ECONOMIC DEVELOPMENT & INSTITUTIONS

# EDI Private Sector Research: Showing How to Improve Management in Firms and Government

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## Abstract

We place the research on the private sector supported by the Economic Development and Institutions (EDI) Programme into the context of the broader literature. The review illuminates the contribution of the EDI research in two areas that are at the centre of the current research frontier. First, the work helps us understand why improvement in management practices is difficult in lower-income countries. Second, the EDI research pushes the frontier in the public sector, showing that properly designed training can improve organisational practices in the public sector.

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Institutions matter for growth and inclusive development. But despite increasing awareness of the importance of institutions on economic outcomes, there is little evidence on how positive institutional change can be achieved. The Economic Development and Institutions – EDI – research programme aims to fill this knowledge gap by working with some of the finest economic thinkers and social scientists across the globe.

The programme was launched in 2015 and will run until 2022. It is made up of four parallel research activities: path-finding papers, institutional diagnostic, coordinated randomised control trials, and case studies. The programme is funded with UK aid from the UK government. For more information see http://edi.opml.co.uk.

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# 1 Introduction

The measurement of management practices has become much more precise in the past decade. Much of this owes to the work of the World Management Survey[1] and related systematic measurement exercises (motivated) by the Survey. Figure 1 shows that there is a very strong correlation between average management performance and gross domestic product (GDP) per capita at the country level. Bloom *et al*. (2013, 2020) and Giorcelli (2019) show that management has a causal effect on firm performance. Establishing a causal link suggests that if we find ways to improve management practices in low-income countries, we should expect to see increased performance in the private and public sector, ultimately leading to an increase in GDP per capita.

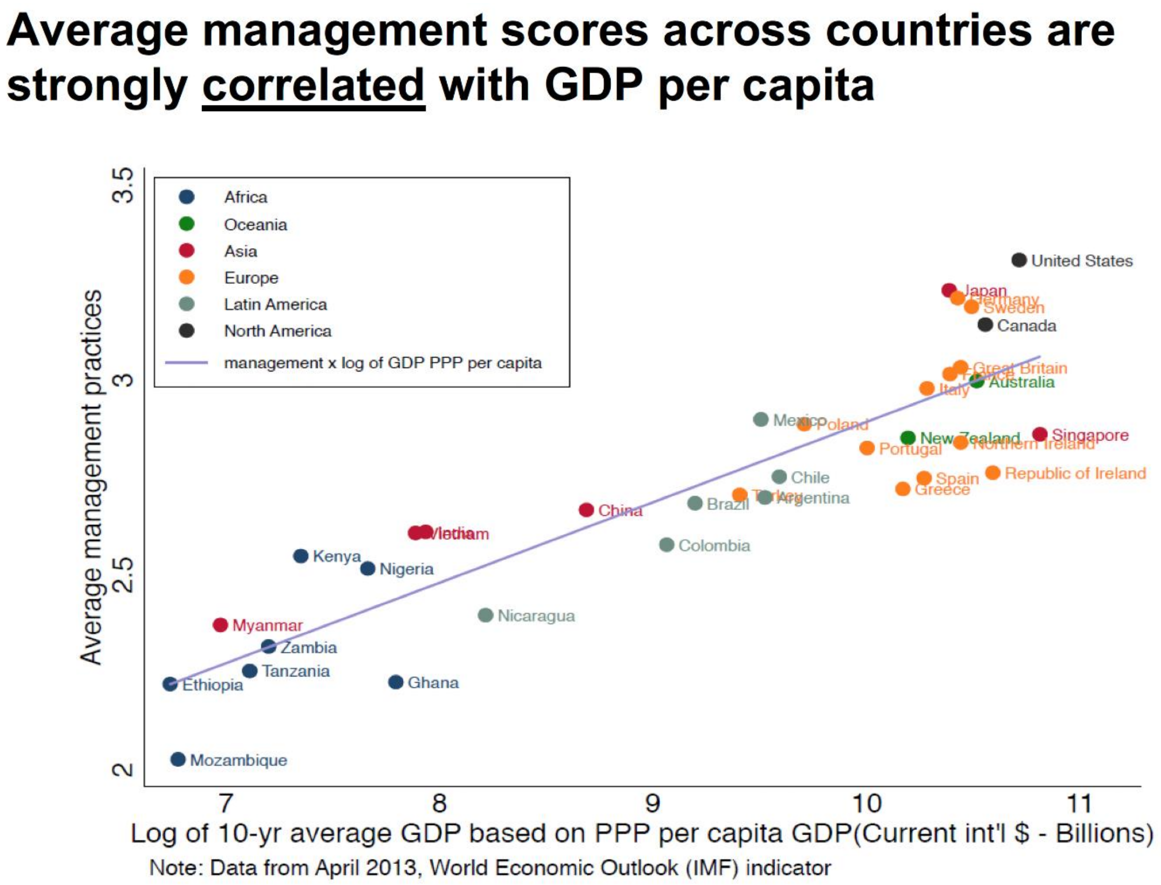
Improving management practices has proven to be difficult. A substantial body of evidence shows that standard training programmes aimed at small and medium-sized firms are either ineffective or have limited effectiveness (McKenzie *et al*. 2021). Individualised and more intensive consulting interventions are effective, but very costly to implement (Bloom *et al*. 2013. This raises the challenge of identifying cost-effective interventions that result in sustained improvements of management practices. Several of the EDI-supported projects have exactly this aim.

