

Firms and Labor

Bread-IGC Virtual PhD course

David McKenzie, *World Bank*

Are firms labor constrained?

- What do we mean by “firms”?
 - Most common type: self-employed owner with no paid workers
 - Small and growing enterprises: with a few workers
 - Large factories
- What do we mean by “labor”?
 - We write production function with L in it, but not a homogeneous input, and some types may not be substitutable (100 low educated workers may still not do what someone with specialized skills can do)
 - Mass of relatively low-skilled workers who might be interchangeable
 - Workers with specialized skills
 - Managers (see Jing Cai lecture)

Are firms labor constrained?

- What do we mean by “constrained”?
 - Write profits = $f(A, K, L) - wL - rK$, and first-order condition setting $MPL = w$
 - Two definitions of constraints (analogous to financial constraints):
 - 1) Can't hire as much labor as they would like at the prevailing wage w
 - Labor is abundant relative to capital in most developing countries, lots of people looking for work – so why can't firms?
 - *Lack information about MPL?* – uncertain if it would be profitable? Could include uncertainty about costs of having a worker (legal, trust issues)
 - *Matching frictions?* – hard to find the worker they want and workers not all substitutable
 - *Indivisibilities?*
 - *Financial constraints* – can't buy the capital to make workers productive, or pay up-front costs of hiring workers like training fees
 - 2) Distortions in economy make prevailing wage w too high or prevent contracts that firms and workers want (equivalent to financial repression)
 - *Minimum wage laws, regulations on firing, labor taxes, contracting frictions* (including inability to pay negative wages at first in some settings)

Are the self-employed labor constrained?

- [De Mel et al.](#) (2019)
- Modal firm in a developing country is a self-employed owner with no employees. Is their growth constrained by lack of labor?
- Experiment in Sri Lanka, in which treated firms are given an 8 month temporary wage subsidy
- Track firms using 12 surveys over 2008-2014 period, to measure impact and dynamics

What is a firm here?

- Urban male-operated microenterprises in Sri Lanka, identified by door-to-door screening
- 40% in retail (e.g. groceries, hardware, plastic products), and the remainder in manufacturing (e.g. tailoring, brasswork, carpentry, food production) and services (e.g. electricians, vehicle repair, haircutting, transportation).
- In 2008, mean monthly profits were approx.. US\$130 on US\$430 of monthly sales



Theory:

- Standard complete markets model (e.g. Lucas, 1978)
- Differences in employment size among firms facing the same output production technology $f(\cdot)$ reflect differences in their management ability, θ
- Employment and Capital stock determined by first-order conditions

$$f_L(\theta, K^*, L^*) = w$$

$$f_K(\theta, K^*, L^*) = r$$

Implications:

- 1) Firms small because have low ability.
- 2) Temporary wage subsidy lowers w in short-run, leads to more short-run labor, but once subsidy is over, return to pre-subsidy levels.

Theory: Matching and learning

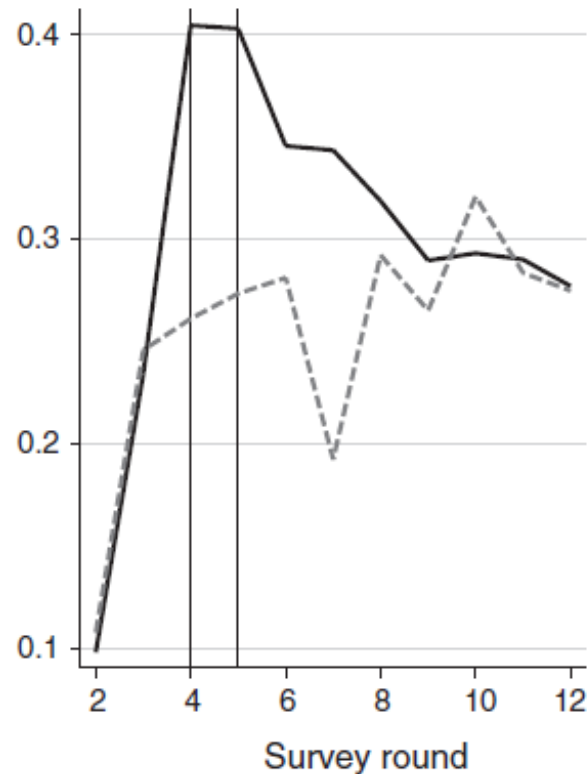
- 1) frictions involved in identifying, hiring, and firing workers in an environment where firm owners are unsure of worker types (Mortensen and Pissarides, 1994)
 - If firms find it hard to find workers they can trust, and costly to fire them, then may be deterred from hiring
 - Subsidy makes it less costly to hire and take a chance on new workers- if some of these then are good matches, long-term employment increases.
- 2) firm owners may not know their own type (θ), as in Jovanovic (1982).
 - pool of firm owners who have not previously hired a worker will then consist of owners with low actual managerial ability, as well as though with high actual ability but who believe they have low managerial ability
 - Wage subsidy induces some of these to hire a worker and learn their type – and then high type keeps workers on after subsidy ends.

