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Contents

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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.

Job Decentralization and Residential Location

By Leah Platt Boustan and Robert A. Margo
Discussion Paper 177

This paper addresses a central question in urban economics: how does the spatial distribution of employment opportunities influence residential location? Over the past fifty years, both employment and population left central cities for the suburban ring. Between 1960 and 2000, the share of metropolitan Americans who lived in the suburban ring increased from 48 to 68 percent. Over the same period, the share of metropolitan residents who worked outside the city rose from 41 percent to 58 percent. The decentralization of both employment and population has led economists to ask whether workers followed jobs out to the suburbs or jobs followed workers. Answering this question is complicated by the fundamental simultaneity of the location decisions of workers and firms.

The authors adopt a novel approach to disentangle the causal relationship between the location of employment and population. They focus on state government – whose primary location is predetermined with respect to current residential patterns. State government is concentrated in capital cities. The choice of capital city was established long before the process of suburbanization began. In many cases, core state buildings, such as the state capitol and the state supreme court, were built in the historic central business district over a century ago and have never been moved. As a result, state workers in capital cities are disproportionately likely to work downtown compared with other workers in the area (75.6 percent versus 55.4 percent). State employees are also present in every major metropolitan area. State workers in non-capital cities are not much more likely than other workers in the area to work in the central city (57.9 percent versus 52.0 percent).

If job location is an important determinant of residential location, state workers in capital cities should be more likely than either state workers in other metropolitan areas or private sector workers in the capital to live in the central city. The authors use a differences-in-differences estimation strategy to compare state workers in capital and non-capital cities, relative to non-state workers. Using individual Census records from the 1980 Integrated Public Use Microdata Series, the authors find that state employees in capital cities are 12 to 14 points more likely than state workers elsewhere to work downtown, relative to others in their metropolitan area, and 3 to 4 points more likely to live downtown. They find no observable differences in age, gender, education level, or wage rates that could account for this residential pattern. Furthermore, this residential gap is robust to controlling for the industrial distribution of state workers in capital and non-capital cities. These figures imply that adding 1,000 jobs to the typical central city would increase the number of working residents in the central city by approximately 250. The authors also find patterns of similar magnitude when examining other industries whose job location is determined by government policy, including the defense industry and the postal service.

Did Railroads Induce or Follow Economic Growth? Urbanization and Population Growth in the American Midwest, 1850-60

By Jeremy Atack, Fred Bateman, Michael Haines and Robert A. Margo
Discussion Paper 178

Although it was the latecomer to the transportation revolution, the railroad quickly rose to dominance. By 1840, there were as many miles of railroad in operation as canals. A decade later, railroad mileage exceeded more than twice that of canals. By 1860, the United States had more miles of railroad than the rest of the world combined. While the coming of the railroad undeniably played an important role in the settlement and development of the United States, there is still a lively discussion on whether transportation infrastructure led economic development or simply followed. In this paper, the authors address the debate by examining the impact of the spread of railroads on the rate of urbanization and population density growth in the Midwest from 1850-60, during which the region was the focus of railroad construction.

Utilizing geographic information systems (GIS) technology, the authors digitize archived records on railroad networks to develop an extensive transportation database with a degree of precision unavailable to earlier researchers. The end result is a county-level panel dataset documenting the spread of railroads in the Midwest. The authors then adopt a differences-in-differences estimation strategy to examine the impact of railroad access on urbanization and population density. While none of the counties in their sample had rail access in 1850, 195 of the 278 counties in the panel had direct access to at least one railroad by 1860. The authors thus contrast outcomes in counties before and after gaining rail access, relative to counties which did not gain access by 1860. Data from the 1840 Census allows the authors to control for pre-existing trends in the counties.

The authors' results suggest that the coming of the railroad increased the fraction of population living in urban areas by 3 to 4 percent, which accounts for more than half of the increased urbanization in the Midwest during the 1850's. At the same time, the authors find little impact of gaining access to railroads upon population densities, which is consistent with research by previous scholars. Their results are robust to a number of different specifications, including the use of an instrumental variable. The authors postulate several reasons as to why the spread of railroads led to urbanization. First, railroads significantly lowered transportation costs, thereby encouraging trade. Trading tended to occur in central urban areas, especially where multiple railroad lines crossed. Second, the gains from trade raised Midwestern incomes and real wages. Some of these income gains translated into increased demand for goods and services that were more efficiently produced and traded in urban areas. Third, once a railroad came to a particular county, individuals may move to nearby towns and villages in anticipation of the construction of connecting "feeder lines".

Dynamic Asset Allocation with Ambiguous Return Predictability

By Hui Chen, Nengjiu Ju and Jianjun Miao
Discussion Paper 179

One of the most debated questions in recent financial research is whether asset returns or equity premia are predictable. This question is of significant importance for portfolio choice. If asset returns are independently and identically distributed (IID) over time, then the optimal asset allocation is constant over time. However, if asset returns are predictable, then the optimal asset allocation depends on the investment horizon and the predictive variables.

To address this question, the authors build a generalized recursive ambiguity model in which an investor is concerned about model misspecification and averse to model uncertainty. One can alternatively interpret this as a model of robustness in that the investor is averse to model misspecification and seeks robust decision making. Following the literature on portfolio choice literature, they consider a simple environment in which the investor allocates his wealth between a risky stock and a risk free bond with a constant real interest rate. They then depart from the literature and the rational expectations hypothesis by assuming that there are two sub models of the stock return process: an IID model and a vector autoregressive (VAR) model. They adopt the dividend yield as the primary predictive variable in the VAR estimation, but also consider alternative predictive variables such as the total payout yield and the net payout yield. The investor is unsure which is the true model of the stock return, and thus faces a model selection problem.

