

Jamie McCasland
Essays in Development Economics:
Lessons from an apprentice placement program in Ghana
100-word Abstract

The present thesis uses original survey data from a national-scale government apprentice placement program to provide empirical microeconomic evidence on the functioning of firms, labor markets, and program targeting in low-income countries. In the first two chapters, I utilize the random match between treatment apprentices and training firms to estimate the effects of access to labor on firms and of firm quality on apprentices. In the final chapter, I study an unusual implementation scenario in which we observe a sample of apprentices directly selected for the program by government officials alongside the entire pool of applicants eligible for the program.

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Two of the most ubiquitous features of economic activity in poor countries are an abundance of very small firms and high rates of youth unemployment.¹ Conventional wisdom argues that small firms face a frictionless market for workers, characterized by a lack of regulation (Rauch (1991)) and community networks that limit information constraints and prevent coordination failures (Zenou (2008)). On the other side of the market, it is often argued that unemployed youth lack the skills to be productively employed (Johanson and Adams (2004)), yet have free entry into small firm employment (Harris and Todaro (1970)). Empirical research on small firm growth has focused primarily on credit constraints (e.g. De Mel, McKenzie and Woodruff (2008)) and managerial skill deficits (e.g. Bloom and Reenan (2007))². However, there is little empirical evidence to substantiate assumptions that small firms are unconstrained by labor market frictions. In fact, anecdotal evidence suggests that small firms face high labor market search costs. For instance, firms in our baseline labor market require potential apprentices to post a monetary bond³ to buy into a job, and firm owners in our baseline survey cite difficulty finding and hiring good workers as a major constraint to growth.

In the first chapter of my dissertation, we study a national-scale government-initiated and -implemented worker placement program. The program recruited unemployed young people interested in apprenticeships and placed them with small firms in Ghana. It included no subsidy to firms (or workers) beyond in-kind recruitment services, and wages paid by firms to program apprentices are equivalent on average to those paid to non-program apprentices within sample firms. We interpret the intervention primarily as providing firms with a non-monetary screening mechanism to identify high-quality workers. In our empirical setting, workers pay this “sweat equity” bond by attending several meetings, interviews, and surveys,

¹The *World Bank Enterprise Surveys*, firm-level data from 135 countries which include primarily formal firms and only those with five or more employees, nonetheless show a strikingly higher density of small firms in poorer countries and poorer regions. In Ghana, the National Industrial Census (NIC) attempts to capture at least some proportion of informal manufacturing firms and shows 94% of manufacturing firms have fewer than twenty workers and these account for 48% of manufacturing employment (in 2000). Both the Enterprise Surveys and the NIC have been used to argue that firms in Sub-Saharan Africa start small and do not grow over time, in contrast to surviving firms in other regions (Iacovone, Ramachandran and Schmidt (2014), Sandefur (2010)). Hsieh and Olken (2014) present more comprehensive data of both formal and informal firms of all sizes (which is generally unavailable for countries in Sub-Saharan Africa) from India, Indonesia, and Mexico, where 98%, 97%, and 92% of firms have fewer than 10 employees, and 65%, 54%, and 22% of the labor force work in firms with fewer than 10 employees, respectively.

International Labor Organization measures put youth (age 15-24) unemployment at 11.8% in Sub-Saharan Africa and 12.6% in Ghana in 2012 (ILO (2013)). The unemployment rate may also understate the difficulties young people face in the labor market, as many are classified as employed but working only a few hours in agriculture or petty trade. Inactivity rates are also quite high, reaching 50% in some countries, and at least 20% in a majority of Sub-Saharan Africa countries with data, even among young men (Garcia and Fares (2008)).

²See also e.g. Anagol and Udry (2006), Bloom et al. (2013), Karlan, Knight and Udry (2012), and Kremer et al. (2013)

³We use the terminology bond posting to align with the literature on labor market bonding, but the bond functions more like a fee, as it is non-refundable.

and continuing to show interest in the apprenticeship despite a long lag in program roll-out.

Unemployed young people targeted by the program were chosen before any firm recruitment, which then centered around occupational trades preferred by program apprentices and geographic areas with high concentrations of program apprentices. Chosen apprentices and firm owners interested in hiring apprentices through the program were required to attend one of over a hundred district and trade level meetings. At these meetings, firm owners introduced themselves and apprentices were given the opportunity to list the firms with which they would be willing and able to work, based on geographic feasibility and general interest. These listed preferences generated apprentice-specific firm sets.

Within these apprentice-specific firm sets each apprentice was randomly assigned to one of his or her listed firms. Each randomization was independent and apprentices had equal probability of being assigned to each of their listed firms. Firms, consequently, were assigned a random number of apprentices (of differing ability levels at baseline) conditional on non-random apprentice interest. 383 firms were assigned zero apprentices. The remaining 700 firms were assigned between one and six apprentices, with 411 firms assigned one apprentice, 187 firms assigned two apprentices, and 102 firms assigned three or more. In our preferred specification, we control for non-random apprentice interest by including firm-level lottery fixed effects, within which each firm faces an equal probability of being assigned each of the multi-valued treatment assignments. Functionally, we measure the impact of a marginal apprentice across firms with similar levels of apprentice interest.

