RESEARCH STATEMENT

Nidhiya Menon
Department of Economics & IBS, Brandeis University
www.brandeis.edu/~nmenon
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My primary research interest is the behavior of individuals, households, and firms, in developing economies. Within this area, I have made contributions to three sub-topics – microfinance and credit, labor and occupational choice, and program evaluation. My research program in these areas has included both theoretical and empirical work. Below I begin by providing a brief overview of the general research interests that motivate my work in each of these sub-fields. Detailed descriptions follow.

The overall objective of my research in microfinance and credit is to examine the long-term benefits of participation in these programs. This is an important question as such organizations have been in operation for quite a few years, and there is anecdotal evidence that benefits of membership differ with length of participation. To address this, I have studied the ability of participants to smooth inter-seasonal consumption fluctuations and determined whether this ability differs between more and less experienced members. I have also considered group-level interdependencies as they develop with length of membership, as well as their implications for repayment outcomes.

My contributions in the sub-field of labor and occupational choice were motivated by the long recognized fact that aspects of the broader economic environment may influence the success of microfinance programs. One question concerns the effect of such organizations in alleviating poverty across countries with different rates of economic growth. This led to my interest in the micro-implications of macro-rules that may influence the on-the-ground realities within which microfinance operates. One such on-the-ground reality in developing countries is economic stagnation, and one relatively unexplored factor that may contribute to such stagnation is reduced domestic and foreign investment due to stringent (domestic) labor laws and regulation. Although the effect of regulations on investment is well-researched in the developed world, there is a relative lack of evidence for less developed countries, where such concerns may be even more warranted. In my work on this topic, I address the link between domestic regulation and new investment in a developing country.

The second issue I have considered in the area of labor and occupational choice is employment choices at the individual and household levels, and whether these choices are tempered by learning motives (learning is faster if there is little diversification in occupational choice) and the need to diversify occupations in order to mitigate risk. This research arose as an indirect extension of my work in microfinance, where the choice of projects (and underlying labor supply decisions) undertaken with micro-loans was an aspect that piqued my interest. Group members may choose similar projects so that they can learn from each other’s experience and thus be individually more profitable in the long run. However, choosing similar projects reduces the group’s ability to insure members against aggregate, type-specific shocks. While learning and diversification have previously been considered separately; my research combines the two in an analysis of project/occupational choice.

The motivation for my work in the area of program evaluation arose from the relative deficiencies of the fixed-effects approach, used in some of the empirical work described above. Although the fixed-effects technique corrects for the presence of time-invariant unobservables, it is expensive...
in number of parameters and requires panel data, which are often unavailable and/or expensive to collect. In collaborative work, I develop a new technique for evaluating programs when program placement is endogenous. This work proposes an instrumental-variables method where exclusion restrictions are defined by relative spatial location.

Below, I describe my research in greater detail, divided by topic.

I. Microfinance and Credit
Research in the area of microfinance is voluminous. Most of it has focused on the role of peer monitoring and joint-liability lending in aligning incentives and in reducing default rates, or on the benefits of participation in such programs for new and current members. There has been little analysis of whether benefits differ for members who have been participants for a long period relative to more recent members. Given that microfinance is no longer a new phenomenon, such a consideration is important. Experienced members, who are relatively more prosperous and secure, may face different incentives than less experienced participants who have recently joined. A difference in membership benefits may be key in explaining why experienced members are more likely to default on loans, as has been noted anecdotally. I address this question in “Long Term Benefits of Membership in Microfinance Programs”, published in 2006 in the Journal of International Development [7]. This study finds that an aggregate measure of membership benefits reaches an optimum within a few years of participation. Thus members who have been in the program for a long period of time experience little incremental gains in this measure, once length of membership exceeds the cut-off at which optimum is reached. Benefits to participation may change with length of membership for several reasons. By virtue of membership in these programs, experienced members have accumulated assets, which may be used in a precautionary role. Accumulated assets and savings may also be used as collateral to obtain loans from other sources. Moreover, membership in a credit program leads to the formation of a “reputation” for experienced clients; experienced members can signal their ability to be good credit risks for other lenders in the market. Where the ability to smooth household consumption across seasons represents an aggregate measure of benefits, I employ the Euler equation approach and information on three micro-credit organizations from Bangladesh to demonstrate that this benefit varies with length of membership. Specifically, experienced participants are better equipped to reduce per capita consumption fluctuations across seasons on their own. Since the participants in the programs I study are predominantly women, results are stratified by gender. I find that for a female participant, one year of membership reduces the percentage change in per capita consumption (caused by a unit shock) by about 6%. In order to gauge the welfare implications of this result, I undertake “willingness to pay” exercises, where the amount an individual (of a given membership length) is willing to pay to smooth consumption (eliminate uncertainty) across her lifetime is considered. This is the “certainty equivalent”. Simulation results confirm an inverse relationship between the length of membership and the “certainty equivalent” of a participant.