The authors find the following main results. The investor deals with specification doubts by slanting his beliefs about sub models of returns pessimistically, causing his investment strategy to be more conservative than the standard Bayesian strategy. This effect is especially large for extreme values of the predictive variable. For low extreme values, an ambiguity-averse investor is more likely to not participate in the stock market. For high extreme values of the predictive variable, the robust strategy recommends much less stockholdings than the Bayesian or the VAR strategy. In addition, they demonstrate that a very small prior probability of the IID model can lead an ambiguity-averse investor to decrease his stock allocation sharply, which diverges from the prediction of the Bayesian approach. As the investor raises his beliefs about the IID model, he gradually increases his stock allocation. Finally, they show that the welfare costs of following suboptimal investment strategies by ignoring model uncertainty can be sizable. Under reasonably calibrated parameter values, the welfare costs of following the VAR strategy and the Bayesian strategy can be around twice and 14 percent of the investor's initial wealth, respectively.

Entrepreneurial Finance and Non-diversifiable Risk

By Hui Chen, Jianjun Miao and Neng Wang
Discussion Paper 180

Entrepreneurship plays an important role in fostering innovation and economic growth. At the same time, entrepreneurial investment opportunities are often illiquid and non-tradable. Entrepreneurs cannot completely diversify away project-specific risks due to problems of incentive alignment and informational asymmetry. Further, entrepreneurs hold dual roles as producers and consumers. Like firms, they need to make investment, financing, and business exit decisions. Like consumers, they exhibit preferences for intertemporal consumption smoothing, and manage household consumption and portfolio decisions. The non-diversifiable idiosyncratic risks that entrepreneurs bear from their businesses thus impact both their business and household decisions.

In this paper, the authors build a dynamic model of entrepreneurial finance to explore the implications of non-diversifiable risks for the entrepreneur's interdependent household and business decisions. Their model features a risk-averse entrepreneur who has access to an illiquid non-tradable investment project. The project requires a lump-sum investment to start up, and generates stochastic cash flows that bear both systematic and idiosyncratic risks. If he chooses to take on the project, the entrepreneur sets up a firm with limited liability. The entrepreneur finances the initial cost using his own funds or by taking on debt. After the firm is set up, the entrepreneur decides when to default on his debt (if the business does sufficiently poorly), and when to cash out by selling the firm (if the business is doing sufficiently well). In addition to business exit decisions, he also chooses consumption and allocates his liquid wealth between a risk-free asset and a diversified market portfolio. While the entrepreneur can hedge the systematic component of his business risks using the market portfolio, he cannot diversify the idiosyncratic risks.

The model predicts that a more risk-averse entrepreneur will choose higher leverage. Because the entrepreneur is exposed to the idiosyncratic risk from his concentrated ownership position in the firm, the diversification benefits of external risky debt are large when markets are incomplete. While a higher degree of leverage increases the risk for the entrepreneur's equity stake, it also implies less equity exposure to the entrepreneurial project, making the entrepreneur's overall portfolio less risky. This prediction holds not only in the baseline setting where the source of external financing is risky debt, but is robust when additional channels of diversification such as cash-out option and external equity are introduced. In effect, the entrepreneur demands an extra premium for bearing the idiosyncratic risks of the firm. Further, compared to a well-diversified firm, the entrepreneur tends to default earlier on his debt. Ignoring this idiosyncratic risk premium can lead to a large upward bias when computing the private value of entrepreneurial equity. Finally, the idiosyncratic risk premium significantly reduces the moral hazard of entrepreneurs to take on riskier projects after debt has been issued.

Corporate Tax Policy and Long-Run Capital Formation: The Role of Irreversibility and Fixed Costs

By Jianjun Miao
Discussion Paper 181

Conventional economic theories of investment are based on the assumption that variations in capital input are subject to convex adjustment costs. However, recent empirical studies suggest otherwise: there is increasing evidence documenting the nonconvexities of microeconomic capital adjustment and irreversibility of investment. An important question is then whether such nonconvexities and irreversibility matter for aggregate macroeconomic behavior. Aggregation of micro-level behavior of heterogenous firms requires researchers to analyze the cross-sectional distribution of firms over state variables. Because this distribution is hard to characterize, researchers typically use complicated numerical methods. By contrast, this paper presents an analytically tractable continuous-time general equilibrium model with investment irreversibility and fixed adjustment costs. In particular, the author examines the role of these investment frictions in long-run capital accumulation and their implications for tax policy.

In the model, there is a continuum of firms that are subject to idiosyncratic shocks to capital. The author focuses on a long-run stationary equilibrium for the economy. He first solves for a firm's optimal investment problem in partial equilibrium by fixing the wage rate. In the presence of irreversibility and fixed adjustment costs, optimal investment is lumpy and is characterized by a trigger value and a target value. The firm adjusts its capital stock to the target value whenever the capital stock falls to the trigger value. After analyzing a single firm's decision problem, he turns to aggregate behavior in general equilibrium, where wages are determined endogenously. He finds that although the presence of investment frictions lowers consumer welfare, it may raise or reduce the long-run average capital stock, depending on the degree of the volatility of capital shocks. An increase in the volatility of capital shocks may raise equilibrium aggregate capital, but reduce welfare. Further, the long-run average capital stock in the presence of both fixed costs and irreversibility is smaller than that in the presence of irreversibility only.

The author then considers the effects of an unexpected permanent corporate income tax change on aggregate capital accumulation. A decrease in corporate income tax rate raises the equilibrium wage rate, output, capital stock, employment, welfare and average labor productivity. It also changes the investment trigger and target values, raising the capital adjustment size and the adjustment rate as a result. Moreover, an increase in fixed costs reduces equilibrium output, capital, consumption and labor productivity. In particular, an increase in fixed costs raises the capital adjustment size, but reduces the capital adjustment rate. The extensive margin effect dominates so that it reduces aggregate capital. The impact of a corporate tax change increases with the fixed adjustment costs. Finally, he shows that the partial equilibrium impact of tax changes is much larger than the general equilibrium impact, which demonstrates the importance of considering the general equilibrium price feedback in a long-run tax policy analysis.