In addition, apprentices participated in a series of cognitive tests, including a Ravens matrices test, a short math test, an oral English vocabulary test, and a Digit Span Recall test. This detailed data on worker cognitive ability (unobservable to the firm) allows us to estimate experimental impacts of sub-treatments defined by splitting the apprentice sample into two groups. We split apprentices into those who perform above and below the median on each of the cognitive tests, and estimate differential treatment effects by (unobserved) worker cognitive ability (in the sample of firms that were listed by both above and below median workers). We are also able to compare these findings to differential treatment effects in sub-experiments defined by a largely observable measure of cognitive ability, namely the completion of Junior Secondary School (the end of free and compulsory education in Ghana).

We study a labor market in which firm owners, in the absence of the intervention, make use of a sophisticated bond-posting mechanism to hire inexperienced workers, and nearly universally cite a desire to screen workers as the impetus for the bond⁴. Under the program intervention, firm owners do not charge a monetary fee to begin an apprenticeship, yet screening via a non-monetary mechanism is executed by the government program. The non-monetary screening mechanism echoes the monetary bond-posting requirement. We develop a stylized model to formalize this insight. Workers, who vary by both ability type and wealth, know their type. Firms, however, have no useful signals about worker type. In the absence of any affordable screening technology, large lump sum search costs cause the market to collapse completely and small firms employ no workers (every firm is size one, the owner). In the market equilibrium we observe before intervention, firm owners screen out

⁴A market of this type is highly unusual, but the intuition behind it fits a large literature on the bonding critique to efficiency wage models, starting with Becker and Stigler (1974).

the lowest quality workers by requiring new apprentices to post a bond in order to begin an apprenticeship. Wages are paid as a proportion of revenues, which depend on ability. Consequently, only those workers whose ability is above a certain minimum level can expect a wage large enough to compensate them for the payment of the up-front bond. Missing credit markets cause a market failure in that workers whose ability exceeds fixed hiring costs remain unemployed if they cannot afford to post the bond.

We then model the worker recruitment and job placement program as a government-financed alternative (non-monetary) screening technology. Workers pay a “sweat equity” bond to signal ability. The model predicts an increase in employment as high ability workers who were previously unable to buy into jobs become employed. If we additionally model the program as paying (all or part of) the fixed costs of vacancy posting and search, employment would increase further as it becomes profitable (or at least zero profit in expectation) to employ lower ability workers.

Our first main result is that firm size increased in proportion to treatment assignment. Like most job training and placement programs, apprentice take-up was less than perfect. However, firms complied with the program design and did not reject assigned apprentices. We show a strong and linearly increasing relationship between total firm size and treatment assignment. Measured using lottery fixed effects, firm size increased by about half a worker for each assigned apprentice. These results imply two things. First, firms assigned one or more apprentices did not substitute away from other employment by firing existing workers. Second, firms assigned zero apprentices through the program failed to hire apprentices through some other means six months after apprentice placement. This suggests that though the program included no subsidy, the search and screening costs necessary to hire new apprentices are both a meaningful channel for policy intervention and potentially economically prohibitive for individual firms.

In the second main result of the paper, we show that apprentice labor inputs increased both reported revenues and reported profits, by about seven to ten percent over two rounds of firm-level follow-up data in the Intention To Treat (ITT) specification. We also estimate heterogeneity in revenue and profit effects by occupational trade group, gender, and baseline firm size. We find that effects do not vary by occupational trade group, but may vary by gender (with large and negative, but insignificant point estimates on the interaction term). Our most robust heterogeneity finding is that treatment effects are larger for firms that are smaller at baseline, suggesting that these firms are indeed facing higher search costs. It is worth noting that estimated increases in profits represent a lower bound for the fixed cost of search. We find no evidence that treatment firms invest in capital to complement the additional labor available for production.

Leveraging variation in worker cognitive ability and educational background at baseline, we show that above median cognitive ability apprentices generate larger treatment effects on revenues and profits. This third main result underlies the potential importance of adverse selection in the labor market for inexperienced workers, even in the context of high unemployment and largely unregulated small firms. In the presence of fixed costs to post a vacancy, identify potential workers, and train new hires, firm owners require a screening mechanism to ensure that these costs are recouped in expectation by worker output. Im-

perfect or missing screening technologies (and in general high search costs) can generate inefficiently low hiring in equilibrium. The ability metrics we use to show that high ability apprentices generate larger treatment effects are not immediately available to firm owners seeking to hire a worker. Signals that are available, like evidence of having completed Junior Secondary School, have no predictive power over the size of treatment effects.

This paper’s findings have potentially important implications for theory and policy. The closest paper to ours is De Mel, McKenzie and Woodruff (2013), the first experimental study to our knowledge of a labor market intervention with small firms in a developing country context. They offered a wage subsidy to a sample of firms in Sri Lanka which was taken up by only about 20% of the firms in the sample, and found no effects on revenues or profits. The program required firm owners to find, screen, and hire their own workers in order to qualify for the subsidy. We should note that in our screening model, a reasonably sized wage subsidy would not increase employment. This is because in our model the binding labor market constraint comes from lump sum search costs and asymmetric information over worker quality, rather than minimum wage restrictions.

We also add to a classic literature on the dual economy and dual labor markets, pioneered by Lewis (1954) and implicit in influential theoretical work on rural/urban migration (Harris and Todaro (1970)). These models argue that in a dual sector labor market, small firms in the informal sector hire mostly family members and thus suffer from fewer coordination failures (Zenou (2008)). In our sample, while family and other socially connected individuals make up a sizable portion of the existing workforce, apprentices previously unknown to the firm owner are common. Recent macro models of informality have started to consider search costs in the informal sector, but direct empirical evidence is still missing (Ulyssea (2010), Meghir, Narita and Robin (2012))⁵.

