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The Institute for Economic Development (IED) is a research center within Boston University's Department of Economics focusing on the economic problems of developing countries and related fields of finance, trade, foreign investment, health, education, economic history and institutions.

Lumpy Investment and Corporate Tax Policy

By Jianjun Miao and Pengfei Wang
Discussion Paper 191

Corporate tax policy is an important instrument to influence firms' capital investment decisions and hence to stimulate the economy. Its transmission channel is through either the user cost of capital according to the neoclassical theory of investment or Tobin's marginal Q according to the q-theory of investment. The neoclassical theory assumes that firms do not face any investment frictions, while the q-theory takes into account of convex capital adjustment costs. However, recent empirical evidence documents that investment at the plant level is lumpy and infrequent, indicating the existence of nonconvex capital adjustment costs. Motivated by this evidence, this paper addresses two central questions: (i) How does corporate tax policy affect investment at both the macro- and micro-levels in the presence of nonconvex capital adjustment costs? (ii) Is lumpy investment important quantitatively in determining the impact of tax policy on the economy in the short and long run?

The authors adopt a novel approach in answering these two questions, which allows them to overcome two major difficulties faced by the existing literature. First, in the presence of nonconvex adjustment costs, the standard q-theory widely used in the analysis of tax policy fails in the sense that investment may not be monotonically related to marginal Q. Second, investment at the micro-level is nonlinear, which makes aggregation difficult, a problem that is especially severe in a dynamic general equilibrium context. To address the first problem, the authors assume firm's face both flow convex and stochastic fixed adjustment costs. As a result, at the micro-level, a modified q-theory applies in that investment is a nondecreasing function of marginal Q. To resolve the second problem of dimensionality, the authors make two assumptions: (i) firms' production technology has constant returns to scale, and (ii) fixed capital adjustment costs are proportional to the capital stock. They show that under these two assumptions, they obtain exact aggregation in the sense that the cross-sectional distribution of capital matters only to the extent of its mean. They then characterize equilibrium by a system of nonlinear difference equations, which can be tractably solved numerically.

The authors find that corporate tax policy generates both intensive and extensive margin effects via the channel of marginal Q. At the micro-level, it affects a firm's decision on the size and timing of investment. At the macro-level, it affects each adjusting firm's investment size and the number of adjusting firms. Its impact is determined largely by the strength of the extensive margin effect, which in turn depends on the cross-sectional distribution of firms. Depending on the initial distribution of firms, the economy displays asymmetric responses to tax changes. In addition, they show that an anticipated decrease in the future corporate income tax rate raises investment and adjustment rate immediately, while an anticipated increase in the future investment tax credit reduces investment and adjustment rate initially. Their general equilibrium analysis demonstrates that analyses using partial equilibrium models of tax policy (as in the existing literature) can be misleading both quantitatively and qualitatively.

Transitional Dynamics of Dividend Tax Reform

By François Gourio and Jianjun Miao
Discussion Paper 192

Dividend taxation may distort investment efficiency. Partly motivated by this consideration, the Bush administration enacted the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) in 2003. This act reduced the tax rates on dividends and capital gains and eliminated the wedge between these two tax rates through 2008. These tax cuts were extended through 2010, but may be repealed in the future. In this paper, the authors ask the following question: What are the dynamic effects of temporary and permanent dividend tax policies on the economy?

To answer this, the authors of this paper build a dynamic general equilibrium model with firm heterogeneity in productivity. They consider a tax system with corporate and personal income taxes, dividend tax, and capital gains tax. Firms decide how much to invest and how to finance investment subject to equity issuance costs, collateral constraints, and capital adjustment costs. When making financing decisions, firms decide whether to use internal funds, debt, or external equity. Firms can borrow or save and may be in one of three finance regimes in which only the nonnegative dividend constraint binds, only the share-repurchase constraint binds, or both constraints bind. As a result, in any period, there is a cross sectional distribution of firms that have different behaviors. Firms are forward-looking and have perfect foresight about future course of tax policies, when making investment and financing decisions.

The model presented in this paper differs from the existing literature in two key respects. First, most existing studies analyze a single firm's decision problem in partial equilibrium. These studies ignore firm heterogeneity which may be important for understanding the economic effects of dividend taxation. Second, most existing studies focus on the effects of permanent dividend tax changes. However, the 2003 dividend tax cuts may be temporary. This paper studies the transitional dynamics for the case of a permanent or temporary tax cut. Moreover, the authors endogenize firms' choices between debt financing and equity financing.

The authors find that the economic effects of dividend tax cuts are distinct, depending on whether the tax cuts are permanent or temporary. When the tax cuts are permanent, aggregate capital, investment, consumption, output, labor, and total factor productivity (TFP) all increase in the steady state. Aggregate dividend payments and equity issuance also increase in the steady state. During the transition path, aggregate capital rises monotonically over time and investment rises in the short to medium run. Aggregate investment rises on impact, but aggregate consumption falls on impact. By contrast, when the dividend and capital gains tax cuts are unexpected and temporary, as was likely the case in 2003, the steady state does not change. But aggregate investment decreases and aggregate dividend payments increase, during the periods when the tax cuts are implemented. In addition, aggregate output rises temporarily in the short run due to the positive capital reallocation effect, measured by the temporary increase in TFP. In the period when the tax cuts expire, investment surges and dividend payments plummet. The authors' calibrated model predicts that the 2003 dividend tax cuts may reduce aggregate investment by about 11 percent relative to the initial steady-state level during the transition phase.

Input Sourcing and Multinational Production

By Stefania Garetto

Discussion Paper 193

Globalization has expanded the scope of trade, as trade in finished products is being gradually outpaced by trade in intermediates, taking place both within and across the boundaries of the firm. This paper proposes an innovative general equilibrium framework to explain the decisions of firms to fragment their production processes across national borders, both in terms of location and organizational structure, through the choice of outsourcing versus in sourcing input production.

The model assumes that firms need to acquire a set of tradeable inputs in order to produce a non-tradeable consumption good. Input production can be outsourced to unaffiliated suppliers, thus generating trade in intermediates, or can be integrated (i.e., insourced) by the firm itself. When a firm decides to insource production, it sets up a new plant, possibly in another country where factor costs are lower. This choice gives rise endogenously to the creation of multinational firms and vertical foreign direct investment (FDI) in the form of integrated production abroad.

The novelty of this approach is that the optimal sourcing strategy is achieved as a market equilibrium, in contrast to other recent literature where it is presented as the outcome of a contracting problem. In this paper, firms simply choose the sourcing options and the locations that minimize their production costs. The driving forces behind the sourcing choice are technological heterogeneity and the implications of imperfect competition on prices. By outsourcing, a final good producer gains access to a potentially better technology, but has to pay a mark-up price. On the other hand, by integrating, firms use their own technology, but save on the mark-ups charged by the suppliers: intrafirm trade happens between a firm and itself, and is priced at marginal cost. Moreover, when intrafirm sourcing takes place abroad, the parent firm is able to transfer its technology to the chosen location, and match the technology with the potentially lower labor costs there.

On aggregate, the model predicts that firms outsource mostly from suppliers located in large countries with low factor costs. Volumes of arm's length and intrafirm trade increase with cross-country heterogeneity. While arm's length trade occurs also between identical countries, a certain degree of heterogeneity is necessary to give rise to vertical FDI and intrafirm trade. In addition, the dispersion of the cost distributions across firms affects the sourcing pattern: the share of intrafirm transactions is larger the higher the productivity dispersion of the suppliers.