A first approach toward improving the productivity of existing managers is to encourage firms to use the market for business development services, rather than rely on programmes delivered, often with substantial subsidy, by aid programmes and non-governmental organisations. The work by Anderson and McKenzie (2020, 2021) is particularly illuminating in this regard. In an experiment with smaller firms in Nigeria, Anderson and McKenzie demonstrate the challenge of stimulating use of private markets for business services. They show that even after resolving information asymmetry issues by informing firms about the quality of providers, firms very rarely purchase accounting or marketing services on the market. Azulai *et al*. (2020), meanwhile, use an experiment with public sector managers in Ghana to show that the effective training of public sector managers can improve management practices.

Uckat and Woodruff (2021) and Uckat (2021) illustrate a second approach. Rather than training existing managers, they aim to understand the importance of expanding the pool of potential managers to include groups – in their case, women – who have previously been excluded from consideration for promotion into managerial positions. Moving in a direction that is conceptually similar, Macchiavello and Morjaria (2021) show that the pool of managers can be effectively expanded through changes in ownership. Acquisition of Rwandan coffee mills by foreign firms significantly increases the quality of management practices and productivity.

[1] https://worldmanagementsurvey.org/

**Figure 1: Data from the World Management Survey. https://worldmanagementsurvey.org/. Thanks to Nick Bloom for providing the figure.**



# 2 Using market-based training services

Anderson and McKenzie conduct work with a group of medium-sized firms in Nigeria with the aim of shedding light on the market for professional services. They motivate the project with a fascinating graph showing the relationship between firm size and the use of specialised, external provision of accounting services (reproduced here as Figure 2). Their data show that firms up to 30 employees almost never use external providers for accounting or marketing. However, specialisation within the firm increases with firm size. In a plurality of firms with more than 10 employees, accounts are kept by someone other than the firm's owner. The crossover number of employees for internal specialisation in marketing is somewhat larger.

In an initial paper, Anderson and McKenzie conduct an experiment in which firms are assigned to one of four treatments: receipt of the International Finance Corporation's *Business Edge* training programme; subsidies for personalised consulting; subsidies to use a human resources firm to hire an accounting or marketing specialist (*insourcing*); or subsidies to use a firm to identify a financial or marketing consultant (*outsourcing*). Comparing the four treatments with a business-as-usual control group, Anderson and McKenzie show that the *Business Edge* training has no effect on either measures of business practices or on sales/profits; however, the consulting, insourcing, and outsourcing all result in significant increases in business practices. Outsourcing has the largest measured effect on profits and sales, though both insourcing and consulting show slightly smaller but still positive effects on these outcomes. While the effects of the consulting intervention are statistically the same as the effects of outsourcing/insourcing, the consulting intervention had a much higher cost.