Finally, apprenticeship training is widespread in Ghana and West Africa, and a common employment arrangement by which small firms can access low wage labor inputs and apprentices can gain both training and work experience. Recent non-experimental research has found that apprenticeship training has positive labor market impacts on earnings for completed apprentices (Frazer (2006), Monk, Sandefur and Teal (2008)). This paper is the first evidence on the impact of apprentice labor on firm output and suggests that apprentice placement programs like the one studied here could generate benefits not only for unemployed young people but also for small firms in similar contexts.

The second chapter of my dissertation uses the random match experiment to study the other side of the market; rather than focusing on firm outcomes, in this chapter I focus on apprentice outcomes. The efficacy (or inefficacy) of job training programs is among the most studied topics in empirical microeconomics. This paper contributes to the literature in three important ways. First, we study the question in a Sub-Saharan African context, where

⁵Besley and Burgess (2004) do provide empirical evidence on the topic, but consistent with older literature find that stronger labor regulation in Indian states pushes workers and firms into the (less productive) informal sector. As Rauch (1991) notes, firm size and firm formality are empirically distinct ways to characterize the firm landscape. The majority of both the theoretical and empirical literature focuses on the formal/informal distinction and/or on minimum wage and other direct regulatory restrictions. Our study in contrast focuses on small firms, regardless of formality status, and on search costs inherent in the functioning of the labor market (rather than imposed by government regulation).

productive skill shortages are particularly acute and institutional education and training infrastructure particularly insufficient. Second, while many evaluations include heterogeneity analysis by trainee type, we focus on heterogeneity in training firm characteristics, about which there is relatively little evidence. The experimental design allows for well-identified estimates of the effect of firm characteristics on trainee outcomes. Finally, the skill progress metrics included in this current version of the paper, combined with an upcoming independent skills assessment and a 2016/2017 apprentice-level follow-up survey, will allow us to measure both actual skill accumulation and medium-term labor market returns.

The randomized assignment of apprentices to firms generates exogenous variation in the characteristic of the firm with which each apprentice trains. Using this exogenous variation, we estimate the effect of firm-level characteristics on apprentice outcomes, as measured using two firm-level follow-up surveys, conducted approximately three and six months after the commencement of the apprenticeships. The firm-level characteristics we study include baseline firm profits, baseline firm sales, the number of workers in the firm, and whether the firm has any non-family workers at baseline. We also study some characteristics of the firm owner, namely their experiences training apprentices in the past and their performance on a memory test given at baseline. Apprentice-level outcome variables in the two follow up surveys include a proxy for attendance (whether the apprentice was present on the day of the followup survey), hours worked/labor supply, measures of instruction time and other time use by the apprentices, and measures of apprentice skill. Apprentice skill is measured using a ten point series of craft-specific tasks, on which apprentices are rated by their trainers as unable to do, somewhat competent in doing, or having fully mastered. Though firm owners report this measure (and it is therefore not fully objective), it is unlikely that reporting bias explains our results. In addition, independent assessments of apprentices are scheduled for later this year, and labor market surveys for all apprentices are scheduled for 2016/2017. These additional outcome measures will allow us to provide further evidence on firm-level determinants of apprentice outcomes in later versions of this article.

Our main finding is that larger, more profitable firms increase apprentice learning, as measured by apprentice partial competence and mastery in craft-specific skills. In addition, firm owners who perform better on our cognitive test and who have more experience training apprentices also result in higher craft-specific partial competence for apprentices. We also estimate whether these firm characteristics affect hours worked in the last work day or week, whether the apprentice was present on the day of the survey, and how the apprentice used his or her time during the last work day. We find positive trends, but nothing particularly conclusive. Findings on hours worked depend on the variable we choose to study. Firms with higher than average baseline firm sales, higher than average baseline firm profits, and firm owners with some experience training apprentices are associated with approximately four more work hours in the last week. Firms with more than two workers besides the owner, at least one non-family worker, and firm owners with higher than average performance on our measure of cognitive ability are associated with about a half an hour of additional apprentice labor supplied (and demanded) in the last work day.

Firm owner cognitive ability and baseline firm sales are positively related to attendance, with point estimates around 10%. Though total instruction is not predicted by firm char-

acteristics, apprentices who are matched to firms with a larger number of senior apprentices at baseline receive more instruction from those senior apprentices. Our follow-up surveys captured apprentice time use, as reported by the firm owner, in the last work day. We divide the day into six categories: Instruction by firm owner, instruction by someone else in the business, observation, practice not for a customer, work on a customer order, and errands or other duties for the shop owner. Observation in this context basically means watching the firm owner perform some task, and perhaps holding string or handing over tools. Practice not for a customer is particularly common in garment making and hairdressing, where work with paper fabric or on model hair is common early in an apprenticeship. Errands or other duties for the shop owner is meant to capture time spent not actually working on business matters, as it is quite common for firm owners to ask apprentices to do personal errands on behalf of the firm owner. Perhaps the most striking time use finding is that time spent in the last day doing errands is about half an hour less for apprentices assigned to firms with higher than average baseline sales, higher than average baseline profits, and higher than average performance on our measure of cognitive ability.

Taken together, our findings suggest that firm characteristics are an important predictor of apprentice learning. As we might expect, firm owners with high cognitive ability and more training experience are beneficial. Note, however, that we find no effect of firm owner years of formal schooling on apprentice outcomes. The seemingly more important firm-level features are not characteristics of the firm owner, but of the business. Larger and busier firms are simply better places to learn.