Finally, the author calibrates the model to match aggregate U.S. data and computes the implied gains from multinational production and intrafirm trade. The results from the calibration exercise suggest that the current welfare gains are about 1% of consumption per capita, and further liberalization could substantially increase such gains.

On Measuring Vulnerability to Poverty

By Indranil Dutta, James Foster, and Ajit Mishra
Discussion Paper 194

In recent years development policy has revolved around poverty reduction. While it is important to focus on poverty, there is a growing recognition that reducing just the level of poverty may not be a wholly satisfactory approach to development. In particular, there has been increasing interest in dynamic and broader concepts of deprivation such as vulnerability, which takes in to account the destitution of individuals from future shocks. At the same time, important questions such as how vulnerability should be defined and measured remain open.

Existing measures of vulnerability in the economics literature fall broadly into two strands. The first strand can be classified as expected poverty measures, where vulnerability is defined as the probability and depth of falling below the poverty line in a specified number of consecutive time periods in the future. However, an implication of such expected poverty measures is that the set of poor will always be a subset within the broader set of the vulnerable, leading researchers using this methodology to find factors determining poverty and vulnerability to be very similar. The second approach is to consider the variations around a given level of income which is different from the poverty line. One major drawback of this concept of relating the lack of consumption or income smoothing to vulnerability is that standard deviations around a given consumption path may not be a good indicator of the vulnerability that individuals may face with uncertain future income. This consumption smoothing approach, however, has the advantage of conceptually distinguishing poverty from vulnerability and thus may yield separate sets of policy prescriptions to reduce vulnerability and poverty.

In this paper the authors use the standard framework of decision making under uncertainty to develop a new measure of vulnerability and offer an axiomatic characterization. Their proposed measure is distinct from expected poverty measures and yet does not have the drawbacks of the consumption smoothing approach. They draw upon the two broad approaches of measuring vulnerability to put forth a hybrid measure which includes the shortfalls as in the expected poverty measures, but also comprises the individualistic aspect of the consumption smoothing approach where individuals may have different minimum income levels (or standard of living) which they strive to maintain in future periods. The measure that they have characterized is extremely general – their framework thus allows them to consider two opposing viewpoints which previous measures cannot: (a) where current living standard reduces future vulnerability and (b) where current living standards exacerbate future vulnerability, within one unified framework. In addition, although their exposition of the measure in this paper is based on income, their proposed measure can be applied for calibrating vulnerability along other dimensions of well-being. For instance, if the subject of interest is food insecurity, the framework is able to employ food consumption instead of income and arrive at a measure of vulnerability to food deprivation.

Poverty and Disequalization

By Dilip Mookherjee and Debraj Ray
Discussion Paper 195

Whether a market economy is inherently "equalizing" or "disequalizing" in the presence of parental bequests and credit market imperfections is a question that has received much attention from development theorists. Some models predict that the market mechanism is fundamentally equalizing: in the absence of ongoing "shocks", wealth differences between households tend to disappear in the long run. Others view markets as disequalizing: inequality must endogenously arise in the long run, even if an economy starts out perfectly equal. However, if the latter models are extended to allow parents to leave financial bequests as well as invest in their children's human capital, inequality is no longer inevitable in the long run, and both unequal and equal steady states co-exist (Mookherjee and Ray 2009). In such situations the long run outcome depends on initial conditions. This paper addresses the question: what will be the long run outcome if the economy starts from a perfectly equal but non-steady-state position?

The model studies the intergenerational transmission of inequality using a model in which agents cannot borrow but can lend at a fixed rate of interest, and parents can make both financial and occupational bequests to their children. The key assumption is that there are two occupations with differing entry costs, both of which are essential in the production process. Considering arbitrary initial conditions of perfect equality, the main result is that markets are disequalizing (i.e., the economy converges to an unequal steady state) if and only if the economy starts out sufficiently poor (i.e., starting per capita wealth is sufficiently low). Initial poverty can lock an economy into long run underdevelopment (i.e., long run inequality and low per capita income), even if it is perfectly equal to start with. The historical causes of long-run underdevelopment thus do not necessarily have to reside in historical inequality; they can also be a consequence of historical poverty. This result is in contrast to most existing models of development and occupational choice, which do not employ the assumption of essentiality of each occupation.

The intuitive explanation is the following. Although borrowing constraints and parental poverty inhibit investments in the more skilled occupation (with a higher entry cost), the essentiality of this occupation implies that in equilibrium some agents must be provided the incentive to enter this occupation. This necessitates a large skill premium, i.e., a high rate of return on skilled occupations vis-a-vis unskilled occupations. Hence high initial levels of poverty imply high levels of inequality in earnings across households choosing disparate occupations. The high sacrifice of the very first generation of parents that invest in their children's skill is compensated by the substantially higher earnings of their children. At the same time, the earnings of the unskilled in the second generation are low. Consequently, second-generation unskilled parents do not want to invest in their children's education. The occupational distribution does not change thereafter and the economy converges to an unequal steady state.

In contrast, if the economy starts with a sufficiently high level of per capita wealth, parents are wealthy enough to invest in human capital at a rate which ensures that the rate of return on human capital equals that on physical capital. Since they all have equal wealth in the first generation, so will their children, and the situation reproduces itself. The economy reaches the equal steady state in the first generation itself. Finally, if the economy starts with an intermediate level of per capita wealth, some inequality in human capital earnings appears in the succeeding generation. But this is overwhelmed in due course by the equalizing effects of financial bequests: unskilled households pull themselves up by their bootstraps. This in turn lowers the skill premium and helps other unskilled households to raise their earnings, and thereby to educate their children. A virtuous cycle is then instituted, whereby inequality falls over time, and the economy converges eventually to an equal steady state.

Impact of Political Reservations in West Bengal Local Governments on Anti-Poverty Targeting

By Pranab K. Bardhan, Dilip Mookherjee, and Monica Parra Torrado

Discussion Paper 196

Political reservation for disadvantaged groups is believed to be a way of improving targeting of publicly provided goods to those groups. However, the extent to which targeting is actually improved depends on the extent to which such mandated reservations succeed in transferring effective power to members occupying the reserved positions, and on the integrity and competence of such officials. Further, it depends on the degree to which personal preferences of elected leaders affect actual policies and programs, rather than voter preferences and needs. It is thus important to empirically evaluate the effect of reservations implemented on targeting of public service delivery.

This paper examines the impact of political reservations for women and scheduled castes and tribe (SC/ST) candidates in local governments in West Bengal, India between 1998-

2004 on targeting to landless, low caste, and female-headed households. The paper differs from the existing literature in several key dimensions: geographic coverage, time span, and use of self-reported household benefits across a broad range of programs. In particular, the authors use a household survey rather than data provided by local governments concerning distribution of benefits. There are several significant advantages of using detailed household survey data. First, since there could be corruption that diverts benefits away from intended beneficiaries, government records may not reflect the true pattern of targeting. Second, with regard to fundamental local public goods such as roads and drinking water, government records may not be detailed enough to record their location and proximity to different households.

The main findings of the paper are as follow. In terms of the impact of women reservations, the authors do not find improvements in any dimension of targeting, and in fact find a worsening of intra-village targeting to SC/ST groups. In contrast, they find a significant positive effect of SC/ST reservations on overall per capita benefits in the village, and on intra-village targeting to female-headed households, as well as the group (SC or ST) for whom the position is reserved. The improvements in village-level benefits partially redressed a systematic tendency for higher level governments to allocate lower benefits to villages with high SC/ST populations. Joint reservations for women SC/ST candidates resulted in a mixture of the respective effects of reservations for women and SC/ST: an improvement in village average benefits, and deterioration in a number of dimensions of intra-village targeting. Hence women reservations resulted in some deterioration of targeting, while SC/ST reservations resulted in some improvements. The authors discuss the surprising results regarding women's reservations, and propose a model of capture-cum-clientelism which offers predictions consistent with the evidence.