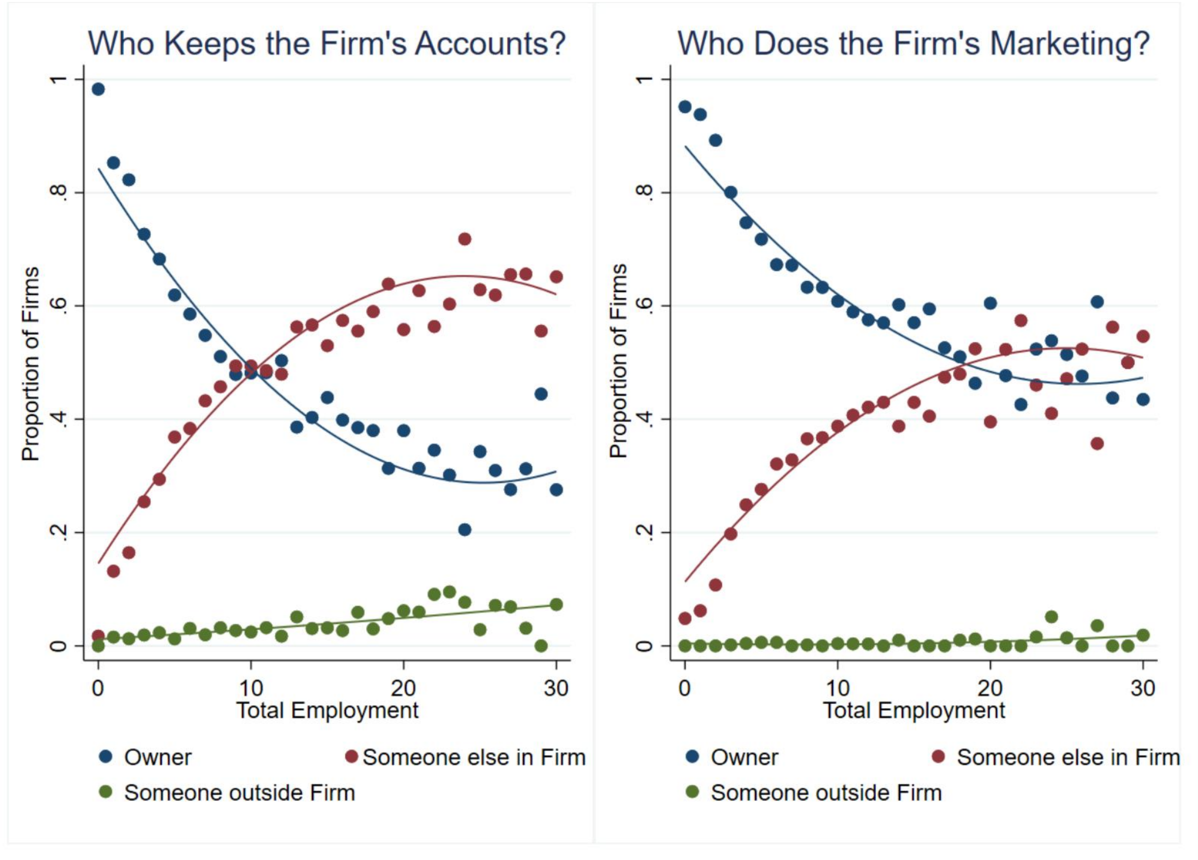
This first experiment suggests that the most cost-effective way for firms to improve practices in the marketing and accounting functions is to outsource the provision of these services. The question, then, is why more firms do not use the outsourcing option to support their accounting and marketing functions. One potential answer is that the results from the first experiment are biased upwards by the fact that the researchers chose high-quality service providers. The market may contain a mix of more competent and less competent providers, and firms may lack information on who the best providers are. With this in mind, Anderson and McKenzie conducted a follow-up experiment, directly supported by EDI. In this experiment, they ask whether information constraints prevent firms from accessing the market for professional services. If firms are provided with information about the quality of potential providers, do they understand how to use that information to select a provider? And are they willing to purchase business services from the market as a result?