Much of the job training literature in rich countries studies large-scale center based programs, such as the Job Corps program in the United States. In a large scale evaluation of that program, Burghardt and Schochet (2001) find no differences in outcomes by geographical features of the training center, training center size, or interestingly, training center ratings and performance reviews by the national government. Several other papers have compared classroom training to on-the-job training and have somewhat conflicting findings regarding which type of job training leads to larger gains in employment and earnings for trainees (e.g. Attanasio, Kugler and Meghir (2008), Card and Sullivan (1988))⁶. Rosholm and Dabalén (2007) study currently employed workers in formal sector enterprises in Kenya and Zambia, matching those who receive on-the-job training to those who do not to generate estimates of the wage returns to on-the-job training. They find that wages increase at a higher rate for those who receive on-the-job training, with heterogeneously high returns for workers in firms with 10 or more employees. Our paper provides the first well-identified evidence, to our knowledge, of firm-level determinants of on-the-job training returns in Sub-Saharan Africa, and focuses on the informal sector where the majority of vocational skills training takes place.

In the final chapter of my dissertation, I present descriptive evidence on program participant selection from a unique implementation scenario. Here I discuss the selection of apprentices, which precedes the random firm-apprentice match studied in the first two chapters.

⁶See Card, Kluve and Weber (2010) for a meta analysis of nearly 100 evaluations, and Betcherman et al. (2007) for a global inventory of job training programs and evaluations targeted specifically to young people.

Program participant selection is an often overlooked, but critical feature in the implementation of government job training programs. While there is a rich empirical literature on heterogeneous returns to various types of job training, and an influential theoretical and empirical literature on distributive politics in low-income countries, we have little evidence that links the two. In the context of limited resources and limited spots in any particular training program, local bureaucrats are often tasked with choosing participants. Consequently, understanding this selection process is necessary if we wish to predict (1) the social insurance success of job training programs in the absence of intense monitoring, and (2) how this type of selection might affect average returns once evaluators have left the building.

For this project, we as evaluators, developed a relationship with the national government agency that initiated a national-scale apprenticeship training program. The national government officials sought a randomized evaluation of the program, seeing it as the gold-standard in terms of evidence of the program’s success or failure. In the course of implementation, which was decentralized to the district level, our staff brushed up against significant pushback from local government administrators on the randomization. This type of pushback is not uncommon. Though distributive political ambitions could inspire pushback, it is also commonly inspired by concern that randomization might leave out some of the neediest potential recipients. Whatever the inspiration, the national officials pushing the evaluation proposed a somewhat novel solution to meet the demands of local government officials while still maintaining the integrity of the evaluation. They proposed that 20% of program spaces in each district be reserved for personal selection by the district officials. The randomization then pulled from the remaining eligible applicants to assign treatment status for the final 80%. For the remainder of the paper, we refer to the 20% interchangeably as “priority” and “official-selected”. Note that these chosen individuals were guaranteed a space in the program. In addition, the number turned out to vary a bit by district, but hovers around 20% of available spaces. In total, this then makes up about 10% of all eligible applicants (with about half of the remaining 90% of eligible applicants subsequently assigned to treatment and the other half to control). All treatment and priority applicants were invited to participate in placement meetings (and enter the firm-apprentice match randomization).

This unusual solution leaves us with administrative micro data on all eligible applicants to the program, and on the small fraction that were directly chosen by government officials across 32 districts participating in the evaluation. In our analysis, we drop four districts that chose not to select any priority applicants, leaving us with applicant survey data from 28 unique districts. In addition, we have demographic and survey data on some of the district officials who participated in each of the decentralized districts. It is missing from three of the remaining districts, leaving 25, with an average of two officials per district. This data allows us to measure whether observable district committee member characteristics could be driving any results.

We find, first, that priority young people are better connected to government (through family members with government jobs). On average, priority applicants have 1.2 family members working in local government, and 1 “close” family member working in local government. A close family member is a parent, sibling, aunt/uncle, or spouse. Decomposed into those working with the Ghana Education Service, which was the primary implementing body

at the district level, those working with the District Assembly, an elected office which was also often involved, and other, we find that official-selected participants have more family members working both with GES and the District Assembly than the total eligible pool. Also note that the eligible pool seems to have a relatively high number of family members in government, an artifact of the fact that this is a government program and we observe only eligible applicants, who are probably more likely to hear about and apply for the program if they have some government connection. This highlights one important weakness in our data, though it still allows us to utilize the administrative feature of the micro data (i.e. we have all relevant applicants).

Next, we find that priority applicants are more likely to be female, suggesting perhaps some social insurance motive. However, other demographics point in the opposite direction. Priority applicants have far better educated mothers and fathers, and are less likely to be parents themselves. This suggests regressive selection policies. We also test for ethnic favoritism in a few different ways. First, we measure whether having ethnic representation in the district committee that matches the ethnicity of the applicant (i.e. at least one committee member of the applicant's ethnicity) affects priority selection. We find that it does not. The participant selection was carried out in an election year, so we also test for politically motivated ethnic favoritism. In August 2012, the sitting President John Atta Mills passed away and was succeeded peacefully by his Vice President John Mahama, who then ran to retain the seat in Dec 2012. He won the election in Dec 2012, and at the time of this writing, is still the sitting president. We check for ethnic favoritism towards Fante (the ethnicity of President John Atta Mills) or Gonja (the ethnicity of President John Mahama) individuals and find no evidence of ethnicity based favoritism. Though ethnicity based favoritism is a central topic in the literature on patronage and distributive politics, we are not surprised by this finding. Anecdotal experience in Ghana suggests that ethnicity is a much less divisive issue there than in many other countries in Sub-Saharan Africa.