Aspirations, Segregation and Occupational Choice

By Dilip Mookherjee, Stefan Napel, and Debraj Ray

Discussion Paper 182

In this paper, the authors incorporate parental aspirations into a theory of occupational choice. Parental aspirations are generated by the economic achievements of neighbors. Their model thus attempts to shed light on how geography per se — the income and skill characteristics of local neighborhoods — interact with wage incentives to determine an equilibrium supply of skilled labor.

The authors begin with a standard model of occupational choice. Parents choose whether to make a binary skill investment in their children. Wages for skilled and unskilled labor settle to equate supply and demand for these factors. The authors then introduce the role of parental aspirations. Parental aspirations are set as benchmarks for the material earnings of their children. Aspirations are in turn based on the achievements of one's neighbors, located within some exogenously given spatial or social window. While agents' locations in the model are given on a one-dimensional interval, the notion of "neighborhood" is flexible: it can be easily extended to span both physical and social distance. For instance, social networks based on ethnicity or race can play a role analogous to those of one's physical neighbors. In a steady state, the investment decisions of all agents, their aspirations, as well as market wages will be endogenously determined.

There are two key externalities that affect investment decisions and drive the results of the model. One is an economy-wide pecuniary externality, resulting from the dependence of returns to investment on economy-wide investment ratios. The other is a local externality: earnings of residents in local neighborhoods affect investment decisions by influencing parental aspirations. The local externality induces complementarily between investment decisions at the local level, in contrast to the substitutability at the economy-wide level. That is, higher earnings of neighbors increase the incentive to invest, whereas higher investment ratios in the economy lower skill premia and reduce investment incentives. The interaction between the economy-wide externality and the local externality is a distinct feature that differentiates the model presented in this paper from most of the existing literature on segregation.

The authors employ their model to analyze the relationship between persistent geographic inequality and macroeconomic outcomes. First, the authors demonstrate the existence of steady state equilibria in which segregation arises: the interval is partitioned into subintervals in which residents either all invest or all do not. Unsegregated equilibria could also exist. Second, the macroeconomic comparison between segregated and unsegregated equilibria depends on the extent of skill-bias in the production technology. If skill-bias is low and skilled agents form a minority, segregation is associated with a higher economy-wide investment ratio and lower skill premia. The converse is true if skilled agents form a majority.

Finally, the authors compare the welfare effects of different equilibria. They show that whether welfare is higher in segregated or unsegregated equilibria depends on the parents' utility function. For example, segregation is unambiguously welfare-enhancing if skilled agents form a minority and parental utility is enhanced by higher earnings of their neighbors. However, if the earnings of their children also feature in the parents' utility function, the welfare comparison is ambiguous as segregation is associated with greater inequality across neighborhoods.

The Distributive Impact of Reforms in Credit Enforcement: Evidence from Indian Debt Recovery Tribunals

By Ulf von Lilienfeld-Toal, Dilip Mookherjee and Sujata Visaria

Discussion Paper 183

One of the many contexts where views of economists diverge from popular opinion involves bankruptcy law and the enforcement of credit contracts. Laws which weaken the rights of lenders to appropriate secured assets of borrowers when they default are popularly justified on grounds of distributional fairness. Economists, on the other hand, generally believe that weakening lenders' rights adversely affects the functioning of credit markets. If lenders cannot seize collateral when borrowers default, borrowers cannot credibly commit to repay their loans. As a consequence, lending involves a high level of risk, causing lenders to charge high interest rates and thus lowering access to credit for poor borrowers.

The authors address this dichotomy of opinions by providing a general equilibrium model to examine the distributional impact of strengthening credit enforcement. The authors demonstrate that when the supply of credit is inelastic, stronger enforcement of lenders' rights raises interest rates on average, and redistributes the allocation of credit in favor of wealthy borrowers. This supports the popular belief that stronger enforcement hurts poor borrowers, while benefiting lenders and wealthy borrowers. According to their model, the economists' view is correct only when the supply of credit is infinitely elastic.

The general equilibrium (GE) effect can be explained as follows. A reform which increases the likelihood that collateral will be seized upon default improves the credit-worthiness of borrowers, and shifts the incentive-constrained demand function for credit outward. This is termed the partial equilibrium (PE) effect. At the same time, the increased demand for credit increases the equilibrium profit rate earned by lenders, which implies a rise in the cost of credit. This GE effect causes a reduction in credit granted. Since the reform operates on the borrower's collateral, the PE effect is greater for wealthier borrowers, while the GE effect affects all borrowers uniformly. As a result, wealthier borrowers experience larger PE effects, which overwhelm the GE effect, enlarging their access to credit. On the other hand, the poorest borrowers experience an increased cost of credit, and lose access to credit. Thus, if the supply of credit is sufficiently inelastic, the reform in enforcement can result in a redistribution of credit.

The authors then investigate this issue empirically by analyzing the distributive effect of a legal reform in India, where specialized institutions called debt recovery tribunals (DRTs) were set up to reduce delays in debt recovery suits and strengthen the rights of lenders. The authors show that the reform increased credit access for large borrowers, but decreased credit access and raised its cost for small borrowers, consistent with the general equilibrium effects postulated by their theoretical model. Further, the authors systematically explore and reject several competing explanations for these distributional effects of DRTs. They conclude that their hypothesis of GE effects operating through the credit market provides the most convincing explanation of the observed effects.

