



## SPECIFIC HUMAN CAPITAL AND SKILLS IN INDIAN MANUFACTURING: OBSERVED WAGE AND TENURE RELATIONSHIPS FROM A WORKER SURVEY

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### Key Highlights

- Thinking of skilling policy, it is important to understand the distinction between general and specific human capital. General human capital is productive across employers, while specific human capital is associated with increased productivity of the worker only to a particular employer/firm or employee-job match. We need to keep this distinction in mind if labour abundant India wants to gain a comparative advantage by becoming skill abundant.
- In the Indian context most studies on human capital are confined to broad general human capital concerns. The paucity of studies engaging with specific human capital is on account of the lack of data. Our study emphasizing specific human capital uses data from a special worker-oriented survey conducted in 2017 in the state of Haryana.
- Our study shows a robust wage tenure relationship, providing attendant support to the proposition that specific human capital is present in the Indian manufacturing sector.
- The study also shows that regular workers invest in specific human capital whereas contract workers without similar labour rights do not. It can be inferred from this that there is a loss of specific human capital formation whenever labour rights are weak.
- For Indian manufacturing output and exports to compete in the international market, it needs to be realized that this cannot be done without enhancing both general and specific human capital.

## EXECUTIVE SUMMARY

### POLICY BACKGROUND AND CONTEXT

Current strategies to skill the workforce do not attempt to strengthen labour market institutions that can guarantee long term employment and real wage stability – instead as time has gone by, the labour protection regime has only been weakened. This policy orientation ignores a crucial distinction between general human capital and specific human capital. General human capital is productive across employers, while specific human capital is associated with increased productivity of the worker only to a particular employer/firm or employee-job match. Specific investments are more valuable if the match continues, than if it is truncated. If employers have invested in specific skills, they will want workers to continue, and to the extent, workers have invested in gaining the specific skills they will want to ensure returns to their investment with wage stability and long-term employment. If workers feel that the employment opportunities associated with the specific skills that they have

invested in will evaporate soon, they will be reluctant to invest in these specific skills. This becomes a problem, particularly if employers need these specific skills to compete in the international market. Without some guarantee of long-term employment and real wage stability, these specific skills will be undersupplied. This is an important concern in a labour abundant country seeking to gain a comparative advantage by becoming skill abundant. While the Make in India policy and its latest manifestation as *Atmanirbhar Bharat Abhiyan* aspire "to transform India into a global design and manufacturing hub", the skilling policy is devoid of any recognition of specific skills. In this context there is no real attempt to check for the presence of patterns of specific human capital in India - typically a discussion of human capital in the Indian



context is confined to broad general human capital concerns.

Our empirical work displays the presence of specific human capital investment by ascertaining that the data throws up a link between tenure and wages - this has come to be an important investigation all over the world, typically undertaken to signify the presence of a specific capital investment in the employment relation. We go on to raise cognate questions as to what are the motivations for workers to gain skills by training themselves and if tenure is taken as an important incentive for worker investment in the job, what factors influence such tenure. This type of inquiry has been absent in India, mainly on account of the lack of data. In the face of this, we seek to use data from a special worker-oriented survey conducted in 2017 in the state of Haryana. While this was a small sample cross-section survey, it is nevertheless very valuable in helping us open up some questions concerning the Indian labour market.

### EMPIRICAL MODELS USED IN THE STUDY

Using the data on hand, we estimate three model:

### Model 1: Wage-tenure Relationship

$$W_i^* = \beta_1 X_i + \beta_2 T_i + \beta_3 S_i + \beta_4 R_i + \beta_5 I_i + \varepsilon_i$$

$$W = 0 (W^* < 6000)$$

$$W = 1 (6000 < W^* < 9000)$$

$$W = 2 (9000 < W^* < 12000)$$

$$W = 3 (12000 < W^* < 15000)$$

$$W = 4 (15000 < W^*)$$

where  $W_i^*$  and  $W_i$  are the latent and observed variables relating to wages received by worker  $i$  respectively and are believed to depend on  $X_i$  the general human capital of the worker (measured as the age of worker),  $T_i$  the specific human capital of the worker (measured as the years spent in the current job),  $S_i$  the skill level of the worker,  $R_i$  whether the worker is a regular or contract worker and  $I_i$  the industry in which the worker is employed. The term  $\varepsilon_i$  is an error term and we assume that it is normally distributed -enabling us to estimate the model as an Ordered Probit Model, using the Maximum Likelihood method.