Our relatively rich dataset on all eligible applicants also includes several cognitive ability measures. We find that official-selected participants are better educated than the total eligible pool. They also perform much better on an oral test of English vocabulary. They do not, however, differ in their performance with respect to the other cognitive and non-cognitive ability measures we capture in the survey. We interpret the English vocabulary performance as primarily capturing affluence, as English language knowledge is much higher among more affluent Ghanaians (both in terms of having better educated parents, and in terms of wealth).

Finally, we test for differences between the pool of eligible applicants and official-selected applicants on measures of baseline labor market outcomes, and measures of household wealth, as captured by an asset index. We find no difference in baseline labor market outcomes, as very few applicants are wage or self employed at baseline. We do find differences in household assets, where priority applicants are more likely to live in a household with a car and with a refrigerator. They also live in households with higher asset wealth when reduced to a first principal component analysis, and personally have more pairs of shoes. Together these suggest that priority applicants come from relatively wealthier households, on average.

Taken together, these findings suggest evidence of distributive politics, wherein resources

are channeled to connected, affluent individuals, rather than the neediest or those for whom the program could yield the highest returns. It could be the case, however, that well-connected people are also the people for whom returns are highest. Though the program is still in progress, we do have some intermediate outcomes that we can use to investigate whether priority applicants who enter the training are doing better than other applicants. To do so, we first regress priority status on enrollment, attendance, hours worked, and mastery of tasks associated with the particular craft. We find that priority apprentices are significantly more likely to take-up the program, but do not appear to perform better, once in the program. This suggests that official-selection could be beneficial in driving up enrollment rates, while having no significant effect on average treatment effects. Note, however, that the point estimates on skill mastery are negative. An independent skills assessment scheduled for later this year and a 2016/2017 follow-up survey on apprentice labor market outcomes could help clarify this finding. Should priority apprentices perform significantly better/worse on the skills assessment or better/worse in terms of labor market returns, we will be able to make a stronger case for the applicability of average treatment effect estimates generated by randomized controlled trials and/or the detriment to average treatment effects associated with patronage.

We also employ a propensity score matching approach to measure whether priority status predicts outcomes conditional on the observable characteristics that predict priority status, in an effort to get closer to a causal estimate of priority status on outcomes. We estimate the propensity to be priority using a probit specification and baseline data on gender, years of schooling, vocabulary score, government connections, number of shoes, and whether the applicant's household has a car and/or a refrigerator. Essentially, we attempt to control for each of the characteristics that we have shown predict priority status. We exclude only mother and father education, as those variables are missing for a large fraction of the sample. We then regress priority status on enrollment, attendance, hours worked, and mastery of tasks associated with the particular craft, adjusting for the propensity score, controlling for district dummies, and clustering at the district level. We again find evidence that conditional on their propensity score, priority applicants are more likely to take up. We also find that priority applicants appear more likely to be in attendance on the day of the survey (over two rounds of surveys). We find, however, no evidence that they work more hours, or master more skills (more quickly). Again, the estimates on partial skill competence and skill mastery are negative.

In trying to explain our findings, we investigate whether characteristics of the district official committee members or characteristics of the districts themselves can explain variation across districts in the degree to which priority selection targets affluent individuals. We find no significant relationships between district official characteristics and the degree of bias towards affluent applicants, and no evidence that election outcomes at the district or region level affect selection. We do, however, note that the Greater Accra region appears to display the strongest preference for well-connected and affluent applicants.

This paper contributes to the empirical literature on differential returns to job training programs. Monk, Sandefur and Teal (2008) find that returns to apprenticeship training in Ghana are highest for those with little to no formal schooling. Similar heterogeneity

along baseline formal schooling is found in studies of programs in both the developed and developing world (Grootaert and Mundial (1988), Blundell, Dearden and Meghir (1996)). Gender is another important dimension of job training treatment effects variation, with many credibly identified studies finding that women benefit more than men (Attanasio, Kugler and Meghir (2008), Nopo, Saavedra-ChanduvŠ and Robles (2007), Greenberg, Michalopoulos and Robins (2003)). These heterogeneous returns highlight the importance of participant selection in the context of job training⁷.

We also contribute to the empirical study of distributive politics⁸. Kramon and Posner (2013) provide a survey of the extensive and growing literature on the topic, highlighting that the degree and nature of biased distribution can depend critically on the patronage good itself. In Ghana, Banful (2011) finds that intergovernmental transfers from the District Assemblies Common Fund were higher in more politically competitive districts, and Miguel and Zaidi (2003) find that decentralization may limit patronage in school funding. Alatas et al. (2010) and Beaman et al. (2014) study allocative efficiency and the targeting of government programs: anti-poverty transfers and agricultural extension services, respectively. In Kenya, Burgess et al. (2015), Barkan and Chege (1989), Kramon and Posner (2012), and Morjaria (2013) document the ubiquity of political patronage and distributive politics along ethnic lines. We, in contrast, find no evidence of ethnically-motivated allocative inefficiency. Alesina, Danninger and Rostagno (1999) and Crampton (2004) study public employment and job creation grants in Italy and Canada, potentially the closest program types to our work.

The three essays in this dissertation use original survey data from a national-scale government job training program to provide empirical microeconomic evidence on the functioning of firms, labor markets, and program targeting in low income countries. Each essay addresses, more or less directly, private enterprise development in low-income countries, an area of development economics that I believe is deeply in need of more research.

