Medium-term Research Agenda  The next pages provide a description of my ongoing and prospective research projects. By section, the projects are:

1. The Cosigner Project
2. The Wage Floors Projects
3. The External Validity of Randomized Experiments Projects
4. The Immigration Reform Projects
5. The Transmission of Well-being Across Generations Projects

1 Intra-household Decision-Making: The Cosigner Project

This project is joint with Dean Karlan (Yale).

The Motivation  The project has two main objectives. First, we want to answer some policy questions in connection with microfinance arrangements in the developing world. Second, we propose a novel way to integrate the design of field experiments, and the subsequent use of experimental and survey data, with the design, estimation, and validation of models of economic behavior within the family. The experiment in question was implemented between 2009 and 2011 by a microlender in Peru, PRISMA. PRISMA agreed to randomize whether or not to require spousal cosignature on its group loans.

There is a widespread belief that microfinance lending programs, directly or indirectly targeted toward women, foster female empowerment, and lead to a more egalitarian allocation of resources within the family. There is also a widespread belief that, by enabling investment, these programs may eventually lift individuals out of poverty (see for instance Duflo (2011) and Banerjee et al. (2010)). Whereas these direct and indirect effects of microfinance lending programs on individual well-being are clearly of interest, as yet too little work exists that substantiates these beliefs. This project aims at filling this gap. Accordingly, a first set of policy questions involve testing the impact of the spousal cosignature requirement on the use and impact of credit on observable outcomes.

We will also use the random variation in the cosignature requirement, combined with a model of the household decision-making process, to analyze the impact on female welfare from accessing credit without being subject to the approval or consent of her husband.

Since the combination of structural modelling and experimental variation is still limited within economics, we believe that this project presents a unique opportunity to advance the substantive policy questions described
above, and to make methodological contributions as well. In particular, this combination of structural modelling and experimental variation provides cleaner identification than is typical within structural estimation work in economics, and it allows us to address a deeper and richer set of questions than as usually answered by experimental work.

The Model We propose a simple model of intra-household decision making. The model is such that the cosignature requirement can affect whether or not the loan is taken out. Whereas when the cosignature requirement is imposed the objectives of the partners are perfectly aligned, when no requirement is imposed husband and wife may have conflicting interests. This juxtaposition is the channel through which we show that experimenting with the cosignature requirement identifies key features of the model, specifically, it identifies the rule used to split resources between partners. Knowledge of this rule is needed to carry out individual-level welfare analysis. In particular, the model confirms that requiring a co-signature implies leaving out of the borrower group those women who have the least bargaining power. A simple comparison of uptake rates would not reveal this result since such comparison remains silent about selection on unobservables. Thus, the model reveals that experimental and survey data complement each other and work in a synergetic way to accomplish what either one in isolation would not. The model also shows how experimenting with multiple features of the loan enables non-parametric identification of some of the objects of interest, for instance a distribution of sharing rules. It also suggests which observational variation can be used to mimic this multifaceted experimental variation. This is important because, as described next, we could not afford to experiment with multiple treatments.

The Experiment In 2007 PRISMA had a policy of requiring a husband’s cosignature from married and from cohabiting female borrowers. The policy reflected Peruvian regulations. However, the policy had not been enforced consistently and PRISMA was concerned by this inconsistency. Specifically, PRISMA wanted to know the extent to which strict enforcement of the rule would affect repayment rates, outreach, and client retention. They asked us to set up an evaluation of this credit requirement. We responded to PRISMA’s request by implementing a randomized evaluation based on two “treatment groups” and no “control group”. In the first treatment group, we asked PRISMA’s loan officers to enforce the cosignature requirement. In the second treatment group, PRISMA’s loan officers did not mention, let alone enforce, the cosignature requirement. We refer to two treatment groups rather than to a treatment and a control group because no group was meant to receive the current status quo of lax/discretionary enforcement. The loan contracts were identical in all other respects, and were identical to what PRISMA was offering at the time.

The Implementation The evaluation has concentrated on the area of Huancayo, Tarma, and Puno (Peru). This area was divided into approximately 100 randomization zones, of which 90 are rural randomization zones that correspond to an existing political divide in Peru. The remaining 10 randomization zones fall in urban areas, mostly within the city of Huancayo. During the evaluation period, about 8 new PRISMA borrowing groups, so called banks, opened per month with a membership of on average 12 borrowers.

The (super) population of reference is the universe of females who participate in the informational meetings that are held by PRISMA in each randomization zone (over time). However, our target is the sub-population consisting of households whose head is either the female or her male partner, that is, households composed of
a married or cohabiting couple. This sub-sample was augmented to include some (recent) widows which we intend to use either for purposes of model-validation or identification.

The Data  We have designed the survey instruments building on two existing surveys: (1) the Mexican Family Life Survey (2002), and (2) the Economic Growth Center Ghana Survey. Both these surveys build on a body of research concerning collection of household data in developing countries. Our survey has a strong focus on loan-taking behavior, decision making within the household, uses of male, female and child time, and investment in agricultural and non agricultural small business enterprises. Many of the questions concerning these last dimensions of decision making appear to be unique to our survey.

Our survey is composed of four instruments: (1) a face-sheet, (2) a baseline, (3) an informed respondent price/village sheet, and (4) a follow up survey. The face sheet collects basic demographic and re-contact information on the (super) population. We have used it to identify the sub-population for re-interview. The baseline questionnaire was administered by means of home visits, typically within a month of the informational meeting. It was administered to all women in the targeted sub-population. Importantly, women were surveyed irrespective of their decision whether to take out a loan from PRISMA. Information was collected on household composition, marital and fertility history of both partners, land, assets other than land (savings, debts, farm machinery, etc.), business enterprises, their management, and their profitability (e.g. hiring of laborers, household members time inputs and decision power, crops, etc.). We were also careful to collect the type of data that has been previously used by researchers in the identification of the sharing rule or female power in collective models of the household. Specifically, the survey inquires about so called “distribution factors” such as individual wages, non labor income, and inheritance of land. Also, the survey records expenditure in some private goods and assignable goods. The informed respondent price/village sheet was completed by the surveyor at the village level and records information on the extend to which various markets are open and liquid (e.g. land, housing, farm labor market, farm equipment, farm animals, etc.) and price data (e.g. rental rates, and male, female, and child wage rates for farm and non farming activities). The follow-up interview gathered information on decisions made by the households during the loan period: use of time, purchase of consumption goods, investment decisions, etc.