Social Interactions and Segregation in Skill Accumulation

By Dilip Mookherjee, Stefan Napel and Debraj Ray

Discussion Paper 197

We live in an age of "globalization", where we are increasingly interconnected and interdependent. While individuals may differ in how they define globalization, it is fairly uncontroversial a decrease in the "local-ness" of social interactions represents one important aspect of it. It is thus important to understand what the implications of these changes are for skill accumulation, inequality, and per capita income.

This paper studies a model of human capital investment incentives with social interactions in a spatial context. The authors utilize the model to examine the interrelationship between peer effects and economy-wide general equilibrium with endogenous prices. There are two occupations, skilled and unskilled; only the former requires costly investment in training. An agent's interactions are partly with local neighbors and partly with others selected randomly from the entire economy. These interactions generate complementarities in investment incentives, via peer effects, social learning or financing from common tax sources. The economy-wide price effects arise because the labor market for the economy as a whole is integrated: returns to each occupation are decreasing in the fraction of agents in the economy in that occupation.

Within this framework, the authors study the implications of a move towards lower local interaction, represented by the fraction of interactions accounted for by local neighbors, or a widening of local neighborhoods, or lowering costs of moving location. These could result from declining transport costs, government-initiated desegregation efforts or the rise of the internet and global media. The authors find that the macroeconomic and welfare effects of these changes depend critically on certain properties of the initial equilibrium. In the case of an increase in proportion of non-local interactions, per capita education and incomes rise while inequality falls if and only if a majority of the overall population was skilled to begin with. In the case where local neighborhoods widen, it depends on whether the initial spatial concentration of skilled people is more or less than that of unskilled people.

The authors conclude by comparing their model with the complementary framework of Bowles, Loury, and Sethi (henceforth BLS) which focuses on social distance between two distinct groups (e.g., of different ethnicities or religions), with different intensities of within-group interaction relative to cross-group interaction. While the authors note that there are common features, they highlight a number of significant differences between the two models. The BLS paper addresses dynamics and is concerned with the effects of global-ness of interactions on the stability of and selection among equal (i.e., unsegregated) steady states. In contrast, the analysis in this paper is static, and examines the effects of local-ness on asymmetric (i.e., segregated) equilibria. The main result in BLS is that the greater global-ness of social interactions can stabilize an unsegregated steady state, i.e., allow states with equality between groups to persist. In this paper, the economy starts and stays in a segregated equilibrium, in which between-group inequality may rise as a result of increased global-ness, depending on the demographic share of different groups and distribution of locations in the population.

Loopholes: Social Learning and the Evolution of Contract Form

By Philippe Jehiel and Andrew F. Newman

Discussion Paper 198

The management literature abounds with examples of loopholes in private as well as public organizations: a principal offers an incentive scheme to an agent, who then “complies” with the letter of the scheme in ways that harm the principal. Frequently these incentive schemes are then replaced by more costly ones that effectively deter the harmful behavior (but may lead to new ones). The change reveals the principal’s dissatisfaction with the original scheme and not simply a willingness to tolerate some harmful behavior. Loopholes present an anomaly for the standard contracting framework, in which the principal designs the incentive scheme fully cognizant of the environment, and the agent always takes the recommend action: in such a world they should not exist. Yet in reality, they are pervasive and seem to be a significant source of organizational change.

This paper explores loopholes as a natural consequence of the fact that principals offer incentive schemes without complete information about the environment they are operating in, and that learning about this environment is a social process. The authors adopt a principal agent framework within an overlapping-generations model. The process of contract design is standard – everyone is fully Bayesian rational and conforms to the standard assumptions of equilibrium behavior – except in two respects. First, principals do not in general have full knowledge of the actual state of the world, i.e., the set of actions that an agent can take. Second, they are limited in the amount they can observe about other people’s actions and therefore in how much they learn.

Before offering a contract to an agent, the principal observes a random selection of earlier principal-agent relationships. If cheating is observed, then it is obviously known to be possible, and the principal will offer a contract that deters it. If it is not observed, then the principal is not sure whether that is because it is impossible or because he happened to observe only agents who were governed by contracts that deter cheating. Indeed, he will update his beliefs in favor of the scenario that cheating is impossible. He then designs a contract optimally given those beliefs.

Because of incomplete learning, the model may have bureaucratic equilibria, in which contracts are offered that deter behavior that is actually infeasible. More novel are the loophole equilibria, where principals who observe cheating close loopholes when they offer contracts. But loophole-free contracts deter all cheating, thereby conveying little information about feasible actions to other principals, who may then come to view that cheating is unlikely enough to choose what prove to be contracts with loopholes. In a population steady state, the result is cycling within principal lineages of contract types that alternately deter and encourage undesired behavior, yielding heterogeneity across principals. Despite the harm that loopholes do, they offer a positive learning externality, and average welfare is higher with loopholes than under bureaucracy.

Whether the economy converges to the steady state or approaches a (lower-welfare) limit cycle in which all principals in one generation offer tight contracts, followed by all in the next generation putting loopholes in their contracts, etc., depends on the temporal structure of observation that individuals make. When they sample only from the current generation’s experience, the economy converges to the limit cycle; when they sample from several past generations, it converges to the steady state. Possible policy implications are discussed.

Trade Policy and Firm Boundaries

By Laura Alfaro, Paola Conconi, Harald Fadinger, Andrew F. Newman

Discussion Paper 199

This paper studies how trade policy affects the ownership structures of firms. The authors embed an incomplete-contracts model of vertical integration choices into a standard perfectly-competitive international trade framework. Integration decisions are driven by a trade-off between the pecuniary benefits of coordinating production decisions and the managers' private benefits of operating in preferred ways. The price of output is a crucial determinant of this choice, since it affects the size of the pecuniary benefits: higher prices lead to more integration. Because tariffs increase domestic product prices, this effect provides a novel theoretical channel through which trade policy can influence firm boundaries.

The authors test the predictions of their model empirically using a new dataset which contains plant-level observations in more than 200 countries in 2004. They combine the dataset with U.S. input-output tables to construct indexes of vertical integration at the firm level, which allows them to study the link between product prices and firms' ownership structures. In particular, the authors exploit the cross-country and cross-sectoral variation in most favored nation (MFN) tariffs and the existence of regional trade agreements, which provide a source of price variation that, is plausibly exogenous to firms' ownership decisions.

The authors first examine the relation between tariffs and organizational structure. Consistent with the predictions of their theoretical model, they find that higher tariffs lead to more vertical integration at the firm level. The impact of tariffs on vertical integration is sizable: in their preferred estimation, a 100 percent tariff increase leads to a 2.15 percent increase in the vertical integration index; this implies that increasing tariffs from 1 percent to their mean level of around 5% increases vertical integration by over 8 percent. Next, the theoretical framework suggests that trade policy should affect the degree of organizational convergence across countries through its effect on prices. In line with the model's predictions, the authors find that for a given country-pair, differences in sectoral vertical integration indexes are significantly larger in those sectors in which differences in MFN-tariffs are larger.