⁷See also Card et al. (2011), Bloom et al. (1997), Betcherman et al. (2007), Card, Kluge and Weber (2010), and Kluge et al. (2005).

⁸Alperovich (1984), Arulampalam et al. (2009), Berry, Burden and Howell (2010), Calvo and Murillo (2004), Case (2001), Dahlberg and Johansson (2002), de la Fuente and Vives (1995), Johansson (2003), Levitt and Snyder (1995), Sole-Olle and Sorribas-Navarro (2008), Tavits (2009), and Worthington and Dollery (1998) study intergovernmental grants from national governments to state, provincial, or municipal governments around the rich and developing world. Blaydes (2011), Castells and Sole-Olle (2005), Golden and Picci (2008), and Min (2010) study distributive politics in the context of infrastructure spending. Cole (2009) and Kasara (2007) study agricultural subsidies and taxes in India and across African states, respectively. Diaz-Cayeros, Magaloni and Estvez (2011), Gonzalez (2002), Winters (2009), and Zucco (2008) study the distribution and targeting of cash transfers. Franck and Rainer (2012), Hawkins (2010), Fisman (2001*b*), Stokes et al. (2011), and Vaishnav and Sircar (2009) study education and health spending. Banerjee, Mullainathan and Hanna (2012) provide a survey and theoretical framework for corruption in developing countries, focusing in part on allocative inefficiency. Bertrand et al. (2007), Fisman (2001*a*), Reinikka and Svensson (2004) are particularly influential empirical studies of corruption in developing countries.

References

- Alatas, Vivi, Abhijit Banerjee, Rema Hanna, Benjamin A. Olken, and Julia Tobias.** 2010. "Targeting the poor: evidence from a field experiment in Indonesia." NBER Working Paper, No. w15980.
- Alesina, Alberto, Stephan Danninger, and Massimo V. Rostagno.** 1999. "Redistribution through Public Employment: The Case of Italy." NBER Working Paper, No. w7387.
- Alperovich, Gershon.** 1984. "The Economics of Choice in the Allocation of Intergovernmental Grants to Local Authorities." *Public Choice*, 44(2): 285-296.
- Anagol, Santosh, and Christopher Udry.** 2006. "The Return to Capital in Ghana." *American Economic Review: Papers and Proceedings*, February.
- Arulampalam, Wiji, Sugato Dasgupta, Amrita Dhillon, and Bhaskar Dutta.** 2009. "Electoral Goals and Center-State Transfers: A Theoretical Model and Empirical Evidence from India." *Journal of Development Economics*, 88(1): 103-119.
- Attanasio, Orazio, Adriana Kugler, and Costas Meghir.** 2008. "Training Disadvantaged Youth in Latin America: Evidence from a Randomized Trial." NBER Working Paper, No. 13931.
- Banerjee, Abhijit, Sendhil Mullainathan, and Rema Hanna.** 2012. "Corruption." NBER Working Paper, No. w17968.
- Banful, Afua Branoah.** 2011. "Do formula-based intergovernmental transfer mechanisms eliminate politically motivated targeting? Evidence from Ghana." *Journal of Development Economics*, 96, no. 2 (2011): 380-390.
- Barkan, Joel D., and Michael Chege.** 1989. "Decentralising the State: District Focus and the Politics of Reallocation in Kenya." *Journal of Modern African Studies*, 27(3): 431-453.
- Beaman, Lori, Ariel BenYishay, Jeremy Magruder, and A. Mushfiq Mobarak.** 2014. "Can network theory based targeting increase technology adoption." Working Paper.
- Becker, Gary, and George Stigler.** 1974. "Law Enforcement, Malfeasance, and Compensation of Enforcers." *Journal of Legal Studies*, 3(1), 1-18.
- Berry, Christopher R, Barry C. Burden, and William G. Howell.** 2010. "The President and the Distribution of Federal Spending." *American Political Science Review*, 104(4): 783-799.
- Bertrand, Marianne, Simeon Djankov, Rema Hanna, and Sendhil Mullainathan.** 2007. "Obtaining a Driver's License in India: An Experimental Approach to Studying Corruption." *Quarterly Journal of Economics*, 122(4): 1639-1676.