Theory: contracting constraints

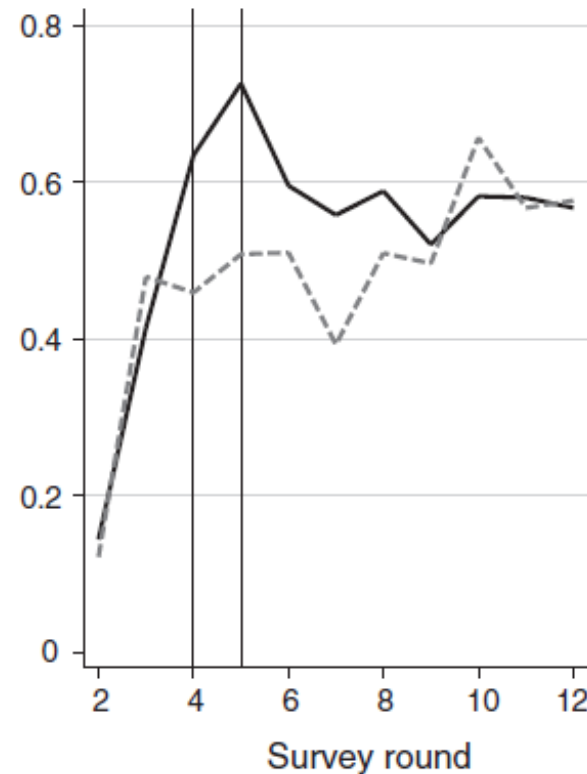
- In many businesses workers may not be very productive in their first few months on the job while they learn the specifics of the job, but then be productive once they have accumulated several months of training.
- Standard model: firm would pay a new worker his or her marginal product, so would pay a low (or even zero or negative) wage in these first months, and then a higher wage once productivity increases.
- But poverty constraints, minimum wage laws, and social norms may limit the ability of workers to take low initial wages to compensate for their low initial productivity - imposes the constraint $w \geq m$ on the optimization problem, where m is this lower bound on the wages that can be paid
 - Subsidy can overcome constraint in short-run, and then if workers increase productivity during subsidized period, worker can stay employed (Bell et al, 1999).

Short-term impact that disappears after subsidy ends

Panel A. Proportion with a paid worker



Panel B. Number of workers



— Wage subsidy group ---- Control group

FIGURE 2. IMPACT ON EMPLOYMENT

Notes: The vertical lines show the intervention period. The number of workers truncated at five workers. Round 2 is the baseline for half the sample and first follow-up for the other half.