Finally, the authors turn their attention to the relationship between the degree of sectoral organizational convergence and common membership in a regional trade agreement (RTA). Their model indicates that, everything else equal, liberalization of product markets between two countries should lead to more similar firms' ownership structure within industries. Their empirical results show that ownership structures are in fact more alike for members of RTAs: the difference in vertical integration indexes is around 9 percent smaller in country pairs engaged in a RTA than for a country pair without one. Further, this effect is found to be stronger for older trade agreements, which are more likely to have fully eliminated trade barriers among member countries. Their model also implies that price and organizational convergence should be stronger for members of customs unions, which impose common external tariffs vis-à-vis non-members, than for members of free trade areas. The empirical evidence indeed supports this prediction – the authors find that customs unions are characterized by a lower difference in vertical integration indexes.

Prohibitions on Punishments in Private Contracts

By Philip Bond and Andrew F. Newman

Discussion Paper 200

Loan contracts that mandate exclusionary penalties – measures that effectively limit the punished individual's economic activities in the future (e.g. imprisonment) – for defaulting debtors are illegal in most contemporary economies. The legal restrictions on exclusionary punishments stand in sharp contrast with the permissive attitude of the state toward transfers of pledged collateral. Indeed, many academics argue that enforceable collateral seizure is crucial for financial development. However, the incentives that can be provided by collateral seizure are naturally limited, and consequently restrictions on exclusionary punishments potentially have large and important effects. For instance, if loan contracts could threaten defaulting borrowers with imprisonment, credit constraints would be substantially eased. The state's aversion towards exclusionary penalties but acceptance of collateral seizure thus poses an interesting puzzle.

This paper proposes a simple contracting model to explain this asymmetric treatment of different types of penalties. Consider a would-be entrepreneur endowed with an investment opportunity, but lacking funds. The entrepreneur can raise financing by promising some share of future output to a lender. However, if the interest rate is too high, the entrepreneur's incentive to exert effort is low, and overall surplus is negatively impacted. One way for the entrepreneur to improve his access to credit would be to agree to accept an exclusionary punishment if he defaults. The advantage of such a contract is that it gives the entrepreneur a greater incentive to work hard, and so can be accompanied by a reduction in the interest rate. The drawback of using exclusionary punishments to incentivize the agent is that with some probability the entrepreneur is unlucky and defaults in spite of working hard. While the entrepreneur internalizes the private cost of the exclusionary punishment, he does not consider the full social cost. In particular, the entrepreneur does not consider the positive surplus that third-parties might gain from dealing with him in the future, were they allowed do to so. Consequently, it is possible for the state to improve overall social surplus by restricting the use of exclusionary contracts.

The model delivers predictions that are broadly consistent with the observed incidence of contracting constraints. First, the negative externality is larger when the growth rate of the economy is high, when uncertainty about the value of future economic interactions is high, and when the number of possible future economic interactions is large. These predictions provide an explanation for why debtor's prison was eliminated in the U.S. and Western Europe at roughly the same time as industrialization occurred. Second, this explanation can account for the asymmetry between the treatment of exclusionary punishments and collateral seizure. Third, the model accounts for why the state itself continues to use exclusionary punishments such as imprisonment even at the same time as it bans their use by private parties: the state is able to internalize the full effect of any externalities, while private parties do not.

Risk Adjustment, Innovation and Prevention

By Karen Eggleston, Randall P. Ellis, and Mingshan Lu Discussion Paper 201

Widespread integration of market-based incentives into healthcare systems has elicited increasing adoption of risk adjustment. By deterring selection, risk adjustment helps to assure fair and efficient payments among health insurers or capitated provider groups. However, since conventional risk adjustment allocates funds among regions or insurers according to current population health status, it does not reward — indeed, it penalizes — provider preventive efforts that improve population health. This prevention penalty of risk adjustment represents a hidden cost of unclear magnitude, undermining provider incentives for innovations in health promotion.

This paper presents a simple two-period, two-type model of provider risk selection and prevention effort to analyze the prevention disincentives of risk adjustment. The model is designed to illustrate the incentives of a given region, insurer, or provider, and does not attempt to model overall general equilibrium effects. The authors broadly define prevention as any innovation in the technology of health services that slows the pace of health deterioration associated with aging and the natural course of chronic diseases. Thus their model applies to secondary and tertiary forms of prevention as well as primary prevention activities. They illustrate how conventional risk adjustment discourages both selection and prevention. By focusing on current population health, conventional risk adjustment resembles static optimization.

The authors suggest a feasible alternative: risk adjustment linked to pay-for-performance for prevention.They demonstrate that combining conventional risk adjustment with pay-for-performance on prevention helps payers to distinguish between provider activities that make existing patients healthier (prevention) and provider activities that differentially attract healthier enrollees (risk selection). Refining payment systems along these lines could help to deter selection while rewarding innovations in prevention technology and organization? This approach is akin to dynamic optimization, encouraging "discovery" of strategies that are not ex ante contractible. For diabetes management, for example, interventions that allow more flexible team response to disease progression — such as allowing a pharmacist to adjust medications without awaiting physician approval — have significant (though modest) benefits for glycemic control. To encourage experimentation with such disease management "technologies" or organizational innovations, payers need to align payment incentives with prevention and quality improvement goals.

Cross-Validation Methods for Risk Adjustment Models

By Randall P. Ellis and Pooja Mookim
Discussion Paper 202

This paper takes a fresh look at cross-validation techniques for assessing the predictive validity of risk adjustment models within the classical linear framework. In recent years interest has grown rapidly in estimating and validating the use of risk adjustment models, which are useful for health plan payment, patient management, severity adjustment, as well as other purposes. It is often the case that a researcher may wish to evaluate alternative sets of predictors on some new dataset, which may differ in the demographics, year, country, or even choice of the dependent variable to be predicted. A commonly used approach is split sample validation, in which a fraction of the data is used for estimation, and the remaining sample is used for validation. The authors argue that while split sample validation is a useful approach for selecting explanatory variables and developing the model structure, it is an inefficient approach when the goal is to simply validate existing risk adjustment models and structures. Splitting the sample in any fashion exacerbates the overfitting problem and increases the divergence between R-squares from the training sample and the validated sample.

Next, the authors point out that using OLS to estimate models of health care costs may produce biased measures and overfitting due to the heavily right-skewed nature of the distribution of costs. The authors demonstrate that the overfitting problem from OLS can be substantial even with sample sizes as large as 200,000, although overfitting largely disappears in samples in the millions. The magnitude of the overfitting problem even in samples over 100,000 has perhaps been underappreciated in studies using small to moderate size samples, and such small samples cannot themselves be relied upon to validate the extent of the overfitting problem.

Finally, the authors offer an efficient algorithm for implementing K-fold cross validation in linear models. This algorithm can be applied to large empirical samples of several million records, taking only approximately three to five times the clock time of running a single OLS regression model. They demonstrate that K-Fold cross validation is superior to split sample techniques, even when multiple splits are considered, since it achieves the same level of precision with half the amount of data. Although the authors develop the algorithm using health expenditure data predicted using a linear risk adjustment framework, the method is general and could be applied to any data.

Infertility Treatment, ART and IUI Procedures and Delivery Outcomes: How Important is Selection?

By Pooja G. Mookim, Randall P. Ellis, and Ariella Kahn-Lang
Discussion Paper 203

Infertility is a widespread and growing problem in the United States. Depending on the diagnosis, a gamut of treatment options is available, ranging from ovulation-inducing fertility drugs to more invasive procedures such as Assisted Reproductive Technologies (ART) and Intrauterine Insemination (IUI). At the same time, it has been observed that these treatments are associated with higher rates of complications during pregnancy as well as poorer neonatal health outcomes. However, women undergoing these treatments come from a different health risk pool compared to their peers. Thus, it is difficult to ascertain whether the worse outcomes are due to the mother's pre-existing health conditions or the fertility treatments.