- Besley, Timothy, and Robin Burgess.** 2004. "Can Labor Regulation Hinder Economic Performance? Evidence from India." *Quarterly Journal of Economics*, 119(1): 91–134.
- Betcherman, Gordon, Martin Godfrey, Susana Puerto, Friederike Rother, and Antoneta Stavreska.** 2007. "Global inventory of interventions to support young workers: Synthesis Report." World Bank Working Paper.
- Blaydes, Lisa.** 2011. "Elections and Distributive Politics in Mubarak's Egypt." Working Paper.
- Bloom, Howard S., Larry L. Orr, Stephen H. Bell, George Cave, Fred Doolittle, Winston Lin, and Johannes M. Bos.** 1997. "The benefits and costs of JTPA Title II-A programs: Key findings from the National Job Training Partnership Act study." *Journal of human resources*, 549-576.
- Bloom, Nicholas, and John Van Reenan.** 2007. "Measuring and Explaining Differences in Management Practices Across Countries." *Quarterly Journal of Economics*, 122(4): 1351–1408.
- Bloom, Nicholas, Benn Eifert, Aprajit Mahajan, David McKenzie, and John Roberts.** 2013. "Does Management Matter? Evidence from India." *Quarterly Journal of Economics*, 128 (1).
- Blundell, Richard, Lorraine Dearden, and Costas Meghir.** 1996. "The Determinants and Effects of Work Related Training in Britain." Institute of Fiscal Studies Working Paper.
- Burgess, Robin, Remi Jedwab, Edward Miguel, and Ameet Morjaria.** 2015. "The Value of Democracy: Evidence from Road Building in Kenya." *American Economic Review*, Forthcoming.
- Burghardt, J., and P. Schochet.** 2001. "National Job Corps Study: impacts by center characteristics." *Mathematica Policy Research*.
- Calvo, Ernesto, and Maria Victoria Murillo.** 2004. "Who Delivers? Partisan Clients in the Argentine Electoral Market." *American Journal of Political Science*, 48(4): 742–757.
- Card, David, and Daniel Sullivan.** 1988. "Measuring the Effect of Subsidized Training Programs on Movements In and Out of Employment." *Econometrica*, 56, 497-530.
- Card, David, Jochen Kluve, and Andrea Weber.** 2010. "Active Labour Market Policy Evaluations: A Meta Analysis." *The Economic Journal*, 120, no. 548 (2010): F452-F477.
- Card, David, Pablo Ibarrraran, Ferdinando Regalia, David Rosas-Shady, and Yuri Soares.** 2011. "The labor market impacts of youth training in the Dominican Republic." *Journal of Labor Economics*, 29, no. 2 (2011): 267-300.
- Case, Anne.** 2001. "Election Goals and Income Redistribution: Recent Evidence from Albania." *European Economic Review*, 45: 405–423.

- Castells, Antoni, and Albert Sole-Olle.** 2005. "The Regional Allocation of Infrastructure Investment: The Role of Equity, Efficiency, and Political Factors." *European Economic Review*, 49(5): 1165–1205.
- Cole, Shawn.** 2009. "Fixing Market Failures or Fixing Elections? Agricultural Credit in India." *American Economic Journal: Applied Economics*, 1(1): 219–250.
- Crampton, Eric.** 2004. "Distributive Politics in a Strong Party System: Evidence from Canadian Job Grant Programs." Working Paper.
- Dahlberg, Matz, and Eva Johansson.** 2002. "On the Vote Purchasing Behavior of Incumbent Governments." *American Political Science Review*, 96(1): 27–40.
- de la Fuente, Angel, and Xavier Vives.** 1995. "Infrastructure and Education as Instruments of Regional Policy: Evidence from Spain." *Economic Policy*, 10(20): 11–51.
- De Mel, Suresh, David McKenzie, and Christopher Woodruff.** 2008. "Returns to Capital in Microenterprises: Evidence from a Field Experiment." *Quarterly Journal of Economics*, 123(4): 1329–1372.
- De Mel, Suresh, David McKenzie, and Christopher Woodruff.** 2013. "What Generates Growth in Microenterprises? Experimental Evidence on Capital, Labor and Training." Working Paper.
- Diaz-Cayeros, Alberto, Beatriz Magaloni, and Federico Estvez.** 2011. "Strategies of Vote Buying: Democracy, Clientelism, and Poverty Relief in Mexico." Working Paper.
- Fisman, Raymond.** 2001a. "Estimating the Value of Political Connections." *American Economic Review*, 91(4): 1095–1102.
- Fisman, Raymond.** 2001b. "Venezuela's Chavismo and Populism in Comparative Perspective." Working Paper.
- Franck, Raphael, and Ilia Rainer.** 2012. "Does the Leader's Ethnicity Matter? Ethnic Favoritism, Education and Health in Sub-Saharan Africa." *American Political Science Review*, 106(2): 294–325.
- Frazer, Garth.** 2006. "Learning the Master's Trade: Apprenticeship and human capital in Ghana." *Journal of Development Economics*, 81: 259–298.
- Garcia, Marito, and Jean Fares.** 2008. "Youth in Africa's Labor Markets." World Bank Publications, The World Bank: number 6578.
- Golden, Miriam, and Lucio Picci.** 2008. "Pork-Barrel Politics in Postwar Italy, 1953–94." *American Journal of Political Science*, 2(2): 268–289.
- Gonzalez, Maria de los Angeles.** 2002. "Do Changes in Democracy Affect the Political Budget Cycle? Evidence from Mexico." *Review of Development Economics*, 6(2): 204–224.

