and past values of the variable. Moreover, the assumption that people form their expectations in this way implies there is always a policy strategy the central bank can use to `fool' the private sector and thereby control real economic activity.

It became clear that adaptive expectations is not a satisfactory explanation. John Muth, in his 1961 *Econometrica* article, proposed that in dynamic models expectations should be consistent with the equilibrium structure of the economy. When forming expectations, people should exhibit the same degree of rationality as with other decisions and should not ignore relevant information. He illustrated his point with a model of an agricultural product. Demand in the current period depends negatively on the current price, and supply depends positively on the equilibrium price farmers, last period, expected to rule this period. There is uncertainty because `weather' implies that supply outcomes cannot be perfectly forecast when commitments are made at planting. The equilibrium price and quantity (those values consistent with demand being equal to supply) in each period equal those consistent with the equilibrium implied by certainty plus an unpredictable random component equal to the forecast error. Because useful information is not ignored, the expected value of this error is zero. Prices and quantities fluctuate randomly around their long-run equilibrium values. There will be forecast errors, but these do not contain new information about the structure of the market and do not call for systematic revisions of expectations. Economists call a model with this property a stochastic equilibrium model.

Muth's contribution is one of the most cited papers in macroeconomics in the last forty years. But despite its revolutionary thrust, the idea languished for a decade. Then, in 1972 Robert Lucas published in the *Journal of Economic Theory* a model of a monetary business cycle in which expectations are assumed to be rational in the sense proposed by Muth. Lucas's objective was to analyze the implications of changes in the nominal quantity of money when expectations do not have the limitations of adaptive expectations.

When expectations are rational, the characterization of monetary policy needs attention. A central bank has systematic goals, and in an open democratic society it is reasonable to assume the goals are widely understood. Nevertheless, it is unlikely that the target for the money supply can be hit with complete accuracy, so the actual money supply has a systematic (predictable) component and an unsystematic (unpredictable) random component. Because all available information is used, the expected value of the unsystematic component of the money supply is zero. In the construction of models, it is assumed that systematic goals are translatable into central bank policy functions.

Lucas's model, like Hume's and Friedman's, assumes the economy is competitive, and firms and households observe their own markets in the current period. Given rational expectations, they know the central bank's policy function but do not observe the current money supply and its unsystematic random component. The conditional expectation of the money supply is then given by the systematic policy function. There are real demand shocks that are specific to individual markets. In the current period these are confounded with the effects of the unobserved money supply shocks which are spread across all markets. In equilibrium, output and the nominal price level fluctuate randomly around their full employment values as the nominal money supply fluctuates randomly around the long run value defined by the monetary policy function. The business cycle produced by the model is the variation of output and employment in a stochastic equilibrium as defined in Muth's original example from agriculture.

The central bank's policy function and the private sector's knowledge of this function are central features of models with rational expectations. Issues regarding the specification of this function are therefore important. Advocates of activist monetary policy argue for a discretionary policy function whereby the central bank chooses the current money supply based on indices of the state of the economy. Given rational expectations, people understand systematic policies and expect their implied outcomes. Discretionary money supply changes will not reduce output variability because unexpected shocks to the money supply cause output to vary. This policy-invariance theorem implies that the choice of the systematic policy function should be based on long-run considerations. One option is a policy function that aims to provide nominal price stability. Whatever the choice, the monetary authority should state clearly its long run objectives and conduct policy in a manner that minimizes the unsystematic variation in the money supply. Monetary policy should attempt to avoid adding unnecessary background uncertainty to the economy.

Monetary theories of fluctuations under rational expectations model the business cycle as an equilibrium process. Problems of transitions, while important, are not addressed. Consider an example. In wartime, central banks often bow to fiscal demands and print money at higher than normal rates, using inflation as part of the fiscal package. At the close of hostilities, there is the problem of returning to peacetime policies with lower inflation. If a central bank could commit to the new policy without cost, the transition would be easy. Unfortunately, policy choices are seldom this simple. Circumstances will have changed, and there will be uncertainty about the new policy function. Announcing a desire to reduce inflation (a new policy function) will have little effect on expectations unless accompanied by fiscal policies that reduce expenditures or raise other taxes. It is by actions that a central bank and treasury coordinate their policies and signal true commitment to reduced monetary expansion and inflation.