We supplement the data collected by means of instruments (1) through (4) with individual-level and bank-level longitudinal administrative records from PRISMA containing information on the loans and borrowers. Availability of administrative data is important for several reasons. First, it allows us to describe the bank and its loan repayment behavior even if we do not survey all its members. Second, during implementation we encountered some resistance from loan officers in some treatment areas. Presumably this is because loan officers were paid based on the number of loans they give out. Thus, their incentive not to implement strictly the cosignature requirement is higher the higher is the deterrence impact of the two signature treatment. The easiest way to circumvent the requirement is for a loan officer to record as single a married female borrower whose husband is unwilling or unable to sign the contract. The marital status recorded by the loan officer is part of the PRISMA data but the true marital status is recorded at the first informational meeting in the face sheet. Thus, we will be in a position to detect the extent of cheating by loan officers, which may be regarded as another margin along which to measure the effect of the two signature treatment.
2 The Wage Floors Project

The first project is joint with Lia Pacelli (University of Torino and LABORatorio R. Revelli) and Elena Pastorino (Federal Reserve Bank of Minneapolis and University of Minnesota). The second project is joint with Elena Pastorino (Federal Reserve Bank of Minneapolis and University of Minnesota).

2.1 The Wage Floors Database

The Motivation  As Neumark and Washer’s comprehensive literature survey shows, most of the research on minimum wages focuses on the US labor market (Neumark and Washer (2008)). When European labor markets are considered, the focus is limited to countries such as the UK, Spain, and Portugal which have or have had a national minimum wage. However, other European countries have minimum wages. Indeed, most European countries have a large number of minimum wages.

Table 1 in Dolado et al. (1996) describes minimum wage regulations in 15 European countries. The table reveals that minimum wages vary by industry in Austria, Denmark, Finland, Ireland, Italy, Norway, Portugal, Sweden, Switzerland, and the UK. They vary by region in Austria, Finland, Germany, and Ireland. Also, minimum wages vary by job tenure in Austria, Belgium, Greece, Ireland, Italy, Norway, and Sweden. Further, minimum wages vary by occupation or job ladder level or skill level in Finland, Greece, Ireland, Italy, Luxembourg, Norway, Germany, and Sweden. Finally, minimum wages vary by age (typically in connection with youth minima) in each of the 15 countries considered with the exception of Greece.

The Existing Evidence  Despite the above evidence, the few researchers that have studied minimum wages in the context of European labor markets have de facto disregarded the existing variation and multiplicity in minimum wages. A case in point is the influential study by Neumark and Wascher (1999). Neumark and Wascher estimate the effects of the minimum wages on youth employment by means of a pooled cross-section times-series data set comprising fifteen OECD countries for the period 1975-1997. The authors’ idea is to exploit the much greater variation that international data provides when compared to the national studies, controlling at the same time for a wide variety of labour market institutions/policies which are thought to impact the effects of minimum wages. Neumark and Wascher employ the Kaitz index, the ratio of the minimum to average wage, as a summary measure of minimum wage regulations. However, as Dolado et al. (1996) point out “in countries with a number of different minimum wages, there are obviously difficulties in computing a single measure of the Kaitz index. Measures are therefore a general indication of minimum wages rather than precise estimates. This is a particularly serious problem in countries like Germany and Italy, which have a very large number of minimum rates that may be very different” (page 321).

The Multiplicity of Wage Floors  Accounting for the multiplicity of minimum wages that can be found in most European countries is demanding in two main dimensions. First, data collection may well appear prohibitive. For instance, in 2008 Germany had an estimated 50,000 labor agreements containing minimum wage provisions, pooling across all levels of negotiation. Second, when multiple minimum wages are in existence, the simple one-equation econometric specifications that dominate the literature on minimum wages become inapplicable.

Accordingly, our ongoing data collection project rests on three beliefs. First, in order to understand the impact of the bundle of regulations, including minimum wages, in existence in European labor markets, we
need to move beyond cross-country analysis that rely on coarse, imprecise, and ad-hoc summary measures of the extent of such regulations. Rather, we need careful, country-specific studies that account empirically and theoretically for the richness and interplay of the existing regulations.

Second, longitudinal individual- and firm-level data is now available for many European countries, mostly from Social Security (henceforth SS) records. Such data expands the variation available, allows us to move beyond the use of aggregate statistics on unemployment rates towards analysis that encompasses the entire working population and concerns outcomes that are dynamic in nature such as life-cycle wage and career profiles.

Third, once the hurdle of gathering the data on regulations has been overcome and the task of specifying a model of the labor market that accounts for the regulations has been accomplished, the variation across industry and over time in regulations will open up avenues for asking and answering a collection of novel questions. I illustrate two such questions next.

**The Theoretical Insights** The first question pertains to the efficiency implications of minimum wage regulations. In related work (see below), we show how the existence of wage floors that vary based on the worker’s position in the job ladder expands the margins along which a minimum wage operates. The efficiency implications of wage floors are no longer limited to the dichotomy of employment and unemployment. Rather, they extend to include job assignment. Specifically, wage floors may lead to a reduction in output without entailing a reduction in employment. The reason is that the interplay of level-anchored wage floors may cause the misallocation of workers to jobs. To see this notice that a worker’s productivity may not be sufficiently high to make his employment at the unconstrained optimal job profitable when the wage floor for that job is relatively high. However, the worker may still be profitably employed by the firm but this is achieved at the cost of assigning him to a lower lever job at which his productivity is sub-optimal.

The second question pertains to the portability of skills. Consider the fact that wage floors vary across industries/occupations, that they are often set/bargained at different points in time and by different actors, and that they respond to political pressure as much as (if not more than) to economic shocks. Variation along such dimensions may affect a worker’s mobility and the distribution of the work force across industries/occupations. Thus, this variation offers a promising avenue to study the portability of skills across industries and occupations.

**The Data Base** Our ongoing data collection project focuses on Italy. Its aim is to construct a time series of wage floors by industry, level in the job ladder, and seniority for the period 1980-2004. A legitimate concern with this endeavor is that a country study has little to say outside of the country considered. Labor market and labor market institutions vary markedly across European countries. We next elaborate on this.

**The Italian Case** One dimension of variation that seems most relevant is how wage floors are determined. Adopting the categorization in Dolado at al. (1996), there are five main types of system. First, a statutory minimum can be set by government (possibly in consultation with employers and unions), as in France, Spain, the Netherlands, Portugal and Luxembourg. Second, as in Belgium, Greece and Denmark, a national minimum wage can be set as part of national collective bargains. Third, different minimum wages can be determined in

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1The collection of the data from the collective national labor agreements is prohibitively time consuming. However, we have purchased historical data for the Insurance sector from a private consultant. We plan to buy the data pertaining to the other sectors in the near future. While the purchased data still requires a non trivial amount of work, especially to be linked to the WHIP records, we are confident that the full data collection project is feasible.
sector-level collective agreements, as in Germany, Italy, Austria and, to some extent, Switzerland. Fourth, as in Sweden, Norway and Finland, collective agreements can cover effectively everybody and generally contain minimum rates without any formal provision for extension of these rates to non-signatory employers. Finally, as in Ireland and the UK (prior to 1993), minimum wages can be set in selected low-paying industries.