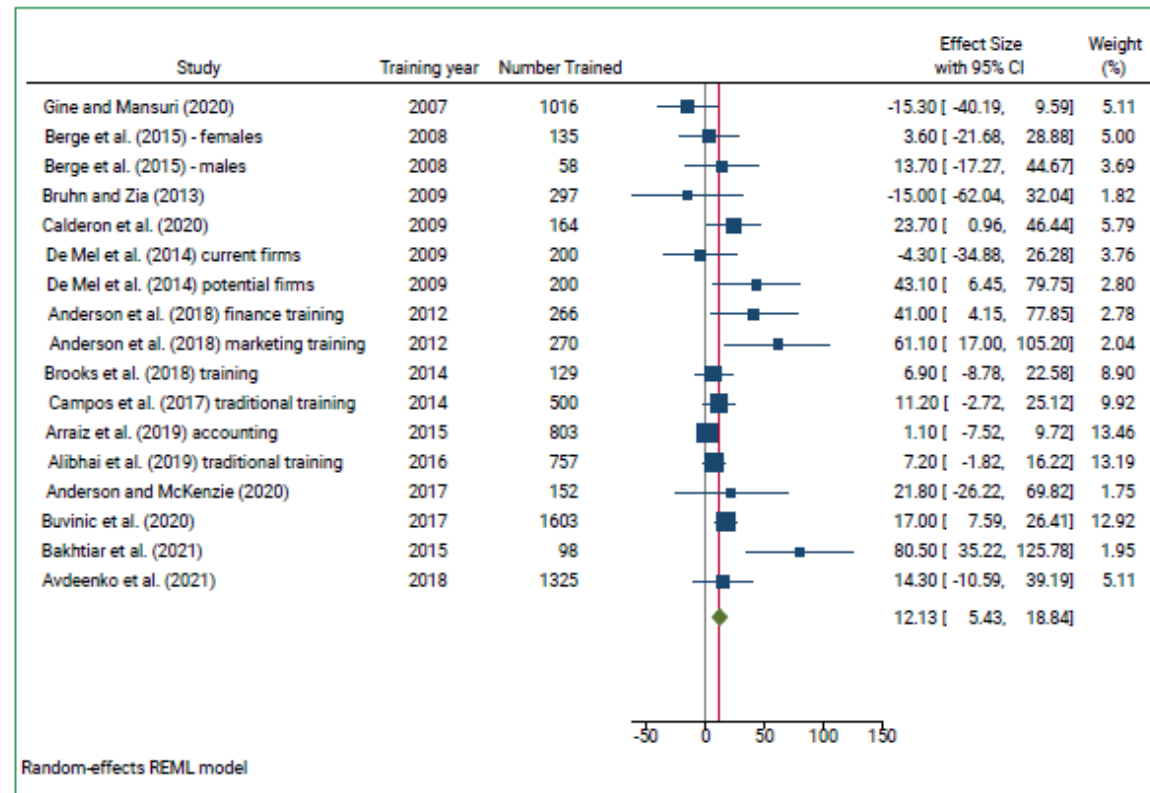
Survey evidence

- *Why don't you hire another worker?* ~80% say insufficient demand/would not be profitable/don't need
- *Is it that takes time for employees to become productive, and you can't pay them a low wage in the meantime?*
 - We asked owners how long they thought it would take a hired worker to become fully productive. The mean response was 4.1 months; 86 percent said the period would be six months or shorter, suggesting that the subsidy was long enough to fully cover the learning period for the majority of the sample.
- *Search costs?*
 - Jobs in these small firms appear to involve mainly physical labor rather than complex mental tasks. Employers say that the sex and physical strength of the worker are the two most important characteristics of workers they consider hiring, with education the least important of the characteristics listed.
 - Most firms looking for workers say they can find worker in 2 months or less – median owner says 1 week

Conclusion: market for labor works reasonably well for these types of firms and their growth not constrained by lack of labor.