This paper attempts to answer this question by employing an instrumental variable (IV) approach. The authors use detailed insurance claims data from a large sample of 3.6 million women of ages 21-54, from 2000 to 2004. The women are classified according to their health conditions, pregnancy status, and neonatal outcomes. Next, the authors examine drug and medical claims to identify procedures associated with various types of fertility treatments, and describe these patterns using univariate and graphical techniques. Separately, they identify states that have implemented mandates broadening or restricting coverage of various levels of fertility treatments. The state variation in these mandates serves as the basis of their empirical strategy – it provides exogenous variation in the use of fertility treatments that are arguably unrelated to underlying health conditions. After demonstrating that these state mandates are indeed significant predictors of utilization rates of fertility treatments, the authors employ them as instruments to assess whether fertility treatments lead to elevated risks of worse health outcomes for both mothers and babies.

While OLS results indicate that the fertility treatments have significant negative health impacts, the authors' IV approach yields substantially weaker effects, suggesting that OLS results are indeed biased due to selection. The mother's pre-existing age and health condition is the most important predictors of complications during pregnancy and neo-natal health. Infertility treatments, while modestly increasing miscarriage rates and other complications of the mother, have no statistically significant effect on the neonatal health of surviving newborns.

The Impact of Access to Rail Transportation on Agricultural Improvement: The American Midwest as a Test Case, 1850-1860

By Jeremy Atack and Robert Margo

Discussion Paper 204

During the 1850s, land in U.S. farms increased by 100 million acres, which represented more than a third of its land at the time. Further, almost 50 million acres were converted from their raw, natural state into productive farmland. The time and expense of transforming this land into a productive agricultural resource represented a significant fraction of domestic capital formation at the time and was an important contributor to American economic growth. While the quantitative significance of these improvements to farmland has been widely recognized, the causal factors underlying such investments are less clear.

Using a newly developed GIS-based transportation database linked to county-level Census data, this paper sheds light on one such causal factor: the coming of the railroad, which lowered the costs of internal transportation and thus raised agricultural revenue productivity. Farmers responded to the shrinking transportation wedge by rapidly expanding the area under cultivation and these changes, in turn, drove rising farm and land values. The authors focus their analysis on the American Midwest in the 1850s, since it was there that almost half of the increase in improved farmland during the decade occurred, and also where much of the railroad construction took place.

The author's measure the causal impact of the railroad on improved acreage by using a difference-in-differences (DID) approach. They compare the change in farm outcomes between 1850 and 1860 in a treatment group of counties – identified as those which gained access to the railroad during the period – versus a control group which did not. Their DID estimate suggests that the predicted change in percent improved acreage between 1850 and 1860 due to gains in rail access is 3.4 percentage points, which represents a quarter of the increase in cultivable land during that period.

Next, the authors supplement their analysis with two robustness checks. First, because improved land is more valuable than unimproved land, one should also observe increases in the value of farm acreage associated with the coming of the railroad. The authors indeed find evidence to support their hypothesis. Second, if residents anticipated railroad construction in their county, they may attempt to improve the acreage of their land in advance of the actual railroad construction. If this were the case, then the DID estimates would understate the true impact of gaining railroad access. To address this possible bias, the authors adopt an instrument variable (IV), derived from various federal government transportation surveys conducted in the 1820s and early 1830s. The surveys provided valuable information regarding topography and other factors that would affect potential construction costs and also contained projections of potential railroad routes. The authors demonstrate that the IV derived from these surveys have strong predictive power of where a railroad would be constructed in the 1850s (when controlling for other factors), but are otherwise uncorrelated with the relevant outcome variables. The IV results are consistent with their initial DID findings that the coming of the railroad accounted for at least a quarter of the increased fraction of improved land.

Correcting the Bias in the Estimation of a Dynamic Ordered Probit with Fixed Effects of Self-Assessed Health Status

By Jesus M. Carro and Alejandra Traferri

Discussion Paper 205

In this paper, the authors analyze the determinants of Self-Assessed Health Status (SAH). SAH is often used in the health and development literature as a proxy for true overall individual health status, and it has also been shown to demonstrate strong correlation with socioeconomic status and lifestyle. In particular, the authors are interested in analyzing the role of socioeconomic and objective, observable health variables as determinants of SAH. They are also interested in understanding the relative contribution of state dependence and unobserved heterogeneity in explaining the observed persistence in SAH. To answer these questions, the authors estimate a dynamic ordered probit using data from the British Household Panel Survey. The authors include two fixed effects, which is new to the literature: one in the linear index equation, interpreted as unobserved health status, and another one in the cut points, interpreted as heterogeneity in reporting behavior.

The estimation of nonlinear panel data models with fixed effects is known to be problematic when the number of periods is not very large. The problem is further exacerbated when estimating dynamic models, such as the dynamic ordered probit model. This incidental parameters problem is reflected in the inconsistency of standard estimators, e.g., the maximum likelihood estimator (MLE), when the number of individuals N goes to infinity and T is fixed. Moreover, this problem results in substantial finite sample biases of the MLE when using panels where T is small. Thus, recent research in microeconometrics has focused on finding a solution to this problem by developing bias-adjusted methods to estimate those models.

So far only one method has been applied to a dynamic ordered probit model – the HS penalty approach proposed by Bester and Hansen (2009). Hence it has not been possible to compare the finite sample performance of different bias-correction methods. This is an important criterion, especially when the number of periods is not very large, which is the case with the sample used in this paper. The authors propose the use of the modified MLE (MMLE) used in Carro (2007) to estimate the dynamic ordered probit model. After deriving explicit formulas of the MMLE, the authors compare the finite sample performances of the two estimators through a series of Monte Carlo simulations. They find that while the HS estimator is computationally simpler than the MMLE, the remaining bias using the HS approach is significant, whereas the MMLE has a negligible bias with their sample size. Thus, they choose to perform the empirical analysis using the MMLE.

Their results show that state dependence is important even when controlling for unobserved heterogeneity and some forms of objective health measures. Also, there is considerable heterogeneity in reporting behavior among individuals, as evidenced by the large dispersion in the estimated fixed effects. Further, they find that objective health measures are significant determinants of SAH, while socioeconomic variables are less important than previously suggested.

Intertemporal Substitution or Reference-Dependent Preferences? Evidence from Daily Labor Supply of South Indian Boat-owners

By Xavier Giné, Mónica Martínez-Bravo, and Marian Vidal-Fernández

Discussion Paper 206

How workers respond to a temporary increase in wages is an old and fundamental issue in labor economics. Studying the behavior of the underlying labor supply model in order to accurately estimate and interpret the associated elasticities is crucial for predicting and evaluating the impact of labor tax and transfer policies.

This paper uses a unique individual-level panel dataset of 279 boat-owners in South India from 2000 to 2007 to study daily labor supply responses to temporary earnings increases. The richness of their data allows the authors to distinguish between intertemporal substitution and reference-dependent preferences, the two main competing theories in the labor literature. While the former hypothesis predicts that labor supply should be independent of recent earnings, the latter implies that the higher the recent earnings, the more likely it is that the reference income has already been achieved, and thus that workers are less likely to supply labor. The authors test whether labor supply depends only on expected earnings or also on recent weekly earnings, conditional on recent effort – measured by days worked in the past week – and individual effects. In doing so, they exploit different sets of exogenous earnings shifters, including internationally-determined prices, lunar phases and wind direction, to identify participation elasticities. In addition, they show that the results are robust to the set of variables excluded from the participation equation.