State-led or Market-led Green Revolution? Role of Private Irrigation Investment vis-a-vis Local Government Programs in West Bengal's Farm Productivity Growth

By Pranab Bardhan, Dilip Mookherjee and Neha Kumar

Discussion Paper 184

Understanding the respective roles of public and private sectors in agricultural development is a key issue for economists and policy makers alike. In particular, are productivity growth and poverty reduction driven primarily by public sector initiatives or private investments? Do public and private sectors operate as complements or substitutes?

This paper addresses these critical questions by examining the "green revolution" in West Bengal, India. West Bengal witnessed a remarkable burst of productivity growth based on diffusion of high yielding varieties (HYV) of rice and increased cropping intensities in the 1980s and 1990s. During this time, the West Bengal government vigorously implemented land reforms, combining tenancy registration and granting land titles to the poor. It also created a system of elected local governments, who were responsible for implementing farm extension and support services. While many economists credit the West Bengal green revolution to these institutional reforms, others point out that this period also witnessed a significant increase in private groundwater investments, which may have spurred productivity growth as well.

The authors present a theoretical model to disentangle the respective roles of land reform, farm extension services, and private irrigation investments in explaining farm productivity growth. They hypothesize that the tenancy registration program increased the demand for groundwater among tenant farms because of reduced sharecropping distortions. This in turn induced sellers of groundwater to invest more in groundwater capacity which involve large fixed costs (tubewells, dugwells and submersible pumps), resulting in a fall in the price of groundwater. Another channel is that registered tenants became eligible for loans from formal credit institutions to invest in groundwater capacity themselves. Consequently, there was a significant fall in cost of groundwater for all farms in the village, including non-tenant farms. Since HYV rice varieties have higher groundwater requirements than traditional varieties, the net result was a faster diffusion of HYV rice varieties in the village.

The authors corroborate their hypothesis using a panel dataset of over 700 West Bengal farms drawn randomly from fifteen major agricultural districts in the state, covering the period 1982-95. The dataset is complemented by an independent household survey of the evolution of irrigation status of agricultural land in these villages. Their results suggest that institutional reforms implemented by local government's stimulated private investments in irrigation, which subsequently increased farm productivity. Complementarily between state-led institutional reforms and market-based investment incentives drove a large part of the West Bengal green revolution.

The Quality Of Public Education And Private School Enrollment: An Assessment Using Brazilian Data

By Fernanda Estevan
Discussion Paper 185

How does the quality of public schools affect the demand for private education? While an important policy question, it is also a complex one due to the simultaneity of enrollment and public expenditure decisions – increased enrollment in private schools could lead to a decrease in the political support for public expenditures on education, resulting in a decline in the quality of public schools. The overall effect of a public policy on education thus cannot be correctly assessed without taking into account the changes in private investments made by households.

This paper analyzes the impact of variation in the quality of public schools on the share of private school enrollment using data from Brazil. In order to cope with the simultaneity issue, the author uses the FUNDEF reform in 1998 as a natural experiment. The reform aimed to improve the distribution and use of resources within each state for primary and secondary public education. The reform enabled a fund to be created within each state with 15% of the four major taxes and transfers, which constitutes approximately 60% of all taxes and transfers. The amount collected through the fund was then redistributed to municipalities within each state according to their respective school enrollment numbers in the previous year. Money dispersed from the fund could only be spent on education purposes. Further, 60% of the amount was designated towards teachers' wages or to improve teacher qualifications. Private schools do not receive public funds and were therefore not directly affected by the FUNDEF reform. Since the reform was defined by the federal government and was implemented uniformly across the country, the author argues that its impact can be considered exogenous at the municipality level.

Using data from the Brazilian School Census, the author finds that municipalities that received a positive influx of funds from the reform saw an immediate reduction in the share of private enrollment in the first grade of primary school, which the author interprets as evidence of a crowding out effect. The same effect is not observed for the subsequent grades. The author hypothesizes the reason for this is because parents are reluctant to switch their children to another school once they have begun their schooling track. The results are robust to variations in school enrollment and the income distribution. Further, the author shows that the FUNDEF reform improved several quality indicators at the school level, such as class size, teacher qualifications, and infrastructure. Using the financial impact of the FUNDEF reform as an instrument, she shows that these quality improvements may explain the decrease in the share of private primary enrollment. Finally, she demonstrates that the improvements in quality also led to an increase in the net enrollment rate.

The Relation between Temporary Employment and Firm Ownership Nationality: Evidence from Spain

By Alejandra A. Traferri
Discussion Paper 186

The share of temporary workers in Spain rose from 15.6% in 1987 to 33.7% in 1994. This increase raised concern among policy makers because of the potential negative effects of temporary employment on efficiency and equality. The co-existence of permanent and temporary contracts creates a segmented labor market, which may generate lower investment in human capital, unequal duration of unemployment, lower mobility and higher wage dispersion. In order to reduce the share of temporary employment, the Spanish government enacted a series of legislative reforms in 1994, 1997 and 2001, which reduced the hiring and dismissal costs of permanent workers and restricted the use of fixed-term contracts. Despite these reforms, the share of temporary employment kept above 30% from 1994 to 2007. The reasons behind the high share of temporary employment in Spain have not been studied in depth and remain unclear.

In this paper, the author attempts to shed light on the puzzle by examining the Spanish manufacturing sector. In particular, she considers the channel of firm nationality on the share of temporary employees. Using a representative panel of 4,050 Spanish manufacturing firms from the Survey of Managerial Strategies for the period 1991 to 2005, the author first points out a striking fact: the share of temporary workers in domestic firms is 9 percentage points higher than in foreign firms, where a firm is considered foreign if its proportion of foreign capital in a given year is larger than 50%. Next, she estimates censored Tobit and Heckman selection models to demonstrate a significant relationship between the proportion of foreign capital and the share of temporary contracts offered by a firm, even after controlling for a wide range of observable and unobservable time-invariant firm characteristics. The author finds that an increase of 50 percentage points in the proportion of foreign capital leads to an average decrease of 2.36 to 3.11 percentage points in the share of temporary workers, depending on the estimated models. This effect is larger for medium firms and smaller for large firms, and is robust to the estimation of several alternative specifications.