To address these questions, Anderson and McKenzie conduct a randomised control trial (RCT) among 1,054 firms with between 2 and 15 employees, with firms in the treatment arms receiving some degree of access to a virtual marketplace showing ratings of potential service providers. The virtual marketplace was created by the authors using information about business service firms from mystery shoppers and from ratings by firms in the original experiment.

Firms in both treatment and control arms were asked to provide preference ranking of a list of accounting/marketing service providers. Treated firms with access to the ratings website shifted their preference ordering towards that ranking, demonstrating that the ratings information increased the average quality of the business service providers preferred by the firms. However, the provision of information – either a list of providers, ratings of providers by other firms, ratings by mystery shoppers, or both sets of ratings – had no significant impact on the likelihood that the firms in the experiment would actually hire a business service provider over the subsequent six months.

These projects are important in showing the value of market-based service providers to firms, but the results from the second experiment leave unsolved the puzzle of how to induce small firms to use the market. The provision of information alone appears to be insufficient to change business behaviour towards the more efficient outcome even when, as demonstrated by the shift in preference rankings, the firms internalise the content of that information.

**Figure 2: Reproduced from Anderson and McKenzie (2020)**



# 3 Training in the public sector

The growth of the private sector also depends on a public sector that efficiently delivers infrastructure and other public goods. Azulai *et al*. (2020) ask whether productivity training can improve the efficiency of government departments. They design and implement a training experiment carried out with mid-level government workers in Ghana. The researchers worked with a consultant and Ghana's Civil Service Training Centre staff to develop a one-day module, *Training for Productivity* (TFP). The module was designed to teach the workers how to identify productivity constraints and how to develop action plans to resolve those constraints and improve productivity.

As the name implies, the module's goal is to increase workers' productivity. But the trainees typically work in teams, so the training, even to an individual, is inherently team-focused, because productivity in this context is a team concept. A worker's productivity may depend both on their own skill level and the culture of the organisation. The organisational economics literature views organisational culture as a specific equilibrium. Each team member anticipates the actions/reactions of other team members when deciding their own actions. Training will be effective then only if it shifts the organisational culture from a less productive to a more productive equilibrium. Viewing training as part of organisational culture rather than as imparting specific skills is important because training a single team member may not be sufficient to shift the equilibrium. If the team member receiving the training believes the actions of other team members will not change, she may not alter her own actions even after learning that a more productive equilibrium is possible.[2]

Is it possible to build performance-oriented culture in governmental organisations through training? The researchers assess the effectiveness of the TFP module with an RCT. In the first experiment, the researchers randomise participation in the training programme at the individual level, in groups containing individuals from various departments. They measure both organisational culture, using the Safety Attitudes Questionnaire (Martinez *et al*. 2015), and the productivity of teams. The questionnaire is a standardised index of Likert-scale agreement with statements such as 'All the necessary information for diagnostic and effective decision making is routinely available to you' or 'The culture in this division makes it easy to learn from the errors of others'. The performance of teams is measured with administrative data on the rate of the completion of tasks recorded in a department's annual work plans, and measures of the quality of management and administrative processes.

Because shifting the norms of one member of a team may be ineffective when coordination of norms across team members is important, it might be argued that the individual-level intervention will underestimate the benefits of the training. Training an entire team together may be required to shift the organisational equilibrium. With this in mind, the researchers conduct a second experiment, providing the training to teams rather than individuals.[3]

The first main result is that the individual training has a significant positive effect. Those trained in the experimental TFP module are more likely to identify better management

[2] The skills of team members may also be complimentary – as, for example, in an O-Ring model of production (Kremer, 1993).
[3] The productivity module is typically the penultimate day of a 10-day training course. In the second treatment, the full department came only for the single productivity training day, which was held three to six weeks after the regular training programme. Only selected individuals from the department attended the other nine training days.

practices. Importantly, task completion rates are higher in departments where those trained in the individual training arm of the experiment work. The measures of administrative and management quality are also higher, though insignificantly so. However, an overall index of departmental performance, measured a year after the training, is significantly higher.