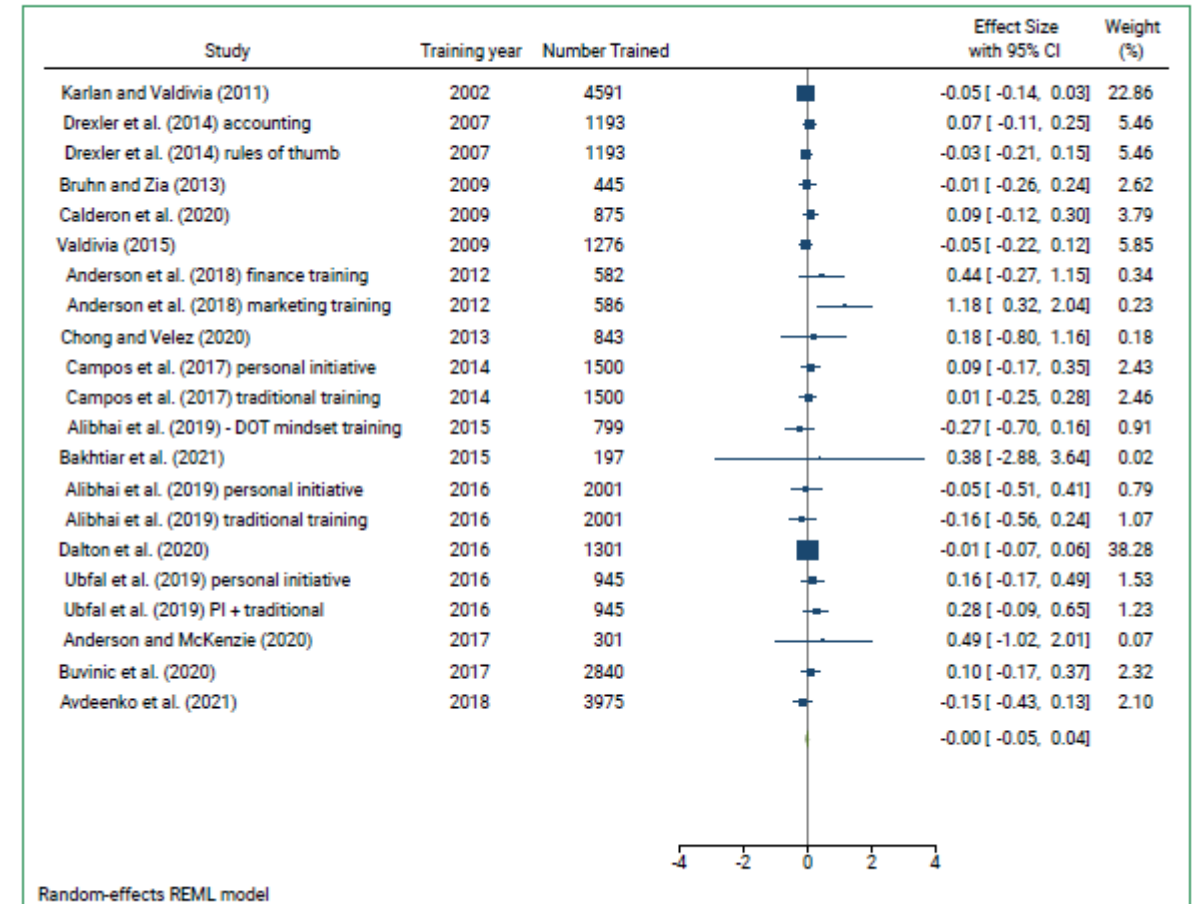
Lots of small firms probably have quite a bit of labor slack – even when profits & sales increase a bit, not accompanied by increase in labor

Figure 2 Estimates of the impact of business training on firm profits



Source: original version McKenzie (2020), updated to include new studies

Figure 5 Estimates of the impact of business training on employment



Note: Effect sizes are expressed in terms of jobs created per firm assigned to training.

SMEs/Larger firms and non-specialized workers

- Should think some frictions less for them:
 - More experience hiring workers, should know their own type, and less uncertainty over MPL
 - Search/matching frictions for non-specialized workers should be lower, since can spread fixed costs over more hiring
 - Indivisibilities less of an issue
- But maybe they are more effected by the regulatory environment, frictions around minimum wages, hiring and firing.
- Let's look at evidence from four cases/contexts

Case 1: large textile factories

- Many of these firms have very large turnover – seem to have no trouble finding production line workers, but issues holding onto them
- [Blattman and Dercon](#) (2018) – entry level jobs in five Ethiopian light manufacturing firms: a water bottling plant, a vegetable farm, a flower farm, a shoe manufacturer, and a textile and garment factory
 - “workers effectively disposable to firms” – firms allowed researchers to randomize which workers get jobs (no shortage of applicants, and not that worried about match quality)
 - One third of workers quit in first month, 77% in first year
 - HR managers described entry-level hiring as ad hoc- commonly filling low-skill positions on a first-come, first-hire manner, with little or no interview process.
- Similarly, other work in large Indian and Bangladeshi textile factories shows high worker turnover and firms having no trouble hiring workers.