Initial efforts to test monetary theories of the business cycle under rational expectations appeared promising. However, these tests require an independent partition of the money supply changes into expected and unexpected components. And this necessitates independent specifications of policy functions. Unfortunately we do not have a positive theory of central bank behavior, and policy functions must be jointly estimated with the models. This makes convincing partitions impossible. These, and other problems, have led to a decline in this research program and a rise in interest in the real business theories discussed below by Diego Restuccia.

This said, the general approach to problems of theory and policy implied by rational expectations has had wide-spread and enduring influence. The core of the rational expectations hypothesis is that people's expectations, and thus behavior, depend on their understanding of the economy, including the goals and actions of policy makers. People's induced responses to policies therefore often result in outcomes that are different than those originally envisioned by the policy makers. Rational expectations direct attention to policy functions, policy makers abilities to commit to these functions, and people's expectations relating to these features of the environment. Each of these is illustrated in our post-war adjustment example, and the same issues arise in the theories of taxation, debt management and foreign exchange rates, to name only a few of the areas that have been touched in important ways. It is not an exaggeration to claim that rational expectations analysis represented a revolutionary shift in macroeconomic analysis.

Computational Experiments in Real Business Cycle Theory

by Diego Restuccia

Business cycles, according to Robert Lucas in the *Carnegie-Rochester Conference Series on Public Policy*, 1977, are defined as recurrent fluctuations of output about trend and the co-movement among other aggregate time series. Classical models conjecture that business cycles are fundamentally a monetary phenomenon and have treated growth and fluctuations as two disassociated processes. Business cycle research changed drastically with the seminal article by Finn Kydland and Edward Prescott published in *Econometrica* in 1982. Kydland and Prescott argued that large and persistent random shocks to technology lead to optimal responses from people with respect to their consumption and supply of labor that can create business cycle patterns as observed in the data.

Kydland and Prescott's article represented a fundamental departure from previous research on business cycles in three respects: First, using dynamic economic theory, they build an abstract model economy where people make economic decisions through time in an environment beset by random shocks. Within the framework of this model they examine the quantitative properties of fluctuations induced by shocks to technology. Their theoretical structure builds upon the neoclassical growth model and they restrict some parameter values and structural forms to make their model consistent with the characteristics of long-run growth observed in the data. Second, Kydland and Prescott's article assesses the role of real shocks--that is shocks to the aggregate production function--as opposed to monetary shocks. Long and Plosser (*Journal of Political Economy*, 1983) later referred to models emphasizing real shocks as `real business cycle models'. The real business cycle approach has shown that technology shocks account for about two-thirds of all output fluctuations in the U.S. economy. Third, the implications of the theory--that is,

statistics from simulated time series computed using the model--are contrasted with statistics from observed time series data.

An implication of real business cycle theory is that cycles are optimal responses of people to aggregate shocks to technology. In this situation, policies aimed at mitigating the amplitude of fluctuations brought on by random changes in technology are actually harmful. More than twenty years after Kydland and Prescott's article, I argue that perhaps an even more important contribution of the real business cycle approach was to provide a systematic methodology for answering quantitative questions in economics. This methodology, which systematically combines theory and observation, is usually referred to as `calibrated models', `computational experiments' or `quantitative theory'. Real business cycle research has had a fundamental impact in other areas of macroeconomics and in related fields such as labor economics, family economics, economic development, and international economics.

The methodology of real business cycle research is described in detail in another Kydland and Prescott article in the *Journal of Economic Perspectives* published in 1996. In the same issue two other articles provide a critical evaluation of Kydland and Prescott's methodology, one by Lars Hansen and Jim Heckman and the other by Christopher Sims.