My second paper in this line of research on the long-term implications of membership, “Non-Linearities in Returns to Participation in Grameen Bank Programs”, published in 2006 in the Journal of Development Studies [8], explicitly models a threshold beyond which participatory benefits begin to decline over time for experienced members. Using data from one of the best-known microfinance organizations, a fixed effects non-linear least squares estimation reveals that returns to participation, as measured by the ability to smooth seasonal shocks, begin to decline after approximately two years of membership. Thus, the ability to smooth inter-seasonal consumption fluctuations as a function of length of membership does not increase indefinitely. Although this study does not directly link repayment rates to length of membership and the ability to smooth seasonal shocks, declining consumption-smoothing returns may provide a plausible explanation why experienced members are more likely to miss installments on outstanding loans,
as noted anecdotally. Taken together with the results of the first paper, these findings have important implications for policy. In particular, to avoid strategic behavior over time, the lending and repayment terms for experienced members may need to differ from those for less experienced members. Eligibility to join these programs (wealth status) and to remain a participant may need to be re-evaluated at regular intervals, instead of just at the beginning as is now the practice. Although such policies may change incentives from the very beginning, recognition that the nature of participants changes over time can assist in making microfinance organizations more cost-effective.

My third paper in this sub-field, “Inter-dependencies in Micro-Credit Groups: Evidence from Repayment Data”, published in the Journal of Developing Areas [6], studies mutual dependence in repayment behavior at the group level. Such dependence is a measure of group cohesion, and it is interpreted as evidence for the existence of inter-connectedness among members at the group level. This paper is unique in interpreting interactions in repayment outcomes as proxy measures of mutual dependence within groups. This analysis demonstrates that individual repayment outcomes are significantly influenced by own lagged repayment behavior, and by averages of lagged repayment behaviors for the remaining members of a group. Simulation exercises of own and cross effects provide further support for the strong inter-dependencies documented in the data.

Among poor households in developing countries, decisions regarding children's schooling involve a trade-off between the immediate gains to be made from having the child work for a wage against the future benefits of investing in the child's education. For a household on the edge of subsistence, the optimal choice is all too often to have the child work rather than to study in school. In this context, access to credit enables a household to transfer consumption across time and gives it more flexibility in the child labor-schooling decision. Thus, it is generally assumed that credit has a positive effect on children's schooling (and a negative effect on child labor). However, as in the case of microfinance organizations, credit may be obtained for production purposes as well as for consumption reasons. I apply this fact to the phenomenon of child labor in developing countries in my fourth paper in this field (“Investment Credit and Child Labor”, forthcoming in Applied Economics [2]). This research demonstrates that because production credit increases the marginal product of labor, it may not increase the probability of school attendance of children employed in the home non-farm enterprise. This is because an increase in the marginal product of labor increases the opportunity cost of school attendance. The results of this study have important policy implications since they suggest that improving access to credit may not, by itself, constitute a solution to the problem of child labor in developing countries.