- Greenberg, David H., Charles Michalopoulos, and Philip K. Robins.** 2003. "A meta-analysis of government-sponsored training programs." *Industrial and Labor Relations Review*, 57, no. 1 (2003): 31-53.
- Grootaert, Christiaan, and Banco Mundial.** 1988. "Cote d'Ivoire's vocational and technical education." International Bank for Reconstruction and Development Working Paper.
- Harris, J., and M. Todaro.** 1970. "Migration, Unemployment and Development: A Two-sector Analysis." *American Economic Review*, 40: 126-142.
- Hawkins, Kirk A.** 2010. "Estimating the Value of Political Connections." *American Economic Review*, 91(4): 1095-1102.
- Hsieh, Chang-Tai, and Benjamin Olken.** 2014. "The Missing 'Missing Middle'." *Journal of Economic Perspectives*, American Economic Association: vol. 28(3), pages 89-109, Summer.
- Iacovone, Leonardo, Vijaya Ramachandran, and Martin Schmidt.** 2014. "Stunted Growth: Why Don't African Firms Create More Jobs?" Working Paper 353, Center for Global Development.
- ILO.** 2013. "Global Employment Trends for Youth." Working Paper, International Labor Organization.
- Johanson, Richard K., and Avril V. Adams.** 2004. "Skills Development in Sub-Saharan Africa." World Bank Publications, The World Bank: number 15028.
- Johansson, Eva.** 2003. "Intergovernmental Grants as a Tactical Instrument: Empirical Evidence from Swedish Municipalities." *Journal of Public Economics*, 7(5-6): 883-915.
- Karlan, Dean, Ryan Knight, and Christopher Udry.** 2012. "Hoping to Win, Expected to Lose: Theory and Lessons on Microenterprise Development." NBER Working paper, 18325.
- Kasara, Kimuli.** 2007. "Tax Me If You Can: Ethnic Geography, Democracy and the Taxation of Agriculture in Africa." *American Political Science Review*, 101(1): 159-172.
- Kluge, J., D. Card, M. Fertig, Jacobi Gra, M., P. L., Jensen, Nima L. Leetmaa, R., E. Patacchini, S. Schaffner, C.M. Schmidt, B. van der Klaauw, and A. Weber.** 2005. "Study on the effectiveness of ALMPs." Report prepared for the European Commission, DG Employment, Social Affairs and Equal Opportunities.
- Kramon, Eric, and Daniel N. Posner.** 2012. "Ethnic favoritism in primary education in Kenya." Working Paper.
- Kramon, Eric, and Daniel N. Posner.** 2013. "Who benefits from distributive politics? How the outcome one studies affects the answer one gets." *Perspectives on Politics*, 11(02), 461-474.

- Kremer, Michael, Jean Lee, Jonathan Robinson, and Olga Rostapshova.** 2013. "Behavioral Biases and Firm Behavior: Evidence from Kenyan Retail Shops." *American Economic Review: Papers and Proceedings*, 103 (3).
- Levitt, Steven D., and James M. Snyder.** 1995. "Political Parties and the Distribution of Federal Outlays." *American Journal of Political Science*, 39(4): 958-980.
- Lewis, Arthur.** 1954. "Economic Development with Unlimited Supplies of Labour." *Manchester School*, 22: 139-191.
- Meghir, Costas, Renata Narita, and Jean-Marc Robin.** 2012. "Wages and Informality in Developing Countries." NBER Working Paper, 18347.
- Miguel, Edward, and Farhan Zaidi.** 2003. "Do Politicians Reward Their Supporters? Regression Discontinuity Evidence from Ghana." WGAPE Working Paper.
- Min, Brian.** 2010. "Democracy and Light: Public Service Provision in the Developing World." Ph.D. diss., University of California-Los Angeles.
- Monk, Courtney, Justin Sandefur, and Francis Teal.** 2008. "Does Doing an Apprenticeship Pay Off? Evidence from Ghana." CSAE Working Paper Series 2008-08, Centre for the Study of African Economies, University of Oxford.
- Morjaria, Ameet.** 2013. "Is Democracy Detrimental for the Environment in Developing Countries? Evidence from Kenya." Working Paper.
- Nopo, Hugo, Jaime Saavedra-Chanduv, and Miguel Robles.** 2007. "Occupational Training to Reduce Gender Segregation: The Impacts of ProJoven." IDB Working Paper, No. 623.
- Rauch, James.** 1991. "Modeling the Informal Sector Formally." *Journal of Development Economics*, vol. 35(1), pages 33-47.
- Reinikka, Ritva, and Jakob Svensson.** 2004. "Local Capture: Evidence from a Central Government Transfer Program in Uganda." *Quarterly Journal of Economics*, 119(2): 679-705.
- Rosholm, M., Nielsen H. S., and A. Dabalén.** 2007. "Evaluation of training in African enterprises." *Journal of Development Economics*, 84, 310-329.
- Sandefur, Justin.** 2010. "On the Evolution of the Firm Size Distribution in an African Economy." CSAE Working Paper Series 2010-05, Centre for the Study of African Economies, University of Oxford.
- Sole-Olle, Albert, and Pilar Sorribas-Navarro.** 2008. "The Effects of Partisan Alignment on the Allocation of Intergovernmental Transfers: Differences-in-Differences Estimates for Spain." *Journal of Public Economics*, 92(12): 2302-2319.
- Stokes, Susan C., Thad Dunning, Marcelo Nazareno, and Valeria Brusco.** 2011. "Buying Votes: Distributive Politics in Democracies." Working Paper.

- Tavits, Margit.** 2009. "Geographically Targeted Spending: Exploring the Electoral Strategies of Incumbent Government." *European Political Science Review*, 1(1): 102-123.
- Ulyssea, Gabriel.** 2010. "Regulation of entry, labor market institutions and the informal sector." *Journal of Development Economics*, 91(1), 87-99.
- Vaishnav, Milan, and Neelanjan Sircar.** 2009. "The Geography of Patronage: Building Schools in India." Working Paper.
- Winters, Matthew S.** 2009. "The Political Targeting of a Cash Transfer Program in Ecuador." Working Paper.
- Worthington, Andrew C., and Brian E. Dollery.** 1998. "The Political Determination of Intergovernmental Grants in Australia." *Public Choice*, 94(3): 299-315.
- Zenou, Yves.** 2008. "Job Search and Mobility in Developing Countries: Theory and Policy Implications." *Journal of Development Economics*, vol. 86, pages 336-355.
- Zucco, Cesar.** 2008. "The President's New Constituency: Lula and the Pragmatic Vote in Brazil's 2006 Presidential Election." *Journal of Latin American Studies*, 40(1): 29-49.