The Italian case offers four main advantages: (1) minimum wage regulations are set at the national level for each sector, (2) they cover all workers (irrespective of their union membership status), (3) they cover all firms (with no opting out), and (4) minimum wages are specified at the level of the position in the job ladder of the firm, and job ladders are homogenous across firms within a sector and (mostly) over time.

The above aspects of the Italian case allow us to describe minimum wage regulations for many sectors and over a long period of time. It is also possible to merge the wage floors data to SS records (WHIP) containing labor market histories for a representative sample of Italian workers during the period 1985-2004. This is so because for each job spell in the WHIP data, we can observe both the relevant national contract and the employee’s position in the institutional job ladder. Moreover, WHIP is employee-employer matched data. Thus, we can analyze both a worker’s work history and aggregate information across workers within a firm at a point in time.

### 2.2 Institutional Constraints

**The Motivation**  Our goal is to study the equilibrium effects of institutional regulations on individual outcomes within the Italian labor market. We believe that the Italian reality offers a unique opportunity to explore the empirical importance of institutional constraints for labor market outcomes. First, Italy presents a superset of the constraints that characterize other European countries. Second, because of the specific features of the Italian constraints, job levels are homogeneous across firms. The ensuing comparability of job levels across firms is a feature typically lacking in other data sources, and it offers the unique opportunity of studying the intra- and inter-firm mobility of workers within a unified framework.

**The Model**  We start by proposing a dynamic equilibrium model of the labor market in which firms are not constrained in their wage setting, promotion/demotion, and dismissal decisions. The model has implications for employment, real wages (level and growth), job assignment (intra-firm mobility), and turnover (inter-firm mobility) of workers. Next, we overlay the constraints implied by the Italian national labor agreements. Specifically, we consider the following provisions: (1) wage floors, for each of the positions in the institutional job ladder of a firm, (2) dismissal/firing restrictions, (3) demotion restrictions and automatic promotions. The introduction of these constraints renders the dynamics of the model non-trivial. In particular, wage floors entail both nominal rigidities and real rigidities.

While policy analysis is a key component of the project, its contributions extend outside of this arena. There are three main dimensions along which the theoretical model is of interest. First, it will be the first equilibrium model that fully accounts for the dynamic decision problem of a firm. Moreover, it does so both along the hiring/firing margin and the promotion/demotion margin. Typically, equilibrium models of the labor market focus on static, or steady state, profit functions e.g. Burdett and Mortensen (1998). Second, it will be the first model that incorporates the full array of institutional constraints that, in different combinations, characterize European labor markets. Typically, only subsets of these constraints are considered e.g. firing restrictions or minimum wages in isolation. The ability of the model to handle, in a tractable fashion, this
array of constraints is distinctive. For instance, it is hard to rationalize job-specific wage floors without accounting for firing and demotion constraints. It is also hard to rationalize wage floors without accounting for job-related productive technologies and the existence of firm-specific skills. A third contribution of the model proposed is that it points to a novel implication of wage floors: their impact on the ‘intensive’ margin of job assignment. While existing theoretical models explore the impact of the minimum wage on employment, our model shows that a minimum wage may leave the employment status of a worker unchanged and still affect output, and hence efficiency of the market equilibrium, by changing job assignment.

The model-based approach to estimation proposed in this project has a few worthy features. First, the empirical analysis works with an internally consistent wage function. This function reveals starkly how the dependence of wages on labor market experience and tenure is not solely a reflection of returns to tenure and experience. To our knowledge, there is no work that uses European wage data and recovers returns to tenure and experience accounting for institutional constraints and forward looking behavior of firms. For instance, the well-known work by Postel-Vinay and Robin (2002), which uses French data, recognizes the empirical relevance of institutional constraints, but leaves to future work the task of incorporating them into the analysis. On a related note, because our model endogenizes the wage function, our project takes up the challenge put forth in Altonji and Devereux (2000) of determining whether ‘nominal wage rigidity has real effects on employment, mobility patterns, and relative wages [by employing a] structural approach. [The model-based approach can incorporate the fact that,] in an environment in which it is costly to cut nominal wages, firms should take account of the possibility of future constraints when setting current wages’ (page 422).

**The Data** The model will be estimated using a linked employer-employee data base, the Work Histories Italian Panel (WHIP), containing pay and career information for a large sample of Italian workers employed at any point during the period 1994-2004. Key to the estimation is the fact that information on the time-varying and level-specific wage floors, as contained in the relevant national contracts, will be collected and matched to WHIP for each worker and time period (see the ‘Wage Floors’ database described above). The estimated model will be used to explore the implications for Italian labor market outcomes of selectively relaxing the existing constraints. The counterfactual analysis will allow us to assess the extent to which differences in labor market outcomes across European countries can be attributed to differences in institutional constraints.

3 The External Validity of Randomized Experiments

*These projects are joint with Patrick Kline (University of California at Berkeley).*

**The Agenda** There are two interconnected projects. They aim to enhance understanding of labor supply and program participation decisions by: 1) developing and estimating a behavioral model of labor supply using survey and administrative data from a randomized experiment, 2) assessing the importance of precise measurement of agents’ choices and incentives on the accuracy of the model’s predictions, and 3) evaluating the ability of the estimated model to predict the results of other experiments in different populations.

The potential intellectual merit of the proposed research is to generate accurate quantitative models of labor supply and program participation. Such models can be used to evaluate the impact of reforms to the social insurance and tax system and to make quantitative statements about the welfare effects of proposed and existing policies. Our estimation approach combines observational and experimental variation in incentives and
opportunities. The experimental variation in welfare rules allows us to relax the key exogeneity assumptions typically made when estimating behavioral responses to changes in program rules. Our ability (or inability) to accurately predict the results of markedly different randomized experiments provides a policy-relevant metric for evaluating our modeling framework in general and, more specifically, our ability to account for self-selection into program and labor market participation.

**Two Papers** The project will deliver two research papers. The first paper focuses on assessing the extent to which the ability of labor supply models to match experimental impacts depends upon measurement issues and modeling complexity. We will develop and estimate a model of welfare participation and labor supply using data from the California Work Pays Demonstration Project (CWPDP) – a large scale randomized welfare reform experiment implemented in California in the early 1990s.

The second paper is motivated by the concern that randomized experiments may have little external validity. The CWPDP experiment, for instance, was conducted on a sample of on-going welfare recipients residing in four California counties during a sustained boom in the state job market. To what extent can what we learn from the California experiment be generalized to other populations, time periods, and program mixes? The many state welfare experiments conducted during the 1990s provide us with the opportunity to answer this question.

**The Broader Impact** The broader impact of our project will be to develop methods for enhancing what can be learned from social experiments through use of a behavioral model. We seek to illustrate how to build and estimate economic models capable of “pooling together” and interpreting the results of multiple experiments in the presence of unobserved individual-level heterogeneity. We believe such methods will become increasingly important as social and field experiments continue to proliferate in economics.