II. Labor and Occupational Choice

My interest in microfinance led to two further categories of research questions. It is widely believed that the broader macro-environment plays an important role in the success of microfinance. This observation motivated my interest in the first category of research questions that deals with the micro-implications of macro-rules. Under this first category, I have two studies that evaluate the influence of economy-wide factors on firms and individuals. The first study considers a question not previously analyzed in the literature - how do factors such as labor laws and regulations affect new firm investments and thus income and prosperity? More particularly, in developing countries such as India, where regional authorities determine such laws and regulations, is there a difference in region-wide levels of new domestic and foreign investment? The other study on the micro-effects of aggregate rules investigates what happened to pay patterns by gender in India after the 1991 liberalization.
The second category of research questions arose from an interest in the determinants of project choice by group members. Learning considerations imply that choosing similar projects would help in making groups more successful; however, the need to co-insure would indicate that diversifying projects would be more prudent. I frame this issue more broadly and consider the effects of learning and diversification in determining the choice of occupations in developing countries.

I begin a description of my work in the sub-field of labor and occupational choice by providing details on studies in the first category of research questions (micro-implications of macro-rules) outlined above. Descriptions of studies in the second category (learning and diversification) follow.

In the context of developed economies, there is a large literature on the effect of regulation on a firm’s location and investment decisions. However, there is a relative paucity of research on this topic for the developing world (Aghion et al. (2005) and Besley and Burgess (2004) are a few of the studies in this area – but they consider effects on industrial and economic performance in general). Paroma Sanyal and I address this gap by analyzing how labor conditions across the states of India affect firm location incentives at the micro level. This analysis, “Labor Disputes and the Economics of Firm Geography: A Study of Domestic Investment in India”, was published in Economic Development and Cultural Change in 2005 [9]. This study demonstrates that regions of India characterized by a “pro-worker” stance (as measured by labor market conditions that favor workers) suffer from a lack of new domestic investments. The specific labor conditions considered are the rights of workers to unionize, mechanisms to resolve disputes, and policies on strikes and lockouts. Using panel data and a fixed effects methodology that controls for state-specific unobservables, we find significant evidence that state-level measures of labor conflict such as number of lockouts, percentage of unionized workers, and number of man-days lost in disputes resulting in work stoppages have a strong negative impact on new domestic investment. The results are robust to the inclusion of variables such as a Gini inequality measure, input costs, indicators of state infrastructure, institutional labor legislation measures, and project characteristics. Disaggregation by industrial classification demonstrates that although labor disputes continue to exert negative effects, location choices of new domestic investment are also conditioned on factors such as proximity to raw materials and minerals. These results indicate that domestic labor laws are crucial to determining the level of new investment. By reducing new investment, stringent labor laws may retard economic growth and progress. Thus, in a survey of factors critical for development, labor laws are an important component that needs to be taken into account.

If domestic investment is sensitive to labor laws and regulations, it is likely that investment from overseas is even more so. Given their lack of knowledge of practical realities and the relatively large costs of locating in India (exit barriers, lack of adequate infrastructure, and so on), foreign firms will tend to avoid states with a pro-worker bias (as signaled by a large number of labor conflicts) because such a bias may translate into higher production costs and lower profits. Sanyal and I document this fact in “Labor Conflict and Foreign Investments: An Analysis of FDI in India”, published in 2007 in the Review of Development Economics [5]. This research investigates how labor conflicts, credit constraints, and indicators of a state’s economic health influenced the location decisions of foreign firms in India from 1996 to 2000. Accounting for the possible endogeneity of labor conflict variables in modeling the location decisions of foreign firms, this study finds that labor unrest has a strong negative impact on foreign investment. Our empirical technique also allows us to confirm that measures of labor conflict are endogenous in an analysis of FDI location in India. We find that state-level heterogeneity measures are
significantly correlated with the labor conflict variable, that is, states may manipulate labor laws (and thus, affect labor disputes) to influence foreign investment.