Their estimates provide evidence of reference-dependent preferences. Boat-owners' labor force participation decisions are found to depend on expected earnings as well as on recent earnings. However, compared to substitution effects, recent earnings effects appear small. In their preferred specifications, estimated intertemporal elasticities are significantly positive and range between 0.57 and 0.61, while short-term income effects are small but statistically significant. In particular, for an average boat-owner, the response of labor participation to changes in recent income is (in absolute value) a tenth of the magnitude of his response to changes in expected earnings. They argue that these small but significant short-term income effects are not driven by credit constraints. Their results imply that conditional on recent earnings, a 10% increase in expected earnings on any particular day raises the probability of working that day by 6%. The authors stress that although short-term income effects are small, they are relevant for estimating labor supply elasticities: because expected and recent earnings are positively correlated, omitting recent earnings yields severely downwardly biased estimates of labor supply elasticities.

Self-fulfilling Traps with Money as a Medium of Exchange

By Christophe Chamley
Discussion Paper 207

The demand for precautionary saving and the reduction of consumption have played important roles in the current economic crisis – uncertainty about employment and income raises the motive for saving, while the lower demand for goods feeds into the uncertainty. The mechanism is analyzed in this paper through a general equilibrium model with money as the medium of exchange.

The model describes an economy where exchanges are between goods and money. Agents increase their money balances through sales of the good they produce and use these balances to buy goods produced by others. Agents cannot consume the good they produce but can consume the good of any other agent they meet through random matching. Both inflows and outflows of money are subject to random micro-shocks but in a "standard" regime of economic activity: these shocks can assumed to be relatively small and agents can afford to keep a relatively low level of money inventories. Such a regime depends on individual expectations: if agents expect that opportunities for sales are subject to a larger uncertainty, they reduce their consumption to accumulate more money as a precaution. But the reduction of consumption by some agents may increase the sale uncertainty of others and raise the demand for money. The higher demand for money (liquidity) may thus be self-fulfilling. The sudden increase of the demand for money shifts the economy from an equilibrium with a regime of high consumption to another equilibrium with a regime of low consumption where agents attempt to accumulate higher money balances and there is insufficient aggregate demand and output.

The author uses the model to present a simple analytic representation of a liquidity crisis as one of two possible equilibria. In the full-employment equilibrium, money is necessary for consumption, but because a stable and high inflow of cash is expected, a relatively low level of money balance is sufficient to maintain a high level of consumption. No agent is cash constrained for consumption and producers can always sell. In contrast, in an equilibrium with unemployment, a producing agent cannot sell when he is matched with an agent who has no money. Because of the probability of no sale, agents attempt to accumulate money. But the higher balances for some agents must result in smaller or no balances for others because the endogenous money price of goods is the same in the two equilibria and the total quantity of money is not affected by the regime of activity.

When the economy is in a full-employment stationary equilibrium, a negative shock of expectations is sufficient to push the economy to an equilibrium with unemployment. The fear of smaller opportunities for sale induces agents to keep money: if they do not have an urgent need to consume they choose to save, but this act of saving reduces the opportunity of another agent to sell his production. The two equilibria with and without full employment are not symmetric. In the stationary equilibrium with unemployment, a jump of optimism may not be sufficient to nudge the economy into a recovery; in full employment all agents who do not have a high need for consumption can shift to saving. In the economy with unemployment, agents who are liquidity constrained cannot jump to consumption even if they become optimistic about the future.

Poverty and Informal Employment in Argentina

By Patricio Millan Smitmans
Discussion Paper 208

Argentina is one of the most advanced economies of the Latin America region. It has the highest human development index and GDP per capita in purchasing power terms, but around a fifth of its population lives in poverty. While the poverty rate has fallen from its peak of 57% during the economic crisis of 2001-02, the author argues that its decline has been limited by the high rate of informal employment. This paper discusses the issues of poverty and informal employment in Argentina, and proposes several legislative changes to deal with them.

The paper begins with an overview of the poverty situation in Argentina. Although poverty has fallen in recent years due to sustained domestic economic growth and favorable international conditions, the level of poverty remains high at 21%. The author argues that the large informal employment sector is a contributing factor to the high poverty level in Argentina. Around 80% of the working age poor – almost half of the working age population – are employed without a labor contract and do not contribute to the mandatory social security system. In addition, informal workers do not have access to any of the social protection mechanisms that formal workers do, such as health insurance or unemployment benefits, making them more vulnerable to economic shocks. Further, their salaries are lower than those of registered workers, sometimes even below the legal minimum wage. Most of them work for small firms, or microenterprises, that are also unregistered. These microenterprises often prefer to remain unregistered given the prohibitively high costs and complicated regulations of entering the formal sector. Under the current system, registered employers must pay social security and health insurance contributions that are 23% above nominal salaries, while workers are subject to a discount of 13% on their gross salaries, which discourages both enterprises and workers from becoming formal. Moreover, Argentina mandates high severance payments (estimated at 95 weeks of salary), which would be especially costly to microenterprises because of their high labor rotation. Thus, the author suggests that the high level of informal employment is in fact a result of state failure, in the sense that the existing government regulatory framework does not sufficiently accommodate the needs and characteristics of small enterprises.

Finally, the author presents several legislative changes with the goal of reducing informal employment in Argentina. First, he recommends considerably simplification of the registration procedures for microenterprises, as well as a substantial reduction in registration fees and related costs. Second, the author suggests a simplified tax and social security payment system such that the self-employed and members of the informal employment system can participate with greater ease. Third, he advocates a reduction of the large gap between gross labor payments at the enterprise level and takes home salaries of workers. Finally, he pushes for the replacement of the present high redundancy payments with a new unemployment insurance system and strengthened labor programs to help the unemployed find new jobs.

New IED Initiatives During 2009-2010

IED was involved in a new venture in collaboration with Duke University and New York University for a career fair. The first of these fairs was held at Duke in March. Nearly 40 Master students attended, along with Masters Program Director Hsueh-Ling Huynh. IED provided funding to each participant from BU to cover airfare and local expenses.

A new mentoring-cum-research-assistant program for MA students by PhD students was initiated in Spring 2010, wherein ten MA students were selected on a competitive basis. They worked as research assistants to PhD students, and were mentored by their advisors. The program is continuing into Summer 2010. The assistantships are being funded by IED.

A new Masters of Arts in Global Development Economics degree program was started this year, designed for students seeking a rigorous training in economics supplemented by the exposure to the related disciplines of politics, international relations, public health, geography and environment. The new program prepares students for careers aiding the economic development of lower and middle income countries and in transition economies, including working as policy analysts and decision-makers in government, nonprofit institutions, international organizations, and the private sector. Seven students enrolled in this program the past year. Summer internship placement efforts were made by IED. A new Global Development seminar series also debuted as a supplement to the program. The guest speakers were **Jose Antonio Ocampo** (Columbia), **Jeni Klugman** (United Nations Development Program), **Santiago Levy** (Inter-American Development Bank) and **Rosina Bierbaum** (University of Michigan).

For the benefit of the PhD students a new mini-conference series was created. This will augment the current Distinguished Visitor Program. Each of the six primary research-active fields for the majority of our PhD students (macro, micro-theory, labor/public, development/history/trade, IO/health and econometrics) can organize one conference a year. The topic of the conference should be something that benefits a significant number of PhD students. The first conference was held on April 29 and 30, on New Developments in Organization Theory, organized by IED Affiliate Andy Newman. It involved a dozen highly distinguished external participants, with whom our PhD students could interact over the entire duration of the conference.