Surprisingly, the researchers find that the team-based training less effective than the individual training. There is evidence that the group training participants learned the material. But while participants are better able to identify good management practices in the area of autonomy and discretion, they are actually significantly less able to do the same in the area of incentives and monitoring. And there are no significant effects on any performance measure, or on the overall index of performance, a year after training. The researchers speculate that involving team leaders in the training may allow them to stifle innovation, or that each individual may free ride on the presence of others and hence put less effort into the training.

The project shows that TFP can be effective, but that the right content of training courses is not sufficient: the outcome of training will also depend on the details of how the training is delivered.

# 4 Expanding the pool of managers

The previous projects ask whether we can improve productivity by improving the knowledge and skills of existing managers. We might also generate gains in productivity by selecting better managers. Uckat and Woodruff examine the potential for this in a very interesting setting, large ready-made garment (RMG) factories in Bangladesh. The ready-made garment sector is often viewed as the first rung on the development ladder. The sector has played a central role in Bangladesh's stellar economic growth over the past four decades. Garments account for more than 80% of exports and an estimated one-eighth of GDP.

The ready-made garment sector has also been central in driving female labour force participation in Bangladesh. Around 60% the sector's workers are women, and jobs in the sector account for 40% of all full-time female non-agricultural employment among women with less than secondary schooling (Menzel and Woodruff, 2021). On the sewing floors, where women account for around 75% of workers, more than 90% of the supervisors and managers are men.

Macchiavello *et al*. (2020) describe the path-dependent culture that leads to inefficiently low levels of promotion of females. Lacking experience of selecting women for promotion, higher-level managers are less confident they are selecting the best female candidates. Co-supervisors and production workers are often resistant to working with or for women.

Uckat and Woodruff (2021) worked with the International Labour Organisation/International Finance Corporation Better Work programme to design a customised nine-day training course to prepare female sewing operators to be sewing line supervisors. Recognising that managers find it difficult to select the best female candidates, they also developed a diagnostic tool intended to help managers select the best female candidates. Using a cross-randomised design, they provided both the nine-day worker-level training and half-day human resources/production manager training on use of the diagnostic selection tool.

Looking first at outcomes on candidate selection, Uckat and Woodruff show that training on using the diagnostic tool caused firms to select better candidates. They measure candidate quality with seven indices, four of which relate to cognitive ability/skills (measures of literacy, numeracy, fluid intelligence, and garment knowledge), and three of which relate to attitudes (interest in being a supervisor, confidence, and support from their family). Uckat and Woodruff show that the attitudes measures in particular predict promotion to the supervisor, even among candidates in the factories not receiving the diagnostic training. The training leads factory managers to select candidates with higher scores on the attitudes diagnostic. Arguably, this is these are characteristics that are less important in the selection of men, for whom family support and confidence, for example, are more universal.

With regard to the individual training, Uckat and Woodruff show that training is most important for achieving promotion. Administrative data from factories shows no significant improvements in productivity on the lines managed by the newly promoted female trainees. However, the researchers have data for only a short period of time after promotion, and because newly promoted supervisors often face a learning curve, the initial lack of improvement in productivity may not tell us much about outcomes over the longer term.

Uckat (2021) builds on this project by tracing the effects from the factory to the households. Sustaining the movement of women into management depends on support from, or at a minimum, a lack of resistance from, households. Uckat examines the reactions in households on two levels. First, she shows that movement into leadership roles in factories changes the dynamics of relationships with spouses. Uckat constructs a counterfactual sample by using discontinuities in the rules factories used to select women for training. She shows that women selected for training increase their bargaining power in their households, especially related to the purchase of goods for personal consumption (for example, clothing and jewellery) and remittances sent to family members. The remittances show particular jumps among women whose children live outside the household, suggesting that the increase in remittances masks expenditure on children.

Second, and perhaps more surprisingly, Uckat shows that the household-level effect extends to women who work under the newly promoted female supervisors. Using the quasi-random assignment of workers to production lines, Uckat shows that female subordinates have more autonomy in their households, especially with respect to travel outside the household for visiting friends or shopping. Opening the managerial ranks to women then appears to have significant impacts outside of the core productivity gains that might be the firms' initial motivation for expanding the pool of potential managers.