Most computational experiments involve four steps. First, the researcher starts by posing a well-defined question. Computational experiments are about the quantitative implications of theory, so a key aspect of the computational experiment is to define the type of issues the researcher is seeking to examine. Frequently, the researcher asks questions about the quantitative implications of alternative policy choices: What are the effects on capital accumulation of eliminating the U.S. social security system? What are the welfare costs of moderate inflations when people hold cash for transactions purposes? What are the output and welfare consequences of taxes on laying off workers when there is idiosyncratic uncertainty about productivity at the plant-level? What is the contribution of uninsured earnings uncertainty on the concentration of wealth in the U.S.? What are the welfare benefits of specific family policies?

Second, the researcher constructs a model economy. An established (well-tested) theory, if available, can be modified for the purpose of answering a well-specified question. Real business cycle models use neoclassical growth theory to answer the question: What fraction of business cycle fluctuations in the U.S. can be accounted for by shocks to technology? In the data, one-third of secular growth in the U.S. can be attributed to capital accumulation and two-thirds to technological progress. The basic growth model is consistent with this long-run evidence.

At business cycle frequencies, two-thirds of output variations can be attributed to changes in the labor input and one-third to changes in technology. The basic growth theory was thus modified to include both shocks to technology and possible variation in the labor input. This last modification was accomplished by assuming that people had a choice in terms of the number of hours allocated to working in the market--people value leisure. These modifications of the basic growth theory are motivated by the specific question that Kydland and Prescott asked. In other instances--and for other questions--further development of theory may be necessary. In a 1998 Federal Reserve Bank of Minneapolis working paper, Edward Prescott argues that "a model is a tool or measurement instrument used to deduce the implication of theory" and he defines theory

as "an implicit set of instructions for constructing a model economy for the purpose of answering a question."

Third, the researcher parameterizes and calibrates the model economy. The model economy incorporates assumptions about preferences, technologies, and endowments in which people in this abstract economy make optimal decisions. It also involves a concept of equilibrium. In the real business cycle literature, a competitive environment is usually assumed. At a given wage rate, firms hire workers and households supply labor to firms. A competitive equilibrium wage equalizes the demand and supply of labor. Particular functional forms for technologies and for representing preferences must be chosen and the parameters of these functions must be selected according to some appropriate procedure. In the real business cycle model, functional forms and parameter values are restricted by long-run observations. For instance, capital and labor income shares are roughly constant in the U.S. time series. Along with competitive markets for capital and labor inputs, an aggregate production function that implies constant capital and income shares is therefore chosen. Parameter values must be calibrated, a procedure which essentially involves the inverse mapping from parameters to economic outcomes. For instance, in growth theory, the capital to output ratio is a function of the exogenous saving rate, the depreciation rate of the capital stock, and the growth rate of population and/or productivity. The model implies a mapping from parameter to long-run equilibrium outcomes such as one where the capital stock is constant or growing at a constant rate. Consistency with data for the U.S. economy necessitates restrictions on the long-run growth rate of population and technology and on the saving rate. Consistency with data on the long-run value of the capital to output ratio requires a restriction of the parameter value for the depreciation of the capital stock. Of course, the details of the model may imply different parameter values so that the calibration of a parameter is always relative to the model economy.

Fourth, the researcher sets up an experiment and executes it to obtain an answer to the question posed. In real business cycle models, this step involves constructing artificial times series to compute statistics, such as the standard deviation of log output as a measure of variability of fluctuations, for each simulation of shocks generated by the random process of technological change. An average of the selected statistic from many simulations is compared to the actual data.

An important feature of the methodology developed in real business cycle models is that results from models can be analyzed in light of different sets of assumptions. A substantial amount of research has been devoted to evaluating whether Kydland and Prescott's results were robust to many variations of the basic framework. One such variation was to consider an environment where people's decisions in the labor market were whether to work for a fixed amount of hours or not to work at all, instead of how many hours to work as in Kydland and Prescott's model. This variation was motivated by the empirical evidence that variations in employment as opposed to hours worked account for most of the variation in the labor input during cycles. Gary Hansen, in a 1985 *Journal of Monetary Economics* article, implemented this extension of the basic model and found that technology shocks generate larger output fluctuations than the basic model. Kydland and Prescott (*Economic Theory*, 1991) developed a model where both labor hours and employment could vary during the cycle. In their model, seventy percent of output fluctuations in the U.S. are accounted for by measured shocks to technology.