### MODEL 2: DETERMINANTS OF TENURE

Next, we identify some factors that may be influencing the tenure of workers. The equation we estimate is

$$T_i = \gamma_0 + \gamma_1 F_i + \gamma_2 E_i + \gamma_3 S_i + \gamma_4 R_i + \gamma_5 ET_i + \gamma_6 H_i + \gamma_7 X_i + \gamma_8 SBR_i + \varepsilon_i$$

where  $T_i$  is the tenure is the dependent variable and the independent variables include worker related characteristics such as whether the worker stays with family ( $F_i$ ), education levels of the worker ( $E_i$ ), the skill level of the worker ( $S_i$ ), whether the worker is a regular or contract worker ( $R_i$ ), whether the employer-provided training or not ( $ET_i$ ), hours worked by the worker ( $H_i$ ), age of the worker ( $X_i$ ) and the job regularisation policy of the employer was contingent on skills ( $SBR_i$ ). We assume the error term is independently, identically and normally distributed and we use the method of Ordinary Least Squares to estimate the parameters of the equation.

### MODEL 3 WORKER TRAINING OR PROPENSITY TO TRAIN

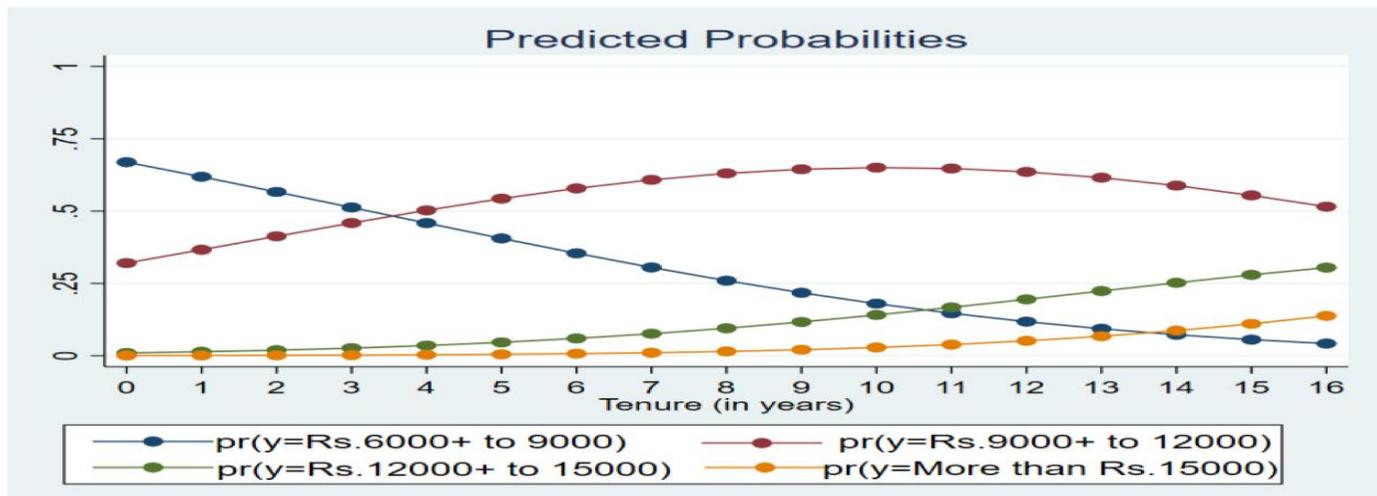
Our third model looks at factors that influences the propensity of workers to undergo training on the job. The model characterising the propensity to be trained is given by:

$$Y_i^* = \eta_0 + \eta_1 E_i + \eta_2 T_i + \eta_3 X_i + \eta_4 S_i + \eta_5 PT_i + \eta_6 R_i + \eta_7 L_i + u_i$$