**The Motivation** Developing models capable of quantitatively forecasting the effects of changes in social welfare and tax policy has been an objective in the economics literature at least since the pioneering work of Marschak (1953), Orcutt and Orcutt (1968), and Kosters (1969). Early contributions to the labor supply and program participation literature including Ashenfelter and Heckman (1974), Burtless and Hausman (1978), and Ashenfelter (1983) focused on incorporating basic restrictions from economic theory into relatively simple statistical models. Since then structural models of labor supply and program participation have increased substantially in complexity by incorporating multiple program participation (Keane and Moffitt, 1998; Hoynes, 1999; Heim and Meyer, 2003), dynamics (Keane and Wolpin, 2002a, 2002b, 2007; Fang and Silverman, 2009), and endogenous family formation (Keane and Wolpin, 2006).

**The Challenges** The development and estimation of any model of labor supply and program participation confronts the researcher with two fundamental challenges. First, any behavioral model must specify the policy environment, the choice set of the agent, and the non-policy determinants of the agent’s choices (her preferences, opportunities, and constraints). Second, estimation of the proposed model has to deal with the limitations of the available data.
The first challenge is complicated by the fact that the modern welfare system consists of a variety of interconnected programs (TANF, Food Stamps, SSI, Medicare, etc.) each with its own eligibility criteria. The further addition of tax regulations results in a highly non-linear budget set, a large number of choice variables, and a plethora of program-specific determinants of eligibility and support amounts. As first pointed out by Burtless and Hausman (1978) and Hausman (1985), estimation in the presence of non-linearities requires an explicit decision-theoretic approach. Accounting for all or most of the interacting programs means that the decision model is bound to be demanding to estimate.

The second challenge concerns measurement of the above incentives, choices, and choice determinants. Both survey and administrative data have important limitations in this respect. On the one hand, survey data (a) can only supply crude measures of eligibility status and of the individual- and household-level characteristics that determine the support amounts given eligibility, and (b) suffer from recall and rounding bias. On the other hand, administrative data on program participation (a) is typically narrow in scope, (b) records information only for periods when the individual - or the relevant group of individuals - are receiving assistance, and (c) is subject to a potentially non-trivial amount of non-random misreporting reflecting attempts by the agent to maximize the support received. This mis-reporting may be economically important and, if disregarded, may lead to an incorrect assessment of the impact of the program on the (overall) well-being of the agent.

The Existing Approaches  Researchers have yet to deal with the above challenges in a unified framework. Indeed, the existing literature employs two alternative, and to a large extent exclusive, approaches to handling the complexities of specifying and estimating models of labor supply and program participation.

One approach involves a crude simplification of the budget set. This is accomplished by focusing on a small subset of the programs and by “smoothing away” the kinks associated with the few programs considered. For instance, MaCurdy, Green, and Paarsch (1990) argue in favor of approximating the nonlinear implicit tax schedule generated by public assistance using low order polynomials. Fraker, Moffit, and Wolf (1985) and McKinnish, Sanders, and Smith (1999) take similar regression based approaches to reducing the dimensionality of the policy environment. The smoothing of the budget set and the reduction of the choice set allows the researcher to (a) model choice functions directly (instead of deriving them from primitives) and (b) work with a very rich set of hours alternatives e.g. by estimating continuous hours of work supply functions.

The second approach provides a different answer to the above challenges. It strives to specify the policy rules and the budget set as accurately as the data permit. However, it applies a severe coarsening of the choice alternatives vis a vis hours of work. For instance, Keane and Moffitt (1998) and Keane and Wolpin (2002 a,b, 2006, 2007 a,b) reduce the set of labor supply alternatives to only full-time, part-time, and no work and deal with a limited set of program participation options. This coarsening reduces substantially the computational/estimation complexities. However, when considering a population “at risk” of welfare dependence it may also miss important behavioral responses along the intensive margin of labor supply. Such models also potentially miss important interactions between hours choices and eligibility requirements for program participation.

Furthermore, both approaches rarely account for measurement or reporting errors, often because the survey or administrative data being used make doing so impractical. When measurement and reporting errors are taken into account, they usually play an ancillary role. Keane and Wolpin (2006), for instance, estimate a dynamic model of labor supply, program participation, fertility, and marriage incorporating measurement and classification errors. However, these errors are introduced for technical reasons, their stochastic processes are
highly restricted, and identification is “indirect” in the sense of relying exclusively upon specification of the rest of the behavioral model.

In sum, while most researchers recognize the existence of measurement limitations, in practice, such limitations are typically not explored or accounted for. The immediate consequence of this paucity of analysis is that we do not know how much measurement matters.

Our Contribution In this paper we strike a different set of compromises than previous work. We model budget sets, choices, and measurement issues in great detail at the expense of assuming that agent’s decisions are myopic. This allows us to sidestep the computational demands associated with dynamic discrete choice models and affords us a great deal of latitude in incorporating a multiplicity of programs and hence an accurate specification of the budget and choice sets. It also allows us to work with a more detailed collection of hours of work alternatives.

The merged administrative and survey data at our disposal allow us to not only model the budget set accurately, but to also measure it accurately. We propose an estimation method that takes advantage of the repeated measurements in our data. Our identification of the measurement structure is therefore more direct than in previous model-based work. Finally, the experimental component of the data allows us to judge the estimated model based on its ability (or lack thereof) to reproduce the impacts of randomized policy changes. This is the metric that we employ to decide whether measurement matters – a question we examine by estimating nested versions of the model that disregard some of the data sources and/or do not account for measurement and reporting error.

The Experiment In 1992, California responded to fiscal crisis by reducing the cash benefits associated with AFDC. Because the proposed reductions exceeded the federal regulatory limit, a federal waiver had to be obtained and a randomized evaluation conducted. This resulted in the California Work Pays Demonstration Project (CWPDP) – a large scale randomized welfare reform experiment providing reduced cash assistance and financial work incentives to welfare participants. In 1992, 15,000 AFDC cases were sampled for the study. Of these 15,000, 10,000 were allocated to an “experimental” group which, along with the rest of the state, experienced a reduction in AFDC cash benefits while the remaining 5,000 were allocated to a “control” group which was consistently exposed to the set of AFDC rules in place as of September 1992.

The Data The CWPDP data are organized into administrative and survey modules measuring the behavior of study participants at different levels of aggregation. The administrative records contain monthly data from December 1992 through September 1997 on sampled welfare cases, the assistance units inside of those cases, and the individuals within those assistance units. The ability to directly measure the assistance unit (AU) is a key advantage of the administrative data since AU composition is a key determinant of the transfers program participants receive. There is also a retrospective administrative component covering the period from January 1987 through December 1992.