The author hypothesizes that this firm nationality effect may be related to firm characteristics unobserved by the econometrician, such as the degree of risk aversion, the intertemporal discount rate or the time horizon used in the decision making process, which are in turn affected by the culture of the home country. It may also be the case that foreign firms receive directives from parent firms in the home country concerning the hiring and training of workers. Another reason may be that relative to smaller domestic firms, foreign firms have higher bargaining power and can therefore negotiate more favorable terms of permanent contracts with the government or unions of the host country, leading to a higher share of permanent contracts in foreign firms.

Markets and Jungles

By Thomas Gall and Paolo Masella
Discussion Paper 187

The quality of institutions is widely acknowledged as a prime determinant of economic growth and development, and is thus a topic of focus for many economists. Much of the existing literature on the topic explicitly models particular institutions, such as the nature of legal or political systems. However, the correct set of institutions to be included in a model is not obvious. In addition, there may be complex interactions between different institutions that are difficult to capture in a model.

This paper therefore departs from the usual approach of modeling specific institutions. Instead, the authors present a novel dynamic model of overlapping generations where a single condition on the primitives determines whether an economy supports market allocations. Their model features agents who differ in land holdings, skill, and power. Skill refers to the individual productivity with land, and power to the extent to which individuals contribute to the determination of particular land assignments. Power may also be interpreted as physical power, wealth, or status.

The main economic concern of the model is whether land is assigned to the skilled, which maximizes surplus, or to the powerful. In particular, the authors examine whether the assignment of land will be based on a market for spot contracts or occur through coalitional expropriation, given an initial endowment distribution of power and land. On a spot market, agents can contract on exchanges of land for labor, so that a competitive equilibrium allocation of land and labor is reached. On the other hand, land may be assigned by coalitional expropriation which may reach any redistribution of the land endowment among agents.

The model generates a rich set of outcomes despite its simplicity. The authors find that among coalitional expropriations, the one assigning all land to the most powerful agents in the economy dominates all others. Stability of competitive markets in a given period is favored by more equal power endowment distributions, and implied by sufficient congruence of land and power. In the long run, two distinct patterns can emerge. The first is sustainable markets, when spot markets for land are stable in every period. The second is a limit cycle, when stable markets alternate with unstable markets in regular intervals. Under limit cycles efficient assignment of land on markets contains the seed of its own undoing; the resulting redistribution of power enables coalitional expropriation in the next period. Limit cycles permit both persistent elites and social mobility depending on the distribution of rents through the market. More equal initial period power distributions increase the strength of market supporters and facilitate stability of markets. This in turn leads to higher and less volatile output. Likewise, less mismatch between supply and demand in the land market favors sustainable markets.The results are robust

Dynamic Effects of Foreign Direct Investment When Credit Markets are Imperfect

By Thomas Gall, Marc Schiffbauer and Julia Kubny

Discussion Paper 188

In economies with severe credit market imperfections, foreign direct investment may enable the undertaking of profitable projects that otherwise would not have been implemented. Foreign direct investment could also lead to technological or human capital spillovers from foreign to domestic firms, thus boosting domestic growth.

The authors of this paper, however, argue that higher exposure foreign direct investment may come at the cost of increased vulnerability to financial crises.

To examine this issue, the authors develop a theoretical dynamic occupational choice model. Firms differ in their ease of access to capital depending on whether the owner is domestic or foreign. Production is stochastic, so that debt financed domestic firms default with positive probability and pay high success wages. Setting up a firm requires an indivisible investment, and collateral is required to obtain a loan. This leads to a pecuniary intergenerational externality: success wages in domestic firms are high enough to provide employees' offspring with enough endowment to become entrepreneurs despite credit market frictions. Hence, the riskier wage profile in domestic firms implies social mobility and ensures a sustainable stock of future potential domestic entrepreneurs. This in turn provides a de facto insurance against systemic shocks that lead to sudden withdrawal of foreign capital from the domestic economy, as domestic entrepreneurs are needed to overcome the credit rationing due to credit market imperfections. By contrast, since wage profiles in foreign firms are less risky, they may fail to enable workers' offspring to be potential entrepreneurs in the next period. Thus, the model predicts that a higher stock of domestic entrepreneurs, corresponding to lower past exposure to foreign direct investment, increases growth after withdrawal and reduces the time to output recovery.

The authors support their hypothesis with data from several sources. First, using data from the World Bank Enterprise Survey for 27 countries from 2004, they show that while foreign ownership of a firm is indeed correlated with an overall wage premium, the top wages in foreign firms tend to be lower than in domestic firms. They also find evidence that the wage variation across domestic firms is higher relative to foreign owned firms. The authors then empirically test their model using data from 30 systemic sudden stop episodes in 20 countries between 1980 and 2000. In particular, the model predicts that past foreign capital inflows have an adverse effect on the duration of recovery, and that the negative effect declines with the degree of domestic financial development. The authors estimate a generalized negative binomial regression model to examine the duration in years until output has returned to its pre-crises level, using the strength of creditor rights as a measure of financial development. Their results indicate that past foreign direct investment significantly prolongs the duration until a full output recovery only in countries where creditor rights protection is weak, which is consistent with the model's prediction.