Case 2: SMEs and educated youth

- [Groh et al. \(2015\)](#) in Jordan
- Sample of 2,279 SMEs in retail, textiles, food, chemicals, IT – trying to fill jobs of administrative assistants, sales staff, accountants, marketing positions, and web development and IT.
- 60% these firms said they experienced difficulty distinguishing between good and bad job candidates, and 64% said they experienced difficulty finding competent graduates in reasonably proximity to the firm.
- Offered a search and matching intervention – screened a pool of unemployed college grads with psychometric and skill testing.

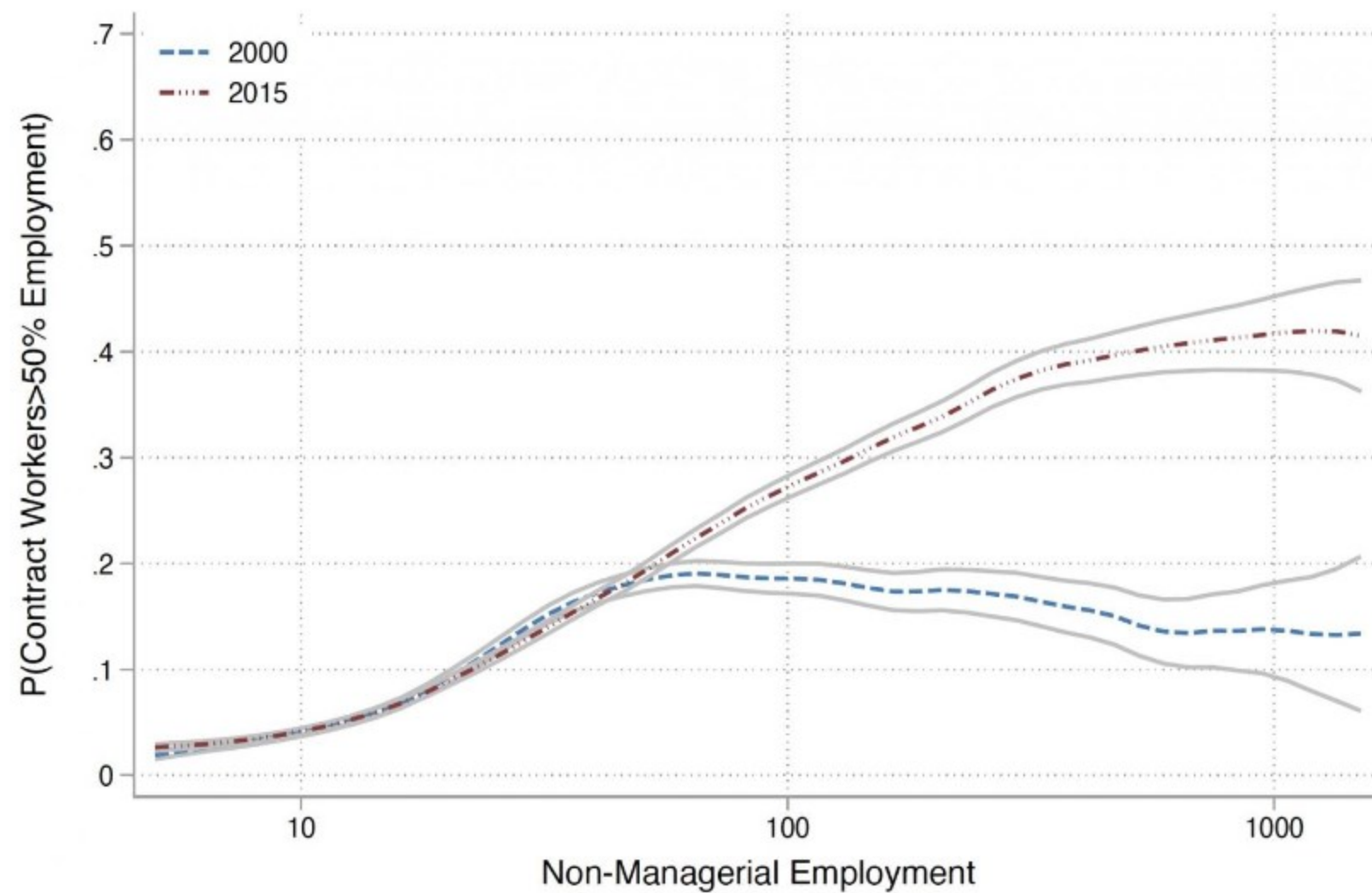
Did improving matching lead to more jobs?