The administrative modules were collected directly from state and county welfare offices with monthly information on program participation, eligibility, hours of work, earnings, payment amounts, and the relevant program rule inputs (unearned income, assets, assistance unit size, etc.). In addition to the large administrative samples, two rounds of household survey data were collected between 1993 and 1996 on roughly 3,000
cases, providing contemporaneous and retrospective information on a variety of topics including program participation, earnings, hours of work, and demographic information. Finally, a data validation was conducted by the California Review and Evaluation Bureau (REB) which involved interviewing case workers, inspecting files, and collecting non-computerized administrative information including hours worked. Data from 7,000 cases validated by the REB are available providing data through 1996.

The Model

The model builds on the static joint labor supply and program participation models of Keane and Moffitt (1998), Hoynes (1999), and Heim and Meyer (2003). Decision making is modeled at the household level and at monthly frequencies. All the choices are discrete. Households make decisions sequentially but because they are myopic their discount rate equals zero. Households have preferences over consumption, leisure, and program participation. Each household is subject to a static budget constraint: its aggregate composite consumption in each period equals per-period income (from various sources), minus expenses in child care, medical care, and housing, and minus a monthly fraction of last year taxes. Total transfer income is the sum of transfer income from each program, but the transfer function is not simply the sum of the program-specific program functions because programs interact. AFDC grants, for instance, are treated as income for determining the FS grant amounts. The transfer function captures these interactions in eligibility and grant amounts. The program rules are imposed exactly, without any approximation or smoothing. Total transfer income depends on earnings, unearned income, and hours of work as reported to the program agencies. That is, we allow for the possibility of under reporting of income and hours to the welfare agencies and incorporate the fact that different programs depend on different definition of countable gross income and different definitions of assistance unit. We note that a unique feature of our data is that it contains reported earnings, hours, and unearned income. The labor supply choices available to an agent are constrained by the existing production and search technologies. We do not model job search explicitly but we posit a stochastic process of job offer arrival and think of it as a reduced form decision rule in an environment in which search is stochastic and in which there are complementarities in workers’ hours for output production.

The Estimation

We allow the households in the population to be (permanently) heterogeneous in their skills and their preferences. Due to the choice-based nature of the sample, the distribution of permanent traits that is recovered pertains to the population of households which are welfare recipients at the time of treatment assignment. Estimation of the parametric model requires functional form assumptions as well as distributional assumptions for the time-invariant household traits and the idiosyncratic stochastic shifters. The measurement structure is then overlaid on the behavioral structure. The behavioral and measurement/reporting models imply a joint distribution of observables. Our main focus is in employing this joint distribution to recover the parameters of the behavioral model, free of the sample selection. Our ability to “correct” for the initial sample selection (except for the dependence of the distribution of the permanent traits) rests on (1) the exclusion restrictions imposed in the behavioral model, (2) the observation that, post-assignment, households transit in and out of welfare, and (3) the “purging” through the model of the dependence of behavior on aggregate conditions. On a related note, the data offers the possibility of incorporating a 9 year monthly history of program participation prior to random assignment. We will explore ways of using this data.

In practice, the presence of missing state variables makes the use of simulation methods the preferred approach. The model will thus be estimated via Simulated Maximum Likelihood. Estimation will first be conducted with only CWPDP control group observations as in Todd and Wolpin (2006) and then with both
control and experimental group observations. The objective is to explore the consequences of exploiting the exogenous variation in the policy induced by the experiment.

**Validation and Specification Analysis**  The experimental component of the data provides us with the opportunity to carry out a stringent validation exercise. We will quantitatively assess the extent to which the estimated model is able to reproduce the experimental impacts of the policy changes. Our focus will be on assessing how use of exact rules, detailed modeling of choices, and the measurement structure of the model influence our ability to fit the experimental effects.

We will answer these questions by considering nested versions of the estimated behavioral model including versions that rely on a coarser specification of the choice set, versions that use only survey data and ignore reporting errors, and version that ignore programs such as food stamps and approximate eligibility criteria. We will also compare the results of predictions generated by versions of the model estimated on the control group only to those estimated on the pooled sample and hence utilizing experimental variation.

We will rely on different metrics for the purpose of validation. To stay close to the experimental literature, we will look at quantile treatment effects on transfer amounts and earnings for various subpopulations (Bitler, Gelbach, and Hoynes, 2005). We will also employ metrics of direct policy relevance such as the grant cost of the programs, which the administrative data allows us to measure exactly under each of the policy scenarios, the size of the AFDC caseloads, and the extent to which changes in AFDC rules induce changes in other programs’ caseloads.

**The Next Step**  The above exercise will allow us to determine what modeling and measurement features matter for accurately predicting treatment effects in a given population. A more ambitious goal, however, is to be able to predict the results of interventions in different populations. Without a behavioral model researchers have little basis on which to forecast the effects of such interventions particularly if they involve different bundles of incentives than previously studied. The second paper, which we now briefly describe, will assess the extent to which these goals can or cannot be met by use of the sort of detailed choice model developed in the first paper.

### 3.2 Labor Supply Models and the External Validity of Randomized Welfare Experiments

**The Motivation**  A common criticism of randomized experiments is that their results are not easily generalized to new environments (Heckman and Smith (1995), Deaton (2009)). Large scale social experiments such as the Negative Income Tax first gained popularity in the economics literature in the study of labor supply. The original ambition of that literature as exemplified by Orcutt and Orcutt (1968) was to use the experimental policy variation to identify structural preference parameters which could be used to forecast the results of national policy changes.

Three decades after the first studies of the Negative Income Tax experiments we have access to a plethora of sophisticated experimental datasets from which a number of qualitative conclusions have been reached (Grogger, Karoly, and Klerman (2002)). Until recently, however, there have been relatively few attempts to build quantitative structural models exploiting the variation in these samples (Lise Seitz, and Smith (2004), Todd and Wolpin (2006), Attanasio, Meghir, and Santiago (2005)) and to our knowledge there have been no attempts to *synthesize* the results of diverse experiments through the use of such models.
We can think of two main reasons for this state of affairs. First, there is the belief that extrapolations based on parametric models rely too heavily on the untested (and untestable) assumptions embedded in those models. Second, there is the belief that most experimental datasets are not amenable to a model-based approach. Most experiments are short-lived, the data collection is limited in scope and in time coverage, and the samples subject to randomization are typically choice based. This criticism is exemplified for the case of welfare experiments by Fang and Keane (2004) who contend that the state waiver experiments are so deeply flawed as to be uninformative in either forecasting future participation patterns or understanding the mechanisms driving the changes associated with the 1996 PRWORA reforms.

In this paper we will examine the relevance of both sets of concerns directly. We will assess the extent to which a common model (and the implied estimated parameters) can rationalize the results of multiple welfare experiments. The exercise entails using the model parameters estimated on the CWPDP data to generate forecasts of the results of a set of experiments that were conducted in different states and time periods – the very same experiments criticized by Fang and Keane (2004).