The previous discussion illustrates that progress can be made by relaxing assumptions of the basic theory. Adding empirically relevant features to the basic environment can also generate further progress. For instance in an influential article in the *Journal of Political Economy* in 1991, Jess Benhabib, Richard Rogerson, and Randy Wright explore the implications of home production for models of aggregate fluctuations. They argue that home production may be relevant for aggregate business cycles because the home sector is large in the sense that people dedicate on average twenty-eight percent of their productive time to working at home. Moreover, estimates of the value of home produced goods range between twenty and fifty percent of measured gross domestic product, and there is clear support in the data for substitutability of time spent working in the market and at home. The authors show that the introduction of home production into the standard real business cycle model helps improve the implications of the standard model along several dimensions. First, both market hours and measured output fluctuate more in the model with home production than in the model without. The reason is that if shocks to technology affect market output differently than home output, there is a role for reallocation of resources across sectors. This reallocation creates additional movements of market hours and measured output that are not present in the standard model. Second, if investment goods are produced only in the market sector, then positive shocks to market output produce a movement of resources from the home sector to the market sector, including the production of market consumption goods. This creates additional volatility of market consumption and reduces the volatility of investment relative to the standard model. All these implications of the theory with home production are in better accord with data.

Computational experiments have had a major impact in business cycle research and in other areas of economics during the past two decades.

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New Colleagues

Gustavo Indart

Gustavo has a Ph.D from our Department, where he also did his undergraduate work. Originally from Mexico, he specializes in economic growth with reference to Latin America.

Gueorgui Kambourov

Originally from Bulgaria, Gueorgui joins us after completing his graduate work at the University of Western Ontario. His specialties are international economics, macroeconomics and labour economics.

Andreas Park

Andreas joins us from Cambridge University where he did his graduate work following undergraduate studies at the University of Bielefeld in Germany. His research interests focus on game theory and financial economics.

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Retirements

John Munro

John Munro

John did undergraduate work at the University of British Columbia and his graduate work at Yale, where he received his PhD in 1965. He came to Toronto in 1968 after three years on the faculty at UBC and became a stalwart in Economic History, supervising more PhD dissertations, by a wide margin, than any of his colleagues in that field. He also played an important role at the graduate level in the Centre for Medieval Studies where he was Associate Director for a number of years. John is a prolific scholar, with a monograph *Wool, Cloth and Gold: The Struggle for bullion in Anglo-Burgundian Trade, 1340-1478* , two volumes of collected papers and two edited volumes, one on coinage and one on textile history. Among his dozens of articles are contributions to the *Collected Works of Erasmus*, a multi-volume edition organized by the University of Toronto Press. He has also served as the Department's representative on the University of Toronto Faculty Association Council and was a member of the salary and benefits committee. In his retirement, John continues to teach two courses and has four research projects on the go.

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The Research Interests of Some of Our Faculty

Eugene Choo is currently focusing his research on two areas of empirical economics. In joint work with **Aloysius Siow** on the economics of the family, they developed an empirically tractable behavioral model of the marriage market. The model makes parsimonious predictions of marriages given additions to the supply of available men and women. It also provides a way of quantifying the welfare gains from marriage relative to being unmarried. Their analysis suggests that changes in divorce and abortion laws in the 1970s have generated a significant fall in the welfare gains from marriage. Eugene is also working in the area of industrial organization. In joint work with **Jo Van Biesebroeck** he is investigating whether inventories of unsold automobiles have an effect on firms' pricing decisions. In this ongoing research, he is working to develop a model of the firm that can account for the inventory and production cycles observed in plant-level data.