Programs for PhD student support were substantially expanded, to include travel grants for twenty one students to take part in interviews with potential employers at the ASSA meetings in San Francisco. IED funded five PhD students who were invited to participate in their second Econometric Game Conference at the University of Amsterdam. This was in addition to the standard policy of offering IED grants to students who were invited to top level international conferences, editing grants to international students, data collection, and competition for summer research fellowships.

In one year since its inception BUPERG (Boston University Political Economy Reading Group) has been quite a success. Graduate students from Boston University Economics Department and from other nearby schools (Harvard and MIT) have been meeting every other week since October 2009, giving students the opportunity to present research at a preliminary stage. The average attendance has been 10 to 12 students per session with faculty members attending on a regular basis.

IED helped the Economics Department create an Alumni Leadership Council from among its recent alumni from the Masters Program; they are: **John Affleck**, International Economist, Property & Portfolio Research, class of ‘00, **Greg Brown**, Senior Consultant, Stone Turn Group, class of ‘07, **Michael Kheyfets**, Senior Consultant, Edgeworth Economics, class of ‘07, **Joseph Kung**, Assistant Vice President, Deutsche Insurance Asset Management (Deutsche Bank Group), NY, class of ‘04, **Fei Rong**, Associate, Boston Strategies International, class of ‘08, **Jessica Sincavege**, Supervisory Economist, BLS Division of International Labor Comparisons, class of ‘03, **Charles Tao**, Research Analyst, i3innovus, class of ‘08, **Rebecca Wildner**, Analyst, Environment and Resources Division at Abt Associates, class of ‘09. Three alumni events were organized over the past year, with a significant number of alumni, current graduate students and faculty participating. Members of the Leadership Council have created networking sites with LinkedIn and Facebook.

Alumni interested in becoming more involved or who would like to host an alumni get-together in Washington DC or NYC, please contact: IED at ied@bu.edu.

Faculty Profiles

The following paragraphs summarize the projects and development-related research being conducted by Institute affiliates from the Department of Economics at Boston University

Marianne Baxter in the past year worked on projects in a wide range of fields. In research that is related to her prior work on macroeconomic consequences of home production, she has been engaged in a large-scale econometric analysis of household expenditures and household time use as they pertain to home production. She is also working with a new data set using IKEA catalogs from many countries and up to twenty years to study the determinants of departures from the law of one price.

Peter Doeringer is completing a book on market power, economic structure, and organization in the apparel industry, based on enterprise surveys in the United States, France, Italy, and the UK. Articles on the United States and French industries have already appeared in the *Socioeconomic Review*. He is also writing a chapter on "Created Agglomeration Economies in Craft-like Industries" (with David Terkla) for the Handbook of *Economic Geography and Industry Studies*. A working paper on this topic was recently presented to the annual *Industry Studies Conference* and to the *21st Annual Conferences of the Society for the Advancement of Socio-Economics*. Professor Doeringer published "Il mercato dell'oreficieria negli Stati Uniti: tendenze, sfide e strategie per Vicenza" [The U.S. Fine Jewelry Market: Trends, Challenges, and Strategies For Vicenza] in Paolo Crestanello (Ed. & Trans.) *L'industria orafa italiano: Problemi e sfide competitive*. He is also beginning a new project on craft-like industries and craft labor markets. Professor Doeringer has completed his second term as Associate Dean for Faculty in the College of Arts and Sciences and also serves as an arbitrator in public and private sector labor disputes.

Randall Ellis's recent research focuses on how payment systems affect health care providers and health plans. He remains active in the International Health Economics Association, and in June 2010 will convert from being President-Elect to being President of the American Society of Health Economists (ASHEcon). His research on risk adjustment and predictive modeling resulted in payment models that are being used in the US since 2000 and Germany since the beginning of 2009, and similar models are being evaluated in the UK, Spain, Portugal, and Chile. During the past year Ellis has given talks in the US, Iceland and Spain. He is currently collaborating with researchers in Australia, Spain, and Germany, and as well as with multiple graduate students at BU on US and developing country topics.

Stefania Garetto current research links firm's international activity with returns on the stock market. In two related papers, she analyzes the relationship between export/FDI status and financial indicators. In part of this work, she develops a structural framework to analyze export and FDI decisions and their impact on the stock market. The model is calibrated to match both international trade and financial data. In her most recent, empirical work, she analyzes the dynamic behavior of firm-level financial indicators: entry and exit into and out of foreign markets are associated with significant changes in the performance of a firm in the stock market.

Simon Gilchrist is conducting research on economy-wide and firm-level determinants of investment, and the influence of credit markets on real activity. In one recent project (joint with Mark Gertler and Fabio Natalucci), he examines the ability of dynamic stochastic general equilibrium models to explain the macroeconomic outcomes experienced during the 1997 Korean financial crisis. In other work (joint with Jae Sim); he explores the link between foreign-denominated debt, balance sheet conditions and firm-level investment spending. Again focusing on the Korean episode, this paper uses a structural model to identify the effect that devaluations may have on investment spending during a financial crisis.

Robert King continues to focus his research on monetary policy and macroeconomics. Particular areas of current interest are the nature of price dynamics; the influence of reputation and credibility on optimal monetary policy; and the history of banking markets.

Kevin Lang continues to focus his research on education and on labor markets. His major current project related to development (joint with Erez Siniver) examines the effect of English knowledge on the earnings of immigrants to a country where English is not the main language. He and Deepti Goel are studying the role of social networks in the assimilation of immigrants to Canada. His book, Poverty and Discrimination, was published by Princeton University Press in 2007.

Robert Lucas's current work encompasses two main fields: international migration and inter-generational mobility. In February 2010 his work on labor mobility in the Central European Free Trade Area was published in a joint-authored World Bank Working Paper. In the previous month a volume appeared, joint-edited with Lyn Squire and T.N. Srinivasan, entitled Global Exchanges and Poverty. Lucas has also been acting as a member of the advisory committee on remittances to the G8. Meanwhile Lucas is continuing his collaborative work with Sari Pekkala Kerr, a former IED visitor, on inter-generational mobility in Finland.

Jianjun Miao is working on a new project about credit risk and business cycles. He and Pengfei Wang provide a dynamic stochastic general equilibrium model to study how credit risk affects business cycles. Jianjun Miao is also working on models of decision making under ambiguity. He proposes a generalized recursive smooth ambiguity model. He and Takashi Hyaashi provide axiomatic foundation for this utility model. He also applies this utility model to asset pricing and portfolio choice problems.

Robert Margo returned this year from leave at the Russell Sage Foundation to become Chair of the Department of Economics. Whenever he can he continues to work on three projects. The first project examines long run trends in the United States in racial differences in homeownership. A second project uses microeconomic census data from the mid-to-late 19th century to study the growth of manufacturing in the United States. The final project, with Jeremy Atack (Vanderbilt) uses GIS techniques to chart the evolution of the transportation revolution in 19th century America.

Dilip Mookherjee has been working on a variety of theoretical and empirical topics related to development economics. Currently ongoing projects include inequality, mobility and welfare (with Marcello d'Amato and Stefan Napel), fertility and development (with Debraj Ray and Silvia Prina), economic effects of bankruptcy law (with Ulf Lilienfeld and Sujata Visaria), middlemen margins and globalization (with Pranab Bardhan and Masatoshi Tsumagari), land reform and local governance (with Pranab Bardhan and Maitreesh Ghatak), potato marketing and microcredit policies in India (with Pushkar Maitra, Sandip Mitra, Maximo Torero and Sujata Visaria).