Mis-match, Re-match, and Investment

By Thomas Gall, Patrick Legros, Andrew F. Newman

Discussion Paper 189

Does the market allow people to efficiently "match" to a socially desirable outcome? There are many reasons to suspect that it does not: search frictions, externalities, and statistical discrimination are all possible sources of matching market failure, which can in turn lead to inefficient levels of output and investment, as well as undesirable degrees of inequality. Policy remedies to counter matching market failure may include *associational redistribution* – re-matching individuals into other partnerships via affirmative action or school integration.

In this paper, the authors present a framework to analyze the policy implications of associational redistribution on matching patterns and investment incentives. In particular, the authors emphasize the role of one source of inefficient stable matching: non-transferable utility within matches, i.e., agents cannot "transfer" utility to one another through non-distortionary side payments. Their set-up features agents who have a binary background type reflecting whether they are privileged or not. Privilege confers a productivity benefit, either in terms of (increased) labor market output or (reduced) education cost. Agents can affect their labor market productivity by investing in education, which determines the probability of becoming a high achievement type. In the labor market, agents match into firms whose output depends on members' achievement and background. The production technology is such that diversity within firms is more productive. As a result of non-transferability, the labor market segregates in educational achievement and background. Thus, the *laissez-faire* equilibrium outcome is inefficient from an aggregate surplus perspective. There is likely to be overinvestment at the top and underinvestment at the bottom: the underprivileged find investing to be too costly or un-remunerative, while the privileged receive inefficiently high rewards in the labor market.

The authors subsequently employ their model to evaluate several associational redistribution policies. Conditioning labor market re-matching on observable information not subject to individual choice, such as background, appears beneficial when it is linked to education outcome. Early stage, e.g. school stage, intervention does not distort incentives and provides benefits when integrating schools is cost efficient. In that sense, early stage policies are more effective than later stage policies. At the same time, earlier and later stage policies are interdependent. School integration makes background-based labor market policies redundant. Achievement-based policy, which when used alone is beneficial, may now be harmful, since its investment-discouraging effect is spread across a larger population. Optimal policies depend on distributional characteristics of the economy. For instance, if privileged agents are scarce, a background-based policy dominates an achievement-based policy. This does not hold for economies where the privileged abound, suggesting that the use of achievement-based policies should be restricted to developed economies. Finally, the authors identify a labor market policy that appears promising in terms of trading off incentive provision and efficient sorting: a club-based policy re-matches the labor market conditioning on individual school choices. The authors find that this policy yields some integration both on the labor market and at school while inducing higher investments than other policies.

New IED Initiatives During 2008-2009

The NEUDC (Northeastern Universities Development Consortium) Conference was hosted by IED on November 8th and 9th, 2008. This consortium is considered to be one of the premier conferences in development economics in the world. The conference highlighted 158 papers presented by their authors and featured 30 posters. Over 350 student, faculty and economists from all over the world participated.

IED worked in collaboration with the Computer Science Department at the College of Arts and Sciences to organize a joint seminar on technology and development.

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 also funded five PhD students who were invited to participate in the 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.

Alumni Program

A New Alumni Program is in the process of being developed to offer alumni the opportunity to re-connect with past and present students and faculty. This committee is made up of alumni, faculty, current students and staff. The committee is in the first stages of creating different types of events such as social get-togethers, conferences designed to feature alumni as speakers or presenters on various topics of research that current students are interested in. IED will be hosting at least two of these types of event in the coming year. Ideas and suggestions for such activities will be very welcome.

Alumni are strongly encouraged to contact Ashley Seamans at aseamans@bu.edu to ensure they are on the mailing and invitation lists for these events.

PhD Students: Completed Dissertations and Placement

The following students obtained starting assistant professor positions:

Nicola Borri
Libera Università Internazionale Degli Studi Sociali (Rome, Italy)
Moira Daly
University of Copenhagen, Business School (Denmark)
Pinar Derin-Gure
Middle East Technical University (Ankara, Turkey)
Shu Feng
Clark University School of Management
Yang Lu
Max Weber fellowship at European University Institute (Florence, Italy); and Hong Kong University of Science and Technology
Michelle Miller
Rutgers Business School
Antonio Miralles
Unversitat Autonoma de Barcelona (Spain)
Alberto Ortiz
Oberlin College; Francesco Russo, post-doctoral fellowship at Centre for Studies in Economics and Finance (University of Naples, Italy)
Jeongmeen Suh
Korea Institute for International Economic Policy
Toru Suzuki
Max Planck Institute (Germany)
Yohei Yamamoto
University of Alberta School of Business.

The following students obtained starting professional research consultant/young economist positions:

Calixte Ahokpossi
International Monetary Fund
Rodrigo Alfaro
Bank of Chile
Jessica Calfee Stahl
Fed Board of Governors
Gerardo Gomez Ruano
Banco de Mexico
Andre Martinez
Banco de Mexico
Valentina Michelangeli
Congressional Budget Office
Ben Tomlin
Bank of Canada (Ottawa)

Faculty Research in Progress 2009

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's classic book Internal Labor Markets with Michael Piore will be published in a Japanese edition by Waseda University, following on a Spanish edition and a partial translation in Italian. He is completing a book on fashion innovation, market power, and hierarchies and networks in the apparel industry, based on enterprise surveys in the United States, France, Italy, and the UK. A paper based upon this research, *Hierarchical Networks and Innovation Failures: Why the New York Garment District Doesn't Imitate Italy*, was presented at the 4th International Industrial Organization Conference. He also wrote two entries, *Noncompeting Groups and The Fishing Industry* (with David Terkla) for the new edition of the Encyclopedia of the Social Sciences. His article, *Can Fast Fashion Save the U.S. Apparel Industry?* (with Sarah Crean) was published in the *Socioeconomic Review*. Professor Doeringer has also been serving as Associate Dean for Faculty in the College of Arts and Sciences.