These two studies indicate that states marked by labor conflict suffer from low levels of new investments and may thus experience slow economic growth. These are exactly the conditions in which child labor flourishes. I address the link between labor laws and child work in “The Relationship between Labor Unionization and the Number of Working Children in India”, published in 2007 in the Indian Economic Journal [4]. This study presents empirical evidence that the unionization of labor directly increases the total number of working children in a state of India. This may occur because “unionized” states have a higher incidence of labor unrest, which leads to disruptions in household earnings. Poor households in such states thus need to rely on their children’s labor to supplement family income and consumption. The strong positive association between state-level measures of unionization and child work is robust to the inclusion of input costs, literacy and enrollment in primary school, credit availability, and unemployment rates. Given the debate on child labor and appropriate methods to eradicate it, the results of this research indicate that labor laws are another dimension that need to be taken into consideration.

The three studies described immediately above analyze the implications of economy-wide factors on firm and household behavior. Next, I discuss my second set of papers in the sub-field of labor and occupational choice. These papers deal with the role of learning and risk in determining the choice of livelihoods in developing countries. In particular, given the occupation of the household head (often, self-employment in agriculture), learning incentives imply that other household members should be similarly employed. However, given the possibility of large aggregate shocks (for example, the uncertainty of rainfall), insurance motives imply that there should be diversification in occupational choices at the household level. Previous literature has considered each of these in isolation; in collaborative work with NarayanSubramanian, I analyze what happens when the goal of exploiting learning spillovers competes with insurance considerations. We find that the optimal choice of projects for an agent maximizing discounted expected utility depends on the relative consequences of learning and type-specific risk. In “Learning, Diversification, and the Nature of Risk”, published in 2008 in Economic Theory [3], we formulate the problem as follows: a risk-averse agent must choose two projects for investment. There are two types of projects, and the agent may choose to focus by investing in two projects of the same type, or to diversify by investing in two projects of two different types. In the beginning, there is some uncertainty about an underlying parameter of the technology for each type of project; over time, through experience, the agent learns this parameter. There are two kinds of risks in the economy – type-specific risk that results from a shock common to all projects of the same type; and idiosyncratic risk that results from a shock that varies from project to project. Focusing on the same type of project makes total output more susceptible to the type-specific risk in each period. However, it also enables faster learning-by-doing, since each period’s outcomes provide two experimental data points rather than one. This implies that while focus imposes higher risks in the initial stages of the projects, it may lead to lower risks in subsequent periods. Thus, for an agent maximizing discounted expected utility over the life of the projects, the optimal project choice will depend on the relative importance of type-specific risk and learning. In prior work, the analysis on the learning side has mainly tackled issues such as when to switch to a new technology based on relative profitability, and the analysis on the risk side has concentrated on risk-shifting behavior. This paper combines both the costs and benefits of learning in a unified model with risk-averse agents.

I test one theoretical implication of the study above in “Rainfall Uncertainty and Occupational Choice in Agricultural Households of Rural Nepal”, which was published in the Journal of Development Studies [1]. Using household data and information on rainfall for the various
districts of Nepal, I find that occupational choice is highly correlated to the uncertainty associated with historical rainfall patterns. Where the head is self-employed in agriculture, other family members are less likely to choose self-employment in agriculture as an occupation in districts where rain is more uncertain. Estimates indicate that for a 1% increase in the coefficient of variation of rain, there is a 0.61% decrease in the probability of choosing the same occupation as the household head, where the head is classified as self-employed in agriculture. This study supports the theoretical research on learning-diversification [8] by providing empirical evidence that insurance motives are important in regions where type-specific risk is large.