Andrew Newman is currently engaged in several theoretical research projects pertaining to development, organizational economics, inequality, and the economics of the household. Recent working papers include "A Price Theory of Vertical and Lateral Integration,'' which develop a competitive equilibrium framework for studying how firms' internal organization decisions interact with markets and how those decisions in turn affect consumer prices and product quality; "Trade Liberalization and Organizational Change," which applies that framework to study how trade policy affects firms' decisions to integrate or outsource; "Mis-match, Re-match and Investment," which provides a new framework for assessing questions like whether school integration or affirmative action in hiring are likely to have greater (positive or negative) impact on individual decisions to invest in human capital; "Are Career Women Good for Marriage?", which studies the recent decline in US divorce rates despite increasing female labor force participation and suggests that

that this trend reversal may be accounted for by the greater flexibility of working women compared to non-working women in intra-household bargaining; and "Loopholes: Social Learning and the Evolution of Contract Form," which explores a new theory of the sources of organizational dysfunction and change.

Wesley Yin continues to work on a number of projects related to health and economic development. In ongoing work, Wes is studying the mechanisms that tie economic growth to the development of well-functioning health care markets. Specifically, economic growth has spurred entry of chain pharmacies in India. Counterfeit and substandard drugs are commonly sold by stand-alone incumbent pharmacies in India. How competition from the new chain impacts incumbent pharmacies and their provision of drug quality is theoretically ambiguous. Hence, the effects of entry on average health and health disparities are also ambiguous. Wes (with Daniel Bennett) is working in collaboration with the new pharmacy chain to identify markets where it will enter, as well as similar control markets where entry will not take place. They are currently collecting baseline pharmacy audit and drug quality data. Follow-up data collection will take place after entry has occurred. Once collected, the panel data will allow them to examine empirically the implications of entry on antibiotic quality and community health. In other work, Wes is studying the trade-off between economic growth, pollution and health in China. Recent initiatives to reduce industrial pollution may benefit the environment and population health, but hamper economic expansion. Wes (with Shinsuke Tanaka and Gary Jefferson) is using detailed Chinese firm-level panel data to investigate the trade-offs between health, employment and economic expansion resulting from Chinese environmental protection policies.

PhD Students: Completed Dissertations and Placement

The Economics Department had another strong and diverse group of PhD students on the job market. We congratulate them on their new positions:
Alfredo Burlando, University of Oregon; **Andrea Canidio**, Central European University (Budapest, Hungary); **Shenyi Jiang**, Renmin University (China); **Denny Lie**, University of Sydney (Australia); **Tatsushi Oka**, National Singapore University; **Mikhail Pyatigorsky**, Wisconsin Center for Education Research; **Marian Vidal-Fernandez**, University of New South Wales (Australia); **Murat Yilmaz**, Bogazici University (Turkey).

The following students obtained starting professional research consultant/young economist positions:
Tamon Asonuma, International Monetary Fund; **Shinsuke Ikeda**, National Graduate Institute for Policy Studies; **Hirokazu Ishise**, Bank of Japan; **MinWoong Ji**, Korean Institution for Industrial Economics and Trade; and **Yunmi Nam**, Korea Information Society Development Institute.

2010 Rosenstein-Rodan Prize Winner Announced

The Rosenstein-Rodan prize is awarded annually for the best paper in a development-related area written by an economics graduate student.

This years' winner is Francisco J. Pino for his paper titled:

2 + 1 < 3: Strategic Voting in the Chilean Parliamentary Elections

The paper tests for the presence of strategic voting using the introduction of a binominal system in Chilean parliamentary elections.

Seminars

IED organizes a weekly seminar year-round where visiting speakers present their research. The following is the list of seminars the past year.

FALL 2009

October 5 **Amit Khandelwal** (Columbia University) *"Imported Intermediate Inputs and Domestic Product Growth: Evidence from India"*
October 13 **Zhingang Tao** (University of Hong Kong) *"Do institutions not matter in China?"*
October 19 **Latika Chaudhary** (Scripps College) *"Public-Private Partnerships and Efficiency: A Historical Perspective from Indian Railways"*
October 26 **Stefania Garetto** (BU) *"Risk, Returns, and Multinational Production"*
November 2 **Glenn Loury** (Brown University) *"Intrinsic Inequality"*
November 9 **V. Bhaskar** (UCL) *"Sex Selection and Gender Balance"*
November 19 **Thomas Piketty** (Paris School of Economics) *"On the Long Run Evolution of Inheritance: France 1820-2050 - Theory and evidence"*
November 30 **Giovanni Immordino** (University of Salerno) *"Accomplice-Witnesses and Organized Crime: Theory and Evidence from Italy"*
December 7 **Shawn Cole** (Harvard Business School) *"Barriers to Household Risk Management: Evidence from India"*

SPRING 2010

March 15 **Jean-Marie Baland** (University of Namur) *"The design of microfinance institutions and outreach among the poor"*
March 22 **Anna Paulson** (Federal Reserve Bank of Chicago, visiting MIT) *"Business Creation and Destruction: Insights from the Thai Financial Crisis" with Robert Townsend*
March 29 **Santiago Levy** (Inter-American Development Bank) *"Why Latin America Lags Behind? Informality, Productivity and Social Policy"*
April 5 **Hillel Rapoport** (Bar-Ilan University, Israel; visiting Center for International Development, Harvard) *"Brain Drain, Institutions and Development"*
April 12 **Ran Abramitzky** (Stanford University) *"Marrying Up: The Role of Sex Ratio in Assortative Matching"*
April 26 **Nava Ashraf** (Harvard Business School) *"Household Bargaining and Excess Fertility: An Experimental Study in Zambia"*

IED Research Visitors

Thomas Gall, of the University of Bonn, Germany visited IED for a period of one year. Professor Gall is collaborating with Andrew Newman and Patrick Legros from the University of Libre Bruxelles, on "Mis-match, Re-match, and Investment".

Alejandra Trafeeri, a 4th year graduate student from the University of Madrid, Spain, visited IED for the past two years, working in the field of micro-econometrics applied to labor and health. Her research interests include bias correction methods in non-linear models with multiple fixed effects, with application to labor markets in Spain.

Patricio Millan, Professor at the Catholic University of Argentina visited IED for three months. Professor Millan is currently working on issues concerning characteristics of labor markets that lead to informal employment.

Ajit Kumar Mishra, Professor in the Department of Economic and International Development, University of Bath, UK visited IED for six weeks. He is currently working on corruption, vulnerability and foreign aid.

Dr. Guoxue Li from the Faculty Exchange Agreement with the Chinese Academy of Social Sciences (CASS), Beijing visited IED for one month. His research focuses on international economics.

Distinguished Visitors 2010

Elie Tamer, Professor at Northwestern University, visited November 9th through the 13th. He gave 2 lectures and one seminar on Econometrics.

Jean-Marie Baland, Professor at the University of Namur, visited March 15th through the 19th. He gave two lectures and one seminar on Development.

Faruk Gul, Professor at Princeton University, visited April 12th through the 16th. He gave two lectures and one seminar on Microeconomic Theory.

Martin Schneider, Professor at Stanford University, visited April 30th through May 5th. He gave two lectures and one seminar on Macroeconomics.

Avrind Krishnamurthy, Professor at the Kellogg School of Northwestern University, visited May 10th through the 14th. He gave two lectures and one seminar on Macroeconomics.

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