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 was recently chosen to be President-Elect of the American Society of Health Economists (ASHE). His research on risk adjustment and predictive modeling resulted in payment models that are being used in Germany since the beginning of 2009, and are being evaluated in the UK and Chile. During the past year Ellis has given talks in Germany and Colombia. He is currently collaborating with researchers in Australia, Canada, Germany, and Spain, as well as with multiple graduate students at BU on US and developing country topics.

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. A portion of that research has considered settings, in which discretionary policy enhances complementarities in economies, thus leading to multiple equilibria with some equilibria much worse than others. An initial example, Monetary Discretion, Pricing Complementarily and Dynamic Multiple Equilibria concerns monetary policy (Quarterly Journal of Economics, November 2004). A very different example, Discretionary Policy and Multiple Equilibria involves the interaction of a government which must decide whether to build flood protection systems such as dams and levies (Federal Reserve Bank of Richmond Economic Quarterly, Winter 2006). In future work, he plans to study examples in which discretionary policy can lead to development traps. Another related component of his research concerns the question of how macroeconomic policy credibility evolves over time. In joint work with two BU PhD students, Yang Lu and Ernesto Pasten, he develops a framework for studying the behavior of a central bank "Managing Expectations" about its future policy stance.

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. At present he is collaborating on two main projects on international migration. One is a World Bank study of a potential transition to free labor movement among the Western Balkan countries. The other is a household survey of migration in Fiji, sponsored by the Institute for Public Policy Research in London and the Global Development Network in Delhi. Prior work with this group has led to a forthcoming volume that Lucas has edited with T.N. Srinivasan and Lyn Squire. Work with the ILO on international migration resulted in an ILO Working Paper on integrating migration into development planning and a paper forthcoming in an ILO volume. 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.

Robert Margo has been on leave this year as a Visiting Scholar at the Russell Sage Foundation in New York City. At Russell Sage Margo has worked primarily on a book with William Collins (Vanderbilt) examining long-run trends in racial differences in home ownership in the United States. A paper with Leah Boustan (UCLA) using racial differences in employment in the US postal service to shed light on *spatial mismatch* was published in the *Journal of Urban Economics*. A second paper with Boustan re-examining an old question in urban economics – the relationship between employment and residential location – will be published in Brookings-Wharton Papers in Urban Affairs. With Jeremy Atack (Vanderbilt), Fred Bateman (Georgia) and Michael Haines (Colgate) Margo began a new project using GIS techniques to chart the nineteenth century transportation revolution in the United States at the county level and to relate improvements in transportation access to manufacturing and urban growth. In September 2009 Margo will become Chair of the BU economics department.

Jianjun Miao continues to work on the topic of the economic effects of dividend taxation with Francois Gourio. He is working on two new projects. The first project analyzes the dynamic effects of temporary and permanent dividend tax cuts on corporate investment and financing decisions in a partial equilibrium model. The second project analyzes the transitional effects of dividend taxation on firms' entry, growth and exit in a general equilibrium framework. These two projects have policy implications for the dividend tax reform enacted in 2003 by the Bush government. Jianjun Miao is also working on two other projects. One project joint with Nengjiu Ju addresses the question as to how ambiguity aversion influences asset returns. He applies the smooth ambiguity model recently developed by Klibanoff, Marinacci and Mukerjee (2005). The other project joint with Rui Albuquerque studies how advance information affects asset prices. Rui and Miao show that in a heterogeneous-agent model when informed agents have advance information about a company's future earnings innovations, this advance information helps explain both momentum and reversals effects.

Dilip Mookherjee has been working on a variety of theoretical and empirical topics related to development economics. The former include inequality, mobility and segregation (with Debraj Ray and Stefan Napel), fertility and development (with Debraj Ray and Silvia Prina), bankruptcy law and bonded labor law (with Ulf Lilienfeld), and middlemen margins and globalization (with Pranab Bardhan and Masatoshi Tsumagari). The empirical research projects include land reform and local governance in West Bengal (with Pranab Bardhan), potato marketing and credit enforcement reforms in India (with Sujata Visaria and Ulf Lilienfeld).

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.

Adrien Verdelhan's research focuses on measures of aggregate risk in financial markets. During the 2008/9 academic year, Adrien has produced two new papers. The first structurally estimates the compensation for disaster risk embedded in currency markets. The second paper estimates the compensation for default risk in sovereign spreads, leading to a new model of optimal default and borrowing decisions when lenders and borrowers are risk-averse.

Sujata Visaria is continuing to work on a number of empirical projects related to economic development. In a forthcoming paper in the American Economic Review (Papers and Proceedings) she and her co-authors study the link between incomplete property rights and religious riots at the neighborhood level in the city of Ahmedabad, India. Continuing work in this project will examine the longer-run effects of religious violence, specifically on residential segregation and health outcomes. Her experimental research (joint with Dilip Mookherjee, Sandip Mitra and Maximo Torero) on information and credit constraints to the marketing of agricultural produce in West Bengal, India has now entered the third year of data collection. Data from the first two years are currently being analyzed. In addition, she is collaborating with Ulf von Lilienfeld-Toal and Dilip Mookherjee to examine the general equilibrium effects of improved credit contract enforcement. Sujata is leaving Boston University to take up a faculty position at Hong Kong University of Science & Technology.continuing his collaborative work with Sari Pekkala Kerr, a former IED visitor, on inter-generational mobility in Finland. Following on their 2007 paper on this topic, Lucas and Kerr completed a fresh paper that examines the role of family budget constraints versus inherited earning capacity, family size and the aging process, in shaping children's life-time earnings. This paper is now under review.