- Made 1,142 matches between workers looking for jobs and employers looking for workers
 - Only 10% resulted in interviews – firms not interested in more than half of cases, and some workers not interested.
 - Out of 114 interviews, only 24 hired, of which 15 quit in first month.
- While firms *say* they have difficulty finding good matches, ex post:
 - Only 6.5% would pay to learn about quality of graduates
 - Conducted a job openings and turnover survey to see what happens to job openings firms do have: 88% filled within 4 weeks
- Some broader distortion due to public sector – workers have reservation prestige – only want to work for certain types of firms.
- i.e. firms can fill positions, but of course would like it if they could get better quality workers at the same wages...

Case 3: large firms and labor laws in India

- India famous for industrial disputes laws, which can make it hard to fire workers for firms with 100+ workers – do these act as a distortion and prevent firms hiring more labor?
- Chang-Tai Hsieh – firms practice *Jugaad* – finding loopholes/informal solutions to problems
- [Hsieh et al. \(2021\)](#) – rapid development of labor contracting industry in India helps provide a workaround – workers hired through third-party intermediaries don't count for purposes of law

Figure 3 Contract labour use and firm size, 2000 vs 2015

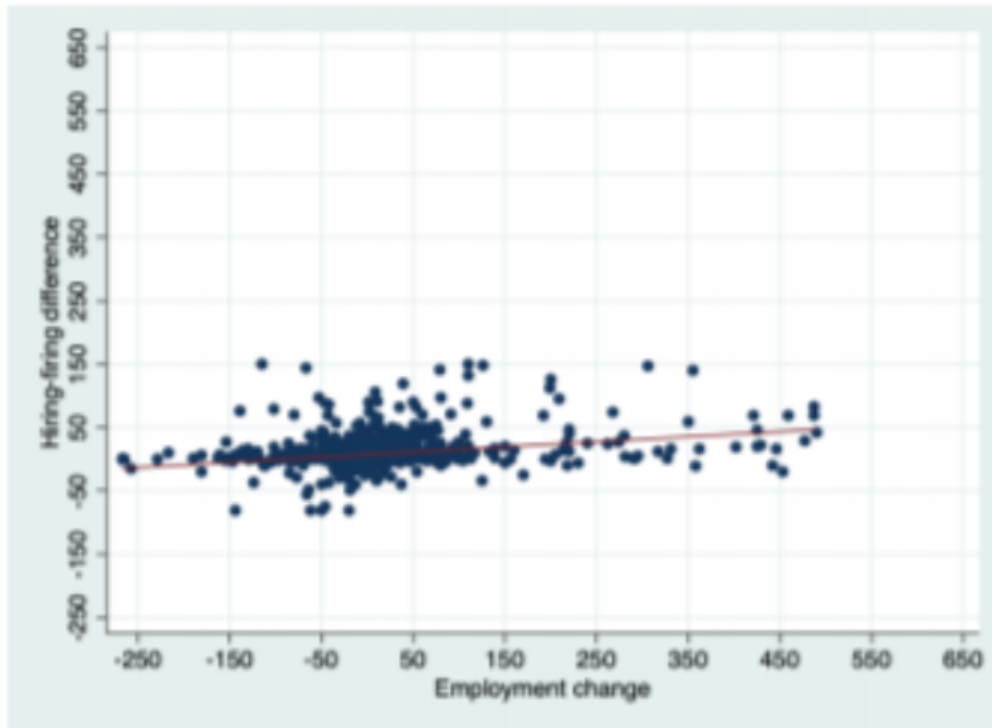


Case 4: South Africa and firms' perceptions of labor laws

- [Bertrand and Crépon \(2021\)](#)
- South Africa as very unusual labor market – unemployment rate of 20-27% (not clearing), mix of developed and developing economy – and quite rigid labor laws that are perceived to make it hard to fire workers, but also low informality
- Sample of firms with 10 to 300 workers, mean 78, 47% <50 workers
- Treatment group of 912 workers get 21 weeks of getting information about labor law – learn laws not quite as bad as thought
- Find treated firms increase workers by 11 workers, or 13% over 6 months

Methods points

Figure 2: A low correlation between the changed in total employment, and the net reporting hiring.



- Firms change workers a lot, even within 6 months (we see employment changes of 50 or more workers- can't be that hard then to change?)
- Makes it really hard to detect 2 or 3 worker change in employment with so much other churn going on – need big samples for this type of work (they had 1800 firms)
- Impacts much lower (1 worker) and not significant when asked about number of workers hired in past 6 months – measurement error an issue
- Is this speeding up hiring that firms were planning?

Often labor not the binding constraint

- Seem not a big issue for low-skilled, entry level labor into large firms, nor for self-employed
- Many firms complain about difficulty getting workers they want or having workers stick around, but revealed preference suggests in practice