The Experiments  We consider two experimental datasets: Jobs First (JF) and the Minnesota Family Investment Program (MFIP) both of which contain administrative data on earnings and welfare payments. The Jobs First program provided large financial work incentives by substantially raising the earnings disregard and reducing the implicit tax rate on earnings for welfare participants. Bitler, Gelbach, and Hoynes (2005) found a pronounced pattern of quantile treatment effects on earned income and transfer amounts. Patrick Kline and I (see my job market paper) confirm that these patterns reflect large intensive margin responses by program participants. The MFIP program involved two experimental samples: one with financial incentives and one with financial incentive and work requirements.

Building Policy Forecasts  A number of challenges are involved in the out-of-sample prediction exercise that we will carry out. Importantly, these challenges are bound to be encountered in any situations in which one is to combine data sources that were collected independently.

The first challenge stems from the fact that the CWPDP, JF, and MFIP interventions were applied to different populations. For instance, inclusion in the MFIP experiment was conditional on long-term welfare recipiency, as of the assignment date, while a minimal history of a month on welfare was sufficient for inclusion in CWPDP. Even in the absence of this difference in selection rules, being welfare recipients in California and in Connecticut at the assignment date may be very different because of the underlying differences in these states’ welfare generosity and economic conditions.

The second challenge stems from the fact that there are differences in the content of the data available across experiments. The administrative assistance data available for the JF and MFIP experiments is limited to AFDC and FS grant amounts and does not contain the variables that enter the grant functions such as assistance unit size and income sources. Likewise, several key variables in the public use survey data accompanying the JF and MFIP experiments were top coded or otherwise coarsened to protect privacy. Moreover, there are differences in the survey instruments employed across experiments.

Returning to the model developed in the first paper, it becomes apparent that the only estimates that can be ported for prediction purposes to the new samples are the behavioral parameters. The remaining parameters governing the measurement structure of the data and the distributions of unobserved heterogeneity need to be reestimated. We will do this by making use of pre-treatment and control observations in the forecast samples.
After retailoring the measurement equations to the new datasets we will then maximize the simulated likelihood subject to the restriction that the behavioral parameters equal the value estimated in the CWPDP. With new estimates of the non behavioral parameters we will then be able to simulate the impacts of the relevant intervention and compare them to the reduced form patterns of treatment effects found in those samples.

An important issue we hope to examine is how our conclusions from the previous paper change when studying out-of-sample forecasts. How important for example is allowing for measurement errors or using exact policy rules for forecasting the results of new experiments? And how important is access to experimental variation in the estimation sample for this exercise? Finally, because the data available in the two validation samples is coarser than that in CWPDP it is interesting to determine the advantages (if any) that improved measurement in our estimation sample will provide for forecasting patterns of treatment effects in these new samples.

Welfare Implications and Unbundling Provided that some of the models are able to yield reasonably accurate predictions, we will conclude with an assessment of the positive and normative implications of the model for evaluating different policy interventions. We provide here a brief list of policy relevant questions that we will seek to answer: (1) What are the effects of pairing the work requirements of the MFIP intervention with the milder financial incentives of the CWPDP intervention? (2) Are treated populations made better off by the various experimental interventions? (3) What combination of welfare incentives is socially optimal (i.e. raises welfare at minimum cost)? and (4) What are the likely impacts on welfare and program participation of recently proposed changes in the generosity of the California state welfare system?

4 The Immigration Reform Project

4.1 The Evolution of the Documented and Undocumented Population of Mexican Migrants to the US

The Facts As of 2006, about 34% of all foreign born individuals present in the US are from Mexico (Passell, 2005, 2006). Estimates for 2006 (Passell, 2005, 2006; Hoefer et al. 2007) put the total undocumented population in the US at 11-12 million, of which about 6 million are from Mexico, or 57% of the total. Also, Passell (2006) estimates that 80-85% of the Mexican migrants that arrived in the US during the period 1995-2005 are unauthorized. For several years, the U.S. Congress has attempted to design legislation to “deal with” unauthorized migration. Various bills (2005, 2006, 2007) have passed either the Senate or the House, but none has become law. Despite their differences, the recently proposed reforms have 3 common pillars: a path to legalization offered to long term undocumented residents, a novel guest worker program, and a tightening of the enforcement at the border and in the interior.

The Research Questions The figures reported above, combined with the attempts at intervening on the status quo via legislation, provide the motivation for a research agenda that comprises two tasks. The initial task consists in describing the population of Mexicans in the US over time (1960-2000). The descriptive task would be straightforward if the ideal data existed. While the ideal data does not exist, the proposed research shows that we can do more with the existing data than previously thought. The second task entails conducting counterfactual policy analysis. We do not know how the proposed reforms would affect the numbers and characteristics of Mexicans who make the US their residence. The policy debate is thus based on answers
that do not exist yet. The probable reason for this gap in knowledge is that policy analysis requires knowledge of how behavior responds to changes in constraints/opportunities (e.g. the immigration law) which, in turn, requires us to exploit variation over time in the immigration law. Hence there is a need to describe the population of Mexicans in the US over a long period of time.

**The Expected Output** This piece of research focuses on the descriptive task. Specifically, I will be able to (1) compute the number of Mexicans in the US by documentation status and by whether they are sole migrants or members of migrant families, (2) describe characteristics of Mexicans in the US such as education, and (3) compare the characteristics of Mexicans in Mexico and Mexicans in the US, which reveals the direction of selection in the migration decision. In what follows I first provide a brief description of the limitations of the existing data. Second, I provide a description of the core data employed, namely the Mexican Migration Project data (henceforth MMP). I devote particular attention to the MMP sampling scheme and explain how the two issues of selection at the community and at the individual level are treated. Finally, I present the results of my exploratory analysis.

**The Limitations of the Existing Data** There are two classes of data sources: (1) data collected in the US on Mexicans, (2) data collected in Mexico on Mexicans in Mexico and in the US. Within the US data group, the US Census has been widely used. However, it under-counts Mexican migrants, particularly if undocumented; offers information only at decennial frequency, while the immigration law has changed at a higher frequency; is cross-sectional; and lacks legal status information. Besides the US census there are other US surveys that contain information on Mexicans in the US. However, they either pertain to subsets of the population, and/or lack legal status information, span short/recent periods of time, have small sample sizes, are cross-sectional, and/or contain limited panel or retrospective information, if any. Within the Mexican data sources, the Mexican Census contains very limited information on migrants. In addition, the data is cross-sectional, at decennial frequency, lacks legal status information and education, and misses long term/family migrants. Mexican Surveys such as the Mexican Life Family Survey are not yet rich enough. Finally, the MMP, widely used by sociologists, offers large sample sizes, covers a long time span, contains very detailed legal status information, but presents a sampling scheme that makes its use demanding and at times discouraged (Hanson (2006)).