Andres Erosa is studying how capital market imperfections can explain the use of low productivity technologies. He is developing a theory where entrepreneurs have private information about the multifactor productivity of their technology. One objective of his research is to study how the level of contract enforcement affects the financing and selection of entrepreneurs by the capital markets. A second objective is to study how these imperfections

impact on industries that differ in their needs for external financing. Preliminary findings suggest that capital market imperfections can lead to low aggregate productivity and large differences in productivity across industries, and to the allocation of a large fraction of the economy's resources in sectors with low productivity. The theory can thus provide an explanation of important observations made by Kuznets and other economists in the economic development literature. The theory also suggests that entrepreneurs have a vested interest in maintaining a status quo with low enforcement since it allows them to extract rents from the factor services they hire. Finally, Andres plans to investigate how the effects of taxation vary across countries that differ in the functioning of their capital markets.

Luisa Fuster is currently working on three projects. One project, joint with **Ayse Imrohoroglu** and **Selahattin Imrohoroglu** of the University of Southern California, quantifies the short-run impact of eliminating social security policies on welfare and the macroeconomy. The project also studies the distributional impact of such elimination and quantifies what would be the political support for different fiscal policies used to eliminate the pension system. A second project, co-authored with **Jose M. Da Rocha** of the Universidade de Vigo, studies why fertility and female participation rates are positively correlated across OECD countries. They build a fertility and labour decision model where there are labour market frictions in order to quantify the impact of unemployment on fertility and participation rates. The third project, joint with colleagues **Andres Erosa** and **Diego Restuccia**, develops a general equilibrium framework to study the impact of fertility decisions on labour market outcomes of females in the US economy. In particular, the project is aimed to understand the differential wage rates, labour market turnover, and employment between females and males. Their goal is to use this model to study the effects of parental leave policies on wages, labour market turnover and employment of females.

Li Hao is currently working on two sets of problems, matching markets and information transmission. Part of the existing literature on matching--that is, on the allocation of market participants among different markets in which they could participate--has focused on markets where participants differ in one-dimensional characteristics but share the same preferences because those characteristics complement each other. In one project Li extends the literature by incorporating participants' concern for how their characteristics are ranked compared to those of other participants in a market and looks at how they choose among markets based on the trade-off between complementarity with other participants versus competition with them. In another project Li extends the standard framework by assuming that participants differ in a second dimension of characteristics and therefore have different preferences, and identifies the equilibrium matching pattern of individuals to markets. On a different front, Li is studying how agents transmit private information when direct or indirect interactions are present. In one project, a model of competitive signaling is constructed to explain the link between grading policies of two universities that do not directly compete in student admission or in graduate placement. In another project, a model of repeated voting is used to understand the impact of delay on the quality of committee decisions.

John Maheu is working on several projects in financial econometrics. In joint work with **Tom McCurdy** they are developing better time-series models of extreme movements in financial markets. Their results provide superior forecasts of stock market volatility, particularly around market crashes. Currently they are investigating the implications of these models for asset

pricing. In related work they continue research into the usefulness of high frequency data in constructing daily measures of volatility for the purpose of forecasting and as inputs into risk management decisions. Another project, joint with **Toby Daglish** and **Tom McCurdy** focuses on the financial gains that better forecasting models of volatility provide. Their approach allows them to quantify the economic importance of different volatility models, as well as parameter and model uncertainty. For the past few months John and **Wing Chan** have been sifting through millions of high frequency transactions from the Toronto Stock Exchange to form better measures of the co-movements of stock prices. Their interest focuses on time series forecasts and portfolio choice. In joint work with **Stephen Gordon**, they are comparing different models of the stock market. In contrast to previous studies their approach allows them to measure when, and often why, a particular model performs poorly.

Stéphane Mechoulan is pursuing two parallel research paths, family economics and health economics. Within family economics, after studying the issue of divorce in the U.S. he has been looking at the determinants of fertility and policy tools that can influence it. Together with **Jasmin Kantarevic**, he is investigating the role of siblings weight and birth order on fertility, and how tax exemptions for dependents (which works as a subsidy for having children) influence fertility. Within health economics Stéphane is interested in economic epidemiology. Pursuant to work on the topic with **Pierre-Yves Geoffard**, he is investigating empirically the behavioral impact of HIV testing and new HIV drugs and how they can impact on the spread of the disease. He is also interested in how drug companies react in the case of contagious diseases. With **Tomas Philipson**, he is studying the issue of intellectual property rights in relation to how current legislation affects the innovation process within the pharmaceutical industry.