# 5 Changing ownership structures to change incentives

Macchiavello and Morjaria (2021) examine an alternative approach to improving management practices in firms: mergers with larger firms. They use administrative data on all of Rwanda's coffee-processing mills to examine how productivity changes with consolidation in the industry through acquisition by a foreign or domestically owned firm. Through a survey of firms making acquisitions during the study period, they identify target firms that were not ultimately purchased by the acquirers, providing a unique counterfactual against which they measure the effects of acquisition.

An event study analysis shows that the productivity of mills acquired by foreign firms increases after acquisition, while the productivity of mills acquired by domestic firms remains unchanged. Following the literature, Macchiavello and Morjaria consider several channels through which acquisition might affect productivity. Measuring management practices with surveys of mills conducted in 2012, 2015, and 2017, they conclude that changes in managers and management practices are the main channel through which productivity is improved. Foreign acquirers, in particular, bring in higher-quality managers and give those managers more autonomy. These managers successfully implement significant changes in management practices. Managers hired following domestic acquisitions, on the other hand, report that they also attempted to make management changes, but were not successful in actually implementing these.

About half of the increase in productivity following foreign acquisition is attributable to changes in management practices. Whether the remaining productivity differences are explained by other factors or only by the imperfect measurement, and hence attenuation, of managerial quality and practices is difficult to pin down precisely. However, the data suggest that acquisitions are not associated with two other channels of productivity improvement suggested by the literature: acquisition is not accompanied by differential investments in technology or increased access to working capital.

The Rwandan coffee mills provide a very different example of expanding the pool of managerial talent. Foreign acquirers bring new managers to the sector, and those managers are effective at changing practices and improving productivity in the sector.

# 6 Networks and private sector development

In addition to the work detailed in this review, the EDI Programme supported several projects examining the role of information networks among firms and traders. One project of note on this topic is work by Hardy *et al*. (2021) showing limited information sharing among traders in Lagos, Nigeria. Surveys with a large sample of market traders show that around 30% of traders report sharing information about new products with other traders, but that sharing information about the reliability of trading partners is very rare, suggesting that in this context, at least, relational contracting is not the motivation for information sharing. Analysis of the data collected for this project is still ongoing.

A second project is presented in papers by Dai *et al*. (2020) and Gupta *et al*. (2020), who use historical data from China and India, respectively, to detail the roots of entrepreneurial communities. Dai *et al*. examine the rapid and impressive growth of China's private sector in the decades following the reforms initiated in 1979. The private sector's share of invested capital grew in China from around 10% in 1985 to 60% in 2015. Dai *et al*. show that the entrepreneurs driving this change often migrated internally from more rural places of birth to more investment friendly cities. Moreover, their data show that the pattern of internal migration was far from random: entrepreneurs starting firms in an industry/location are unusually likely to have been born in the same location (county) in China.

Not all counties are equal in creating clusters of entrepreneurs. Dai *et al*. suggest that interactions between individuals are more frequent in more densely populated counties. This observation provides a theoretical underpinning for the idea that interpersonal trust, supported informally by repeated interactions, increases in parallel with population density, at least up to a point. Trust networks are important for entrepreneurs, as they allow them to raise capital, hire trusted employees, and find cooperative trading partners. Hence, Dai *et al*. conjecture that denser counties are more likely to produce clusters of entrepreneurs. They recognise that population density might be related to many factors affecting entrepreneurial decisions – for example, wealth, and therefore access to capital. But Dai *et al*. show that while these other factors can explain some part of the patterns observed in the data, only the network/trust story is consistent with all of the patterns in the data.