**The Data** The MMP data contains data gathered since 1982 in surveys administered every year in Mexico during the winter months: 2 to 5 Mexican communities have been surveyed each year. Each community is surveyed once, the size of each random sample is about 200 households, and the data collected is retrospective, back to age 15. The MMP is unique in that it allows the construction of individual-level histories for marriage, fertility, work, location, and documentation of the household head, his spouse, and, to a more limited extent, their offspring. As pointed out above, the MMP data confronts the researcher with 2 logically distinct problems. First, the communities in the MMP data are not representative of the population of communities in Mexico, at a point in time. Indeed, these communities were chosen to yield large samples of migrants. Second, with reference to each community’s sample, households (headed by a native of the community) that reside in the US in their entirety are not surveyed. This implies that long term migrants who either have formed a household in the US or have brought their dependents to the US are more likely to be missing from the community sample.
The Approach  Preliminary analysis shows that MMP data can indeed be used to describe the population of Mexicans in the US and in Mexico over a long period of time. This result obtains despite non-random selection of communities (henceforth NRSC) and choice-based sampling (henceforth CBS). Specifically, I show that NRSC and CBS have to be handled jointly. In particular, NRSC requires augmenting the MMP data with time series community-level information from other sources, but it is feasible and works well. CBS requires modeling the dynamic selection brought about by state dependence in the location/migration decision due to moving costs. The latter task is accomplished by directly modeling and estimating choice probabilities using the retrospective dimension of the MMP data. Thus, the approach requires specification of only the agents' state space but no further assumptions on preferences, expectation formation, etc. are needed. Remarkably, it allows me to exploit a unique data source that contains time-consistent information.

Preliminary Results  Explorative analysis, see figures below, shows that the stocks of documented and undocumented Mexicans in the US respond as expected to changes in the immigration law. Also, it highlights the fact that the direction of the selection, for instance with respect to education, may be erroneously estimated if it is based on the Mexican and the US Census (not shown). This bias is due to the under-count of undocumented migrants, differences in coverage and definitions, limited information on migrants, the decennial frequency of the data, and, most importantly, the fact that changes in the immigration law (e.g. the 1986 amnesty) affect the composition of the documented and undocumented population of Mexicans in the US. The next steps entail (1) extending the location model (e.g. by incorporating network effects), (2) validating the results with reliable data sources (e.g. the Mexican Census for Mexicans in Mexico and INS records), (3) analyzing the time series covariates/determinants of flows and stocks (immigration law and economic conditions).
4.2 Evaluating Competing Immigration Reforms

The Motivation  For several years, the U.S. Congress has attempted to pass legislation to “deal with” unauthorized migration. Various bills have passed either the Senate or the House, but none has become law because no consensus or compromise "solution" has yet emerged. The recently proposed reform(s) have 3 pillars: (1) a path to legalization for those who have worked in the US (plus a fine), (1.a) during the last 5 years; (1.b) during the last 3 years (previous return to MX); (1.c) in the US in agriculture during the last 12 months; (2) a guest worker program (GWP) entailing temporary (non-immigrant) visas to be applied for from MX and requiring periods in MX between stays in the US; (3) a tightening of the enforcement at the border and in the interior.

The Policy Questions  This project wants to implement the main features of the recently proposed US immigration reform(s). With reference to Mexico and the US, I will answer questions such as the following. Suppose that a legalization process similar to the 1986 amnesty was enacted today, what would happen? Specifically, who among those eligible would choose to legalize? Who will not be able to legalize? How do the eligibility requirements (e.g. proof of continuous and undocumented presence and employment in the US for 5 years and/or payment of a fee) shape the characteristics of the group of undocumented immigrants who will have the option to legalize (e.g. in terms of having spouse and dependents living in the US versus Mexico, or having US-born versus Mexico-born offspring, or in terms of occupation and skills, etc.)? What would those who are not eligible do? In particular, who among the latter group would go back to Mexico and who

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would instead remain in the US undocumented? How would the answer to the previous questions change as the eligibility requirements are changed (e.g. from 5 to 3 years of continued stay, for different levels of the fee)? How would the answer to the previous questions change with the specific features of the proposed GWP? Specifically, with reference to the latter program, consider the following features. A given number of people a year would be allowed to enter the country to work for two years, after which they must go home for a year, with a six-year cap on the total time spent in the US. Thus, while workers could renew their visa up to three times, they would be required to return home for a year in between each time. Guest workers bringing dependents could obtain only one, nonrenewable two-year visa. Moreover, families could accompany guest workers only if the latter could show proof of medical insurance and demonstrate earnings 150 percent above the U.S. poverty level. Thus, natural questions to ask are the following: who are the Mexican workers who will benefit from such a guest worker program? Do the features of the program discourage a worker from bringing his spouse and dependent along with him to the US? Do the features of the program encourage return migration? Will a worker who has used up his six years of temporary visa return to Mexico or will he rather choose to overstay the last leg of his visa? How do answers to these questions change as the effectiveness of enforcement at the border and in the interior varies?

The Data Limitations and Other Challenges  

The contribution of the proposed research stems from the recognition that, as of today, the above questions have not been answered. While these questions are of undisputable policy interest, two major difficulties have hampered progress: (1) the limitations that mar the existing individual level data, (2) the inherently counterfactual nature of the questions.

Concerning data limitations, it is well known that the US Census does not provide a representative sample of undocumented Mexican immigrants. Other US national surveys either suffer from the same problem and/or pertain to a subset of the population (e.g. the National Agriculture Worker Survey), or do not contain information on the legal status of immigrants (e.g. Current Population Survey). None of these US national surveys has a panel dimension and the retrospective information collected is very limited, if any. The Mexican Life Family Survey (MxLFS) and the MMP may appear more promising. However, only the first two waves of data are available for the MxLFS while the MMP pertains to communities and villages chosen for reasons other than their representativeness of the population of communities or villages in Mexico. Moreover, both surveys disproportionately miss by construction long term migrants and migrants who move with their entire family. These consequences of the sampling scheme are particularly worrisome in consideration of (1) the eligibility requirements attached to the proposed legalization, that is, long term migrants are the target of the amnesty, (2) the fact that several of the features of the proposed guest worker program reflect the concern that immigrant families constitute a heavy burden on US taxpayers.

Next, consider the inherently counterfactual nature of the policy questions we want to answer. This feature stems from the fact that the proposed immigration reform is a collection of policy measures that (1) have never been implemented, or (2) have been implemented in the past but within a different economic scenario and vis a vis a population that is different from the population that would be affected by a policy intervention enacted today (e.g. the 1986 amnesty), or (3) have been implemented in the past but in isolation, that is, not as one measure among several other measures, or not in the same bundle of measures currently proposed.