Angelo Melino is working on issues related to the equity-premium puzzle and its implications for the social cost of business-cycle fluctuations. In 1985, **Rajnish Mehra** and **Ed Prescott**, in a seminal paper entitled "The equity premium puzzle", noted that over the last century, the real annual return to holding the market portfolio of equities exceeded the real return to holding Treasury Bills by almost 7%. Using a simple general equilibrium model, they calculated that the extra risk to holding equities deserved a premium of no more than 0.35%! In a recent paper, Angelo and co-author **Alan Yang** point out that economic theory poses very few restrictions on asset prices beyond the notion that there is no free lunch. Working with the same model as Mehra and Prescott but introducing a new utility function, they are able to reproduce exactly the historical facts about equity and treasury bill returns. In a related project Angelo is using these facts about the equity-premium puzzle to address the claim by **Bob Lucas** in his 2003 American Economic Association Presidential Address, that the welfare gains from eliminating all business cycle fluctuations would be tiny while a long list of growth-enhancing policies promise of much larger welfare gains. He shows that the standard preferences Lucas uses in his calculations are inconsistent with the reward to bearing risk that the market awards to equity holders and should be viewed as unreliable for measuring business cycle risk as well. Using the same utility function as in the paper with Alan Yang, he calculates that the gains from eliminating completely the business cycle are at least as large as any of the growth enhancing policies that Lucas lists.

Phil Oreopoulos spends most of his waking hours working with data to address public policy issues ranging from education attainment choice to long-run social economic effects of infant health. One ongoing project questions whether models that view education as an investment

decision can adequately explain recent findings of substantial gains to youths compelled to take additional schooling. Phil proposes alternative models better suited to fit this evidence that involve cultural influences and time inconsistency. Another interest concerns whether the strong relationship between parental earnings and children's eventual earnings is related to nature or nurture. Together with co-authors **Marianne Page**, **Ann Stevens**, **Enrico Moretti**, **Kevin Milligan**, **Till Von Wachter**, **Miles Corak**, **Andrew Heisz**, **Rene Morisette** and **Ken Clay**, he is using natural shocks that affect parental social economic outcomes, not innate characteristics, to investigate the determinants of this link. Phil is also beginning a project looking at whether within family variation in infant health measures, such as gestational age, correlate with within family variation in adult social-economic outcomes, such as welfare participation and unemployment.

Carolyn Pitchik is working on three projects in diverse areas. The first project, joint with **Maria Gallego** of Wilfred Laurier University, shows that when kingmakers in a country have the ability to seize power and not just the ability to create a change in leadership, an increase in the competition to become dictator or a decrease in the coup's riskiness increases the benefit of a coup relative to its opportunity cost and so increaes the likelihood of a coup. The second project shows that wages decline with tenure when the worker may allocate some time to self-promoting activities. The third project shows that, in a budget-constrained, private-valuation, sealed-bid sequential auction with two incompletely-informed risk-neutral bidders, the sequence of sale affects the competition for a good and therefore also affects revenue and the prices of each good in a systematic way that depends on the relationship among the valuations and incomes of bidders.

Shouyong Shi is working in monetary theory and in labour theory. The common theme in this research is the study of markets where trading frictions, often referred to as transactions costs, are important. To capture the fact that these frictions make it difficult for markets to realize all gains from trade, he models market exchange as a decentralized process of search and matching. Prices, which are not determined by a fictional auctioneer but by the market participants, do not always clear the market. In monetary theory, Shouyong is studying the fundamental question of why intrinsically useless pieces of paper which we call money can circulate as valuable objects. His decentralized exchange model provides an answer to this question by providing a rationale for the role of money as a medium of exchange. Building on these foundations, he is currently examining the dynamic effects of monetary policy. In the theory of labour markets, Shouyong is studying how different mechanisms of wage determination affect equilibrium wages, unemployment, and the efficiency of the labour market, and how technological changes affect wage inequality and the assignment of machines to workers.