My final set of papers completed so far in the area of labor and occupational choice returns to a consideration of the micro-implications of economy-wide factors by analyzing the effect of India’s 1991 liberalization on compensation patterns by gender. In collaborative work with Yana Rodgers (“International Trade and the Gender Wage Gap: New Evidence from India’s Manufacturing Sector” [12] – published in World Development), I address how increasing competitive forces from India’s trade liberalization have affected the wages of male and female workers. The study finds that an increase in openness to trade is associated with larger male-female residual wage gaps in India’s concentrated manufacturing industries. Our analysis begins by formulating a theoretical model of competition and industry concentration in which the net effect of international trade on the gender wage gap can be positive or negative depending on changes in market parameters and a discrimination coefficient. We test the theory using repeated cross sections of household survey data merged with trade and production information from 1983 to 2004. By employing empirical techniques at the industry level to estimate the relationship between the male-female residual wage gap and measures of domestic concentration and international trade competition, we find that increasing openness to trade is associated with a widening in the wage gap in India’s concentrated manufacturing industries. By analyzing the effects of the liberalization on women’s relative compensation and highlighting that female employees in manufacturing industries fare less well than their male counterparts, this study demonstrates that reforms do not benefit everyone equally.

In an extension of this work, Rodgers and I examine why a structural overhaul in trade policies after 1991 was not accompanied by greater improvements in women’s relative wages. This study, “Gender Inequality in the Labor Market During Economic Transition: Changes in India’s Manufacturing Sector”, is published as a chapter in a volume on labor markets in developing countries, edited by Ravi Kanbur and Jan Svejnar [10]. Two decomposition analyses (Oaxaca-Blinder and Juhn-Murphy-Pierce) find that unmeasured gender-specific factors have become more important as determinants of gender wage differentials across education groups, and these may have offset female gains due to education and observed productivity characteristics. A detailed analysis of the policy and other implications of the results in the two papers that study pay patterns by gender in manufacturing industries in post-reform India is compiled in “Trade Policy Liberalization and Gender Equality in the Labor Market: New Evidence for India” [14].

III. Program Evaluation
Some previous work evaluating the effect of programs in developing countries has relied on fixed-effect techniques to correct for the possible correlation between area-level unobservables (which may influence program placement) and the behaviors being analyzed. Indeed, some of the empirical analyses I have undertaken in the research discussed above have also used this approach. However, fixed-effects techniques are expensive in number of parameters, and they require panel data which are often unavailable and/or may be expensive to collect. In “Program Evaluation Using Spatial Instruments: Evidence from Indonesia” [11], Mark Pitt and I develop a new technique that permits estimation of program effects from a single cross-section of
data. This technique derives identifying instrumental variables (exclusion restrictions) from a model of the placement of spatially sited programs that affect human capital, in which the social planner’s welfare function is defined over the human capital outcomes of all spatially defined districts in a country. Using the proposed “spatial instruments”, we demonstrate the efficacy of our approach by evaluating the effect of public programs on outcomes such as school attendance, fertility, and infant mortality, using a single cross-section of data from Indonesia. Our method contributes to the literature by developing a new procedure which is economical and effective.

My second paper in this sub-field studies the effect of government health and education programs on poverty in Chile, and contributes to the program evaluation literature for Latin America by explicitly including a consideration of the factors that may underlie program placement decisions. In joint work with David Glick (“Public Programs and Poverty: Evidence from Chile” [13]), I use provincial-level panel data on poverty rates, indigence measures, and other regional level variables, to analyze the link between public spending (on health and education) and poverty. After controlling for time-invariant province-specific characteristics that may affect program placement, we find that per capita public health and education expenditures have an ameliorating effect on poverty. Per capita education expenditures are especially crucial to reducing the poverty head-count ratio. This study also provides evidence that public spending in Chile is non-random – in particular, government health expenditures appear to be influenced by groups with regional loyalties. By evaluating “location rules” that determine the distribution of public programs, the analysis in this paper extends previous work in the area.
Research discussed


Other citations