The Model and the Data  

The research project we propose overcomes both the data limitations and the counterfactual nature of the immigration reform measures. We propose a model that describes the dynamic
decision problem faced by a Mexican male from age 15 onwards: his decision to marry, a Mexican or a US female; migrate to the US, with or without documents – hence possibly crossing the border illegally – as well as with or without his spouse and dependents; his decision to stay in the US, possibly overstaying an expired visa, or return to Mexico; and his decision to have children born in the US or in Mexico. The model proposed allows us to exploit the richness of the MMP data while overcoming the difficulties inherent in the MMP’s sampling scheme, and implement the counterfactual measures of the immigration reform. That is, the model enables us to (1) understand the incentives and constraints created by the various immigration policy measures, (2) use the MMP data to estimate the parameters that govern how behavior responds to those incentives and constraints and, (3) use observational data collected around past policy events (e.g. 1986 Amnesty) to validate the estimated model, and (4) use the estimated model to predict the policy impact under different scenarios.

5 The Evolution of Well-being Across Generations

The Motivation This project aims to enhance our understanding of how endowments and subsequent opportunities and shocks explain the evolution of individual and family well-being across generations. Specifically, we are interested in answering two questions: (1) what are the determinants of the changes in well-being across generations?, (2) is the evolution of the wealth distribution across generations accompanied by changes in a family/dynasty’s position? If so, what explains who the relative winners and losers are?

This project proposes to address the above questions by creating a new data base that has four fundamental advantages when compared to existing data. First, it covers the long time horizon necessary to carry out comparisons across generations. Second, it contains repeated measures of family/individual wealth and income over such a long horizon. Third, it contains precise and direct information on random income shocks received by families at different stages of their life cycle. Fourth, it does not suffer from the severe attrition problems that plague the existing longitudinal data sets.

The Existing Multi-generation Data Sets The advantages described above may be best understood if we consider the Panel Study of Income Dynamics (henceforth PSID). The PSID is perhaps the best data set in existence to study issues related to family well-being across generations: it began in 1968 with an original random representative sample of 5,000 US households; it includes all individuals born into the original PSID families (and, to some extent, those who join them by marriage); it collects data at yearly or more recently biannual frequency; and it contains wealth data starting in 1984. For all these reasons, the availability of data in the PSID spanning more than one generation has spawned numerous studies examining intergenerational correlations in income and economic status.

However, as pointed out by Fitzgerald et. al (1998), many of the children of the original parents attrited either when their parents attrited or after they had set up their own households. The authors reports that by 1989, 50% of these second generation individuals are missing from the PSID. Also, the attrition problem is bound to worsen as the panel length increases. Moreover, two limitations emerge with respect to the wealth information contained in the PSID. On the one hand, no wealth information was collected until 1984, which implies that we do not observe the wealth of the original parents. On the other hand, too little time has elapsed since 1984 to be able to observe the wealth of the children of the children in their adulthood. Finally, there is no reason to expect that any of the income variation observed in the PSID is purely random variation. Taken together these observations show that the admittedly best data set in existence is far from being the
ideal data set to study individual and family well-being across generations. There is room for doing better and this is what this project is about.

**The Ideal Data Base** What is the ideal data for this inquiry? To answer this question we brainstorm through a simple framework that incorporates the main insights and findings from the existing research on well-being and its determinants. Accordingly, we first need to acknowledge that different children are born into different families and that the differences in initial conditions may pertain to both physical wealth, that is, land/real estate ownership, livestock holdings, and savings; and to non-physical wealth, that is, healthiness/longevity, physical strength, and cognitive ability. Second, we need to allow for the possibility that different children experience different shocks during the course of their lives (e.g. health and income shocks); that is, chance bestows luck on some and misfortune on others. Third, the shared environment may also change and this change may affect individuals differentially. For instance, technological innovations may lead to skill-biased productivity gains and thus to changes in the relative market value of different endowments. As another example, lower costs of, and enhanced access to, education may compound initial differences in the endowment of cognitive ability. Similarly, technological advances may lead to changes in the costs of travel, in the efficacy of contraceptive methods, and in the curability and prevention of diseases. These changes affect the scope for individuals’ responses to their endowments, the changes in their environment, and the individual-level shocks received. For instance, migration in search of better opportunities may become a viable option, fertility control may be used to adjust to income shocks, inherited healthiness may matter less. Thus, we expect the mapping between initial conditions and subsequent shocks to be affected by the extent to which individuals can adjust their behavior.

**Our Data Base** The above discussion reveals that providing a comprehensive answer to questions (1) and (2) poses formidable demands in terms of data. These demands convinced me that rich historical data is needed to empirically examine the evolution of well-being across generations. Accordingly, I sought financial support to field an exploratory data collection effort that uses historical data. In particular, the project uses longitudinally linked archival sources pertaining to ten birth cohorts that came of age during the last decades of the 19th century. The choice of this period was dictated both by data availability and by the noteworthy technological and social innovations that took place during those decades. More specifically, we focus on the Italian town of San Giovanni in Persiceto (henceforth SGP). The year of reference is 1871 and the initial children are the town’s children: they are the 4 to 14 year old members of a stratified random sample of the families residing in the town in 1871. Our aim is to collect information on these children’s initial conditions and their subsequent opportunities, choices, and outcomes throughout adulthood.

**The Archival Sources and the Natural Experiment** Consider first the initial conditions. Information on each child’s initial conditions is taken from the 1871 Census sheet to which the child belongs. This source is supplemented by other sources providing information on several forms of wealth as measured at about the same time: a Census of real estate properties conducted in 1865 and the 1873 registers pertaining to taxes levied on e.g. livestock holdings. Next, consider outcomes/choices of the child during his lifetime. Information on each child’s (mostly demographic) outcomes are derived from a unified collection of administrative sources, available from 1866 onwards. This collection records educational attainment, marriages, fertility (dates and gender of each offspring), occupation(s), and migrations from birth until death. Information on income and
wealth for each child’s household is then taken from yearly tax registers pertaining to the years 1874 to 1920. A Census of real estate properties conducted in 1929 supplies information on real estate wealth near the end of life for each child. Next, consider opportunities of the child during his lifetime. We have the luxury of observing income shocks received by a subset of these children and their families at a handful of points in time, namely every nine years starting in 1869. These shocks, besides being observable to us, are also by construction unrelated to the child and his family’s characteristics (observable and not). The reason for the observability, randomness, and exogeneity of the income shocks is a town institution, dating back to the 13th century and called Partecipanza, that pertains to a form of communal ownership of land. Every nine years the communal land is divided up into parcels that are then randomly assigned to the Partecipanza members. Because the parcels are of varying value, the assignment effectively produces random income shocks which we observe in the archival data and can link to each member family.

The Contribution The data collection project is extremely novel in its approach as well as very ambitious. To our knowledge there has never been an attempt to use the archival sources described above as we propose. Other countries besides Italy (e.g. France and Germany) have similar records starting from at least the second half of the 19th century. However, we know of no attempt to exploit these records to construct complete lifetime histories of a handful of cohorts. The fact that these records are linked to sources providing information on various components of family wealth is unprecedented. The fact that migrants will be followed across all the (within-country) locations they visit is unique: it will render the data assembled the most complete data on migrants in existence.

References