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What's Happening in the Department of Economics

Professor Martin Eichenbaum's Bank of Nova Scotia Lecture

by Michelle Alexopoulos

As part of the Bank of Nova Scotia's Distinguished Visitors Program, the Department was pleased to have Professor Martin Eichenbaum of Northwestern University give a talk on November 10, 2003. Marty is a fellow of the Econometric Society, a Fellow of the National Bureau of Economic Research, and a Senior Research Consultant at the Federal Reserve Bank of Chicago. He has made major contributions in the areas of monetary policy, real business cycle research and, most recently, international economics. His papers have changed the academic community's views on these subjects, influenced policy at the Federal Reserve, and helped redefine models used by institutions such as the World Bank. Since Marty has previously given technical academic talks at the Department, this talk was aimed at the larger University community, alumni of the Department, economists from the Bank of Canada and members of the banking community.

Marty's talk focused on the very timely issues of fiscal deficits and their relationships to currency and banking crises, arguing that recent international currency crises have been largely fiscal in origin. He addressed two main questions. First, how do governments actually pay for the fiscal costs--banking system failures, repayment of foreign currency denominated debt and other financial commitments--associated with currency crises? Second, what are the implications of different financing methods for post-crisis rates of inflation and depreciation?

Marty began by explaining that conventional wisdom suggests that currency crises arise because governments print money to finance current and ongoing deficits, or to finance prospective deficits. He pointed out that, while models based on this viewpoint generally predict that seignorage (inflation taxation of private-sector money holdings) should rise significantly in the wake of a currency crisis, data that he and his co-authors have examined from countries like Korea, Turkey, and Mexico, suggests that this does not occur. Instead, the respective governments paid for the majority of the fiscal costs of the currency crises by taking actions to deflate the value of outstanding, non-indexed government debt and undertaking informal fiscal reforms. Therefore, it is not surprising to find that inflation rates were not as high as the traditional models would have predicted in the first few years following crises. It is nevertheless clear that the method of financing the government chooses has important implications for the rate of inflation in the economy and for determining which individuals in the domestic economy will ultimately end up paying the costs of currency crises.

After the talk, Marty responded to a number of questions from the audience on the topic. Animated conversation continued during the reception that followed the address.

Special Congratulations to Gerry Helleiner

Gerry has recently been inducted as an Officer of the Order of Canada. The citation reads:

"Gerald Helleiner has enhanced our country's reputation as a caring and compassionate nation. An eminent development economist, he has worked in Canada and Africa to promote the interests of developing countries. Well known for his scholarly writings on trade, finance and development, he has shared his expertise with numerous international bodies and non-governmental organizations, as well as with foreign governments. He has also lent his leadership to the International Development Research Center and to the North-South Institute. Professor Emeritus of Economics and Distinguished Research Fellow at the Munk Center for International Studies at the University of Toronto, he has been a role model for many young economists."

Graduate Economics Union/Department End of Year Dinner

by Christine Neill

Doing our bit for the SARS-ravaged Toronto economy, 80 brave souls from the Economics Department's faculty and graduate students attended the annual end of year dinner sponsored by the Department and the Graduate Economics Union. As always, it was a great opportunity to get together with the people we've seen around the halls but haven't managed to talk to properly during the year, just before they head off for good and we never see them again (if they are lucky).

The group that dined at Grano on Yonge St. on April 25 was evenly split between MA students, PhD students and faculty, while the group that made it to the after-party at that perennial university hangout, the Madison, was a bit more heavily weighted to MA students celebrating their release from exams.

Thanks to the ticket sellers (**Azim Essaji**, **Jeanne LaFortune**, **Carl Vogel**, **Melanie O'Gorman**, and **Tasso Adamopoulos**) for their efforts in publicizing the event to people who hadn't seen the email, or in getting back to people who really did want to come but didn't have the money on them just then, or had to check on spousal availability. It takes a surprising amount lot of work, and we do appreciate it.