Identifying network effects from observational data is particularly challenging because networks are very likely to be correlated with other factors affecting outcomes of interest. This work faces the issue head on, building a theoretical model to generate a series of detailed predictions. Their model predicts several clear patterns for the data: entry will be increasing with the density of population in the entrepreneur's county of birth; entry will be increasing over time; entry will increase over time faster for those born in higher density counties; entrepreneurs from a given birth county will cluster in specific sector-locations; and, finally, initial capital stock will be decreasing in the density of an entrepreneur's home county, because strong networks induce entry by entrepreneurs with lower ability. These predictions allow them to rule out several alternative channels through which place of birth might affect entrepreneurial outcomes. For example, models in which individual wealth drives entry may predict that the marginal entrepreneur's ability decreases with wealth. However, models where entry is driven by individual wealth alone will not result in entrepreneurs from a given birth county choosing to enter in the same sector/location.

The authors test the predictions of the model using an exceptional dataset from China. The data cover all private firms and include information on the identity of the legal representative of the firm (the Chief Executive Officer), other executives, and shareholders. Each individual in the data is identified by a national identity number that includes digits indicating their county of birth. Thus, the authors can identify individuals from a given county, and can identify all of the firms with which a given individual is associated (for example, a Chief Executive Officer in one firm might be a shareholder in another firm). The data match the model very closely. Entry rates increase with density of county of birth, and do so at an increasing rate over time. Entrants from more densely populated counties are of lower ability, which again increases over time. And growth is faster in firms started by entrepreneurs from more densely populated counties. The authors then use the empirical result to guide a structural estimation of the model, which allows them to show that, in the absence of network effects, entry would have been significantly lower overall, and particularly among entrepreneurs from higher density counties.

Thus, taken together, the Chinese data indicate that trust is enabled by density, which, in turn, enables entrepreneurs to flourish. Gupta *et al*. (2020) uses a version of the same network model to examine the role of networks in private sector development in colonial India, with a focus on the cotton spinning and jute industries. Cotton spinning developed around Bombay in the 1860s, following the American Civil War. Gupta *et al*. examine the roll of five communities: Parsis, Vanias, Muslims, Jews, and Bhatias. Given the historical nature of the data, they are naturally not as detailed as the data from contemporary China. The authors are able to test for network effects by comparing the initial capital stock of entering firms from each community. The model's prediction, as in China, is that initial capital stock will fall over time, and fall faster for entrepreneurs from larger networks. In the Indian data, larger networks are measured by the number of entrants from the network early in the process.

The patterns of entry in India again support the role of networks in the process. An abrupt end to investment opportunities in raw cotton following the end of the American Civil War meant that Parsis, who dominated that trade, were left looking for new opportunities. They entered cotton spinning earlier and more robustly. According to the model, this initial differential at entry will produce network effects that lead to higher rates of subsequent entry, inducing more marginal entrants from the community. This is seen in the data by both higher rates of entry among Parsis, who also enter with lower capital investments.

The data from both China and India demonstrate the importance of networks in entry. Although policy cannot affect past population density in counties of birth or entry into ethnic communities, policy may affect development of networks through other means. These papers show us why development of networks should be an important focus for policy focused on private sector development.

# 7 Discussion and conclusions

The research supported by the EDI Programme makes a significant contribution to the cutting edge of research on ways to improve the management and productivity of firms in lower-income countries. The research highlights the fact that solutions are likely to be context-specific. For small and medium-sized enterprises and larger firms, the objective should be the development of vibrant markets for business services. However, as Anderson and McKenzie's research shows, developing these markets will not be easy. Even when firms are informed who the high-quality service providers are, they rarely purchase services from these providers. This suggests a need to shift training efforts from the direct provision of services to building better functioning markets and training firms how to use those markets.

The work supported by EDI also points to ways to ensure that capital finds its way to those who use it most productively. Where capital has more value in some firms than others, takeover of less efficiently run firms by more efficiently run firms can increase aggregate productivity. Macchiavello and Morjaria's work details one example of this. In their case, the transfer of asset ownership comes through entry by foreign owners, but facilitating the consolidation of assets, where that consolidation is driven by improvements in efficiency, can be an important means of increasing productivity. Dai *et al*. (2020) and Gupta *et al*. (2020) show that networks are an important source of both capital and trust, and point to a role for policy in developing open networks of business owners.

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