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 2008

October 6 **Paola Conconi** (Universit´e Libre de Bruxelles (ECARES) and CEPR) Maurizio Zanardi

October 14 **Gordon Hanson** (University of California San Diego)

October 20 **Robert Townsend** (Massachusetts Institute of Technology) *Enterprise Dynamics and Finance: Distinguishing Mechanism Design from Exogenously Incomplete Markets Models, with Alexander Karaivanovr, Simon Fraser University*

October 27 **Nathan Nunn** (Harvard University) *The Trans-Atlantic Slave Trade and the Evolution of Mistrust in Africa*

November 3 **Omer Moav** (Hebrew University of Jerusalem, Royal Holloway University of London) *Conspicuous Consumption, Human Capital, and Poverty with Zvika Neeman*

November 17 **Andy Newman** (Boston University) *Trade Liberalization and Organizational Change Joint with Paola Conconi and Patrick Legros*

November 24 **Vijayendra Rao** (Development Research Group, The World Bank) *Is Deliberation Equitable? Evidence from Transcripts of Village Meetings in South India. Joint with Radu Ban*

December 1 **Aparajita Goyal** (Development Research Group, The World Bank) *Information Technology and Rural Market Performance in Central India with Nathan Nunn, Harvard University*

December 8 **Nancy Qian** (Brown University on leave at Harvard University) *Columbus's Contribution to World Population and Urbanization: A Natural Experiment Examining the Introduction of Potatoes with Nathan Nunn*

SPRING 2009

March 2 **Andy Newman** (Boston University) *Loopholes: Social Learning and the Evolution of Contract Form joint with Philippe Jehiel*

March 16 **Thomas Gall** (visiting from University of Bonn) *"Dynamic Effects of Foreign Direct Investment When Credit Markets are Imperfect" joint with Julia Kubny and Marc Schiffbauer*

March 23 **Raquel Fernández** (NYU) *"Women's Rights: Fertility, Selfish Husbands, and Altruistic Fathers"*

March 30 **Asim Ijaz Khwaja** (Harvard University) *"Report Cards: The Impact of Providing School and Child Test Scores on Educational Markets"*

April 6 **Xavier Gine** (The World Bank) *"Barriers to Household Risk Management: Evidence from India"*

April 23 **Hanming Fang** (Duke University) *"Does Affirmative Action Lead to Mismatch? A New Test and Evidence"*

April 27 **Jean-Philippe Platteau** (University of Namur) *"Transformation of the Family under Rising Land Pressure: A Theoretical Essay"*

May 4 Joint with Microeconomics **Mathias Dewatripont** (Universite Libre de Bruxelles (ECARES) and MIT) *"Rational Crowd-Pleasing and Democratic Accountability" joint with Paul Seabright (Toulouse School of Economics)*

Visiting Scholars 2009

James Rebitzer, Professor at Case's Weatherhead School of Management, visited September 15th through the 19th. He gave 2 lectures and one seminar on labor /public economics.

Gordon Hanson, Professor at UCSD and Director of the Center on Pacific Economics, visited from October 13th through the 17th. He gave two lectures and one joint seminar on international/development economics.

Stephen Morris, Professor at Princeton University, visited January 26th through the 30th. He gave two lectures and one seminar on microeconomic theory.

Hanno Lustig, Professor at UCLA Anderson School of Management, visited March 17th through the 20th. He gave two lectures and one seminar on macroeconomics.

Fernando Alvarez, Professor at University of Chicago, visited March 25th through the 27th. He gave two lectures and one seminar on macroeconomics.

Michael Jansson, Professor at UC Berkeley, visited on April 13th through the 17th. He gave two lectures and one seminar on econometrics.

Hanming Fang, Professor at Duke University, visited on April 20th through the 24th. He gave two lectures and one seminar on industrial economics.

IED Research Visitors

Thomas Gall, Professor at the University of Bonn, Germany is visiting for a period of one year. Professor Gall is collaborating with Andrew Newman along with colleague Patrick Legros from the University of Libre Bruxelles. Jointly, they will be working on "Mis-match, Re-match, and Investment". Professor Gall has traveled to the University of Pennsylvania and the University of California to disseminate this research.

Fernanda Estevan Goncalves is a 4th year graduate student from the Catholic University of Louvain, Belguim. Fernanda is visiting for 6 months; her field is micro-econometrics with a broad interest in education with topics related to public and development economics. Fernanda is lecturing part time at Tufts University.

Patrick Legros, Professor of the Universite Libre de Bruxelles, Belgium, is a long time collaborator of BU Professor Andrew Newman, an applied theorist interested in industrial organization and the theory of the firm. Among the projects worked on during this period is a book on the economic theory of assortative matching. In addition, Professor Legros and Newman worked on a number of ongoing research projects during his stay, including one with Thomas Gall, on human capital investment in the presence of matching distortions.

Alejandra Traferri is a 4th year graduate student from the University of Madrid, Spain. Alejandra is here for six months, working in the field of micro-econometrics. Her research interests include bias correction methods in non-linear models with multiple fixed effects, with application to labor markets in Spain.

2009 Rosenstein-Rodan Prize Winners 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' winners **Shinsuke Tamala** and **Marian Vidal-Fernandez** will share the $1500 prize.

Access to Health Infrastructure and Child Health Development: Evidence from Post-Apartheid South Africa

Shinsuke Tamala

This paper studies the effect of increased access to health infrastructure following the dismantling of apartheid in 1994, on health status of children and subsequent effects on school enrollment.

AND

Inter-temporal Substitution, Weekly Target Earnings or Both? Evidence from Daily Labor Supply of Southern Indian Fisherman

Marian Vidal-Fernandez

This paper uses daily data on participation of fishermen, along with their daily catch, to test hypotheses concerning their labor supply and its determinants.

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