Some photos from the dinner

The Annual Alumni Reception

by Robbie Innes

The annual alumni reception was held on May 30th at Massey College, giving alumni a chance to exchange notes on what they had been doing since their graduation, as well as on their more recent occupations. They not only enjoyed conversing with other alumni, and partaking in tasty hors d'oeuvres, but also listening to an illuminating talk by Professor **David Foot**.

David's enlightening and entertaining presentation covered a wide variety of material both globally and historically. The focus of the first part of the talk was an historical overview of population growth in Canada and the United States over the last century, and roughly outlined the `Boom, Bust and Echo' phenomena experienced.

Areas such as health care, education, employment, retirement, recreational interests, and aptitudes and interests of the various age groups were among the issues explored. His charts and graphs showed us what to expect in the next ten to twenty years in these areas. For instance, we learned why possible job applicants in their 40's and 50's have more competition in finding employment than those in their 30's. Regional population patterns, as determined by, age were also explained. We learned where someone in their 20's would be likely to live as compared to someone in their 50's.

David then expanded his horizons to a more global scale, including discussion of Central and South America and many parts of Europe, both past and present. One focus of this part of the

presentation was on the labour market with speculation on where there would be shortages and where surpluses along with some suggestions as to possible solutions.

Thus concluded an entertaining, informative presentation.

New Ph.D. Graduates

Congratulations to our students who have obtained their Ph.D. degrees. Together with their place of employment and thesis topic, they are

Xinhua Gu, Nanjing University, "Essays on Search Models of the Capital Market, and Real Investment Options with Financing Constraints".

George Georgopoulos, Atkinson College, York University, "Essays on Applied Monetary Economics".

Seungjin Han, McMaster University, "Robust Equilibrium Allocations and Efficiency in Two-Sided Economic Problems".

Jiaping Qiu, Wilfred Laurier Business School, "Essays on Portfolio Choice and Corporate Investment".

Achievements of our Faculty

Scott Eddie has been appointed a guest scholar of the Europa Institute Budapest for the fall term while working on a book to be published by Oxford University Press.

Gerry Helleiner has become the first chairman of the international board of a newly formed NGO, International Lawyers and Economists Against Poverty (ILEAP), which assists very poor and very small countries with trade negotiations and relevant capacity-building. It is based at the University of Toronto Faculty of Law. As noted above, he has also been inducted as an Officer of the Order of Canada.

John Munro has been appointed to the Executive Committee of the Instituto Internazionale di Storia Economica "Francesco Datini da Prato" in Italy. He had been previously elected to the Comitato Scientifico of this Institute in 1999 and was re-elected in 2003.

Shouyong Shi, our Canada Research Chair, has been awarded the Bank of Canada Fellowship, offered for the first time this year.

Mark Stabile has won the Polanyi Prize, an annual award given to an exceptional Ontario economist in the early stages of his/her career.

Graduate Scholarship Winners

We are pleased to report that eleven of our graduate students have won major scholarships. **Rima Lee Aboud, Tasso Adamopoulous, Thomas Caldwell, Rumana Chowdhury, Elad Gafni, Michael Kilby, Hong Mei Li, Brian McCaig, Nathan Nunn** and **Razvan Dorin Sufana** have all received Ontario Graduate Scholarships. **Marcelin Joanis** has been awarded a Social Science and Humanities Research Council Fellowship. Also, both **Marcelin Joanis** and **Brian McCaig** have, in addition to their other awards, received Royal Bank Graduate Fellowships in Public and Economic Policy. Five of these eleven students are studying for their PhD, three are MA students, two are in the joint JD-MA program and one is in the MFE program. Congratulations to all!

Other News

Our departmental family has increased with the birth of **Alice Baker**, daughter of **Michael Baker** and **Gillian Hamilton** and a brother to Isaac, and with the birth of **Daniel Erosa Fuster**, son of **Andres Erosa** and **Luisa Fuster**. Special congratulations to these four colleagues on especially productive years!

Pierre-Pascal Gendron, a Ph.D graduate from the Department in 1997, has been appointed Professor of Economics in The Business School, Humber Institute of Technology and Advanced Learning.

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Department of Economics Welcome Page

From the Editor

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