 - They often can fill jobs pretty quickly
 - They don't spend a lot of effort in screening, nor employ lots of good HR practices to help keep best workers
 - Often can find ways around regulations, so wedges might not be so big

When might labor be more of an issue?

- With unusual market institutions:
 - South Africa
 - Apprenticeships – system where wage paid is typically negative for a while, training people who will compete with you.
 - [Hardy and McCasland \(forthcoming\)](#) – government program in Ghana that worked with small firms and poor unemployed young people who couldn't pay usual fee – government instead does in-kind screening program that selects people committed and not likely to jump quickly into other jobs.
 - Finds self-selected group of firms who choose to be in the program do benefit in short-run from this help – see increase in profits of 10%
 - But [Alfonsi et al. \(2020\)](#) – no long-run impacts of wage subsidies for firm training in this environment in Uganda; [Crépon and Premand \(2021\)](#) find no impact on firm profits of subsidized apprenticeships in Côte d'Ivoire.

When might labor be more of an issue?

- With specialized labor in growth-oriented SMEs
- Search frictions may be greater for this type of labor, and it may be harder for firm owners to know MPL of this type, since less experience with it.
- [Anderson and McKenzie \(2022\)](#) – as firms grow, may be better for entrepreneur to get specialists to do marketing, accounting, and other professional functions – but may not know how to find good workers of this type
 - Experiment in Nigeria – subsidized using HR firms and accounting and marketing consultancies to perform these tasks
 - Find helps firms improve business practices, and grow sales and profits
- Search frictions also higher over space – if need to hire someone in another region or country, may be difficult for firms

General equilibrium/macro viewpoint

- *Given* the current skillset of the labor force, and prevailing market wages, many firms seem to be able to hire and fire workers without many constraints
- *This is not to say that they couldn't do better if supply and price of workers improves*
 - Natural resource curses/large state sector – which pushes up w and makes labor expensive e.g. [Gelb et al. \(2017\)](#) argue that labor costs are much higher in most African countries than one might expect given GDP per capita- so that African firms not able to compete in light manufacturing
 - i.e. most constrained firms are ones we might not even see – don't exist
 - See also [Hjort et al. \(2022\)](#) on high cost of middle managers in developing countries

Table 3: Comparing countries

	Labor cost per worker	Capital cost per worker	GDP per capita
Bangladesh	\$835.31	\$1,069.84	\$853.02
Kenya	\$2,118.01	\$9,775.45	\$1,116.69
Tanzania	\$1,776.65	\$5,740.99	\$1,094.95
Senegal	\$1,561.64	\$2,421.98	\$775.45
Ethiopia	\$909.28	\$6,137.98	\$471.19