$$Y_i = 1 (Y_i^* > 0)$$

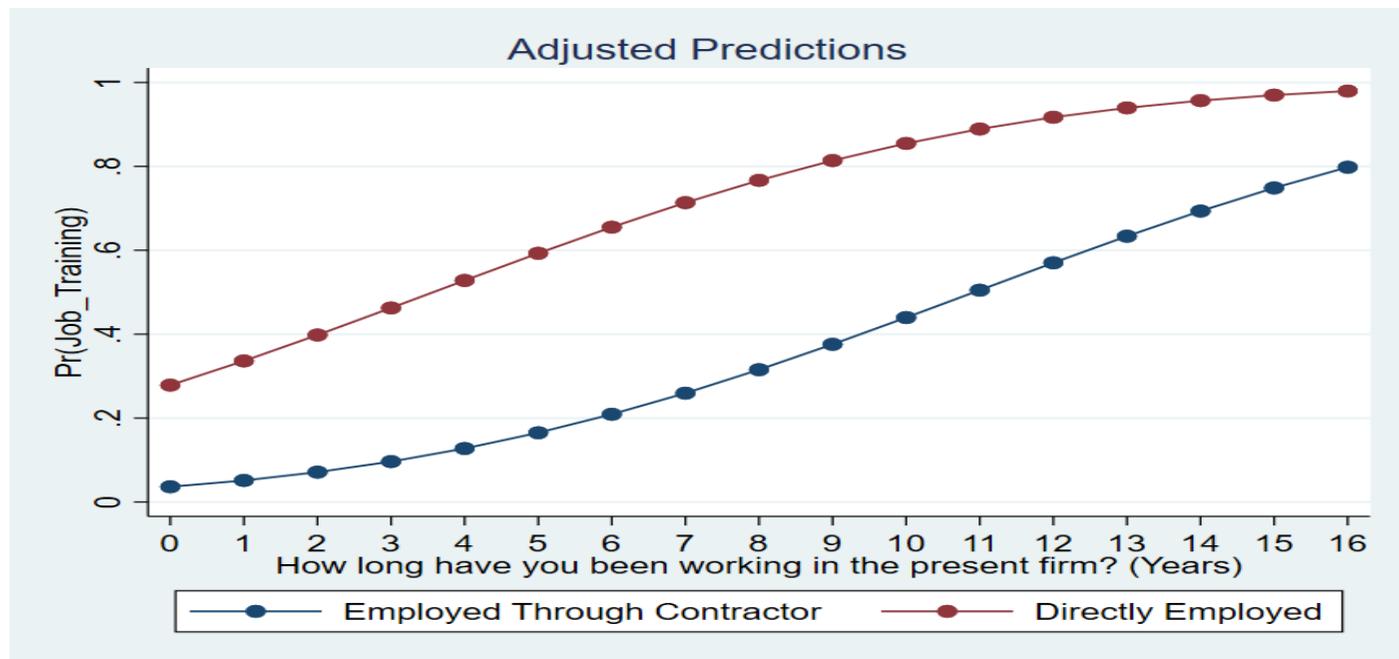
$$Y_i = 0 (Y_i^* = 0)$$

Diagram 1: Tenure and Wages: Predicted Probabilities



Source: ICRIER Worker Survey on Labour issues in Indian Manufacturing sector 2017

Diagram 2: Job Training and Tenure: Predicted Probabilities



Source: ICRIER Worker Survey on Labour issues in Indian Manufacturing sector 2017

where  $Y_i^*$  and  $Y_i$  are the latent and observed variables related to the propensity to be trained. Here the observed variable takes note if the worker reported any training on the job whatsoever. The independent variables include  $E_i$  which represents the education level of the worker,  $T_i$  the tenure or the number of years the worker has worked in her current job,  $X_i$  the age of the worker,  $S_i$  skills of the worker,  $PT_i$  whether the worker says he would pay to be trained,  $R_i$  captures the type of worker - contract or regular and  $L_i$  represents the nature of the industry in which the worker is employed - labour intensive or capital intensive. The error term  $u_i$  is assumed to be normally distributed, and the parameters are estimated as a probit model, using the Maximum Likelihood method.

## RESULTS

A detailed discussion on the empirical estimation and results can be found in the complete working paper but the key findings

of our study can be highlighted using two diagrams that follow from the results. In Diagram 1, which draws from Model 1, we see that the predicted probability of drawing a worker with a long tenure declines if she is in the lowest wage bracket (Rupees 6000 to Rupees 9000). In the next wage bracket (Rupees 9000 to Rupees 12000) the probability rises, hitting a maximum of around 10 years but then tapers down. Over the next two higher wage brackets (Rupees 12000 to Rupees 15000 and More than Rupees 15000) the probability of drawing a worker with long tenure is not as high as the previous bracket but nevertheless is increasing. While this model only uses a cross-section, it does signify a robust wage tenure relationship and thus provides attendant support to the presence of specific human capital in the manufacturing sector.

The results from Model 2 (not presented in this executive summary – see the complete working paper), which looks at the

determinants of tenure, suggest that much of the specific capital associated with the job is learned on the job. This is evident from the significance of the variable capturing whether an employer imparts training – reflecting the possibility that the employer (and the worker) are investing in a long-term relationship. A further reflection of this can be seen in the strong significance of the relationship between tenure and the type of worker - regular or a contract worker.

These findings are reinforced by results associated with Model 3, which looks at the factors that explain varying propensity to skill across workers. The most interesting and significant result of Model 3 is that there is a positive relationship between propensity to skill and whether the worker is a regular worker or a contract worker – this tells us that regular workers have a propensity to get trained, but contract workers do not. In other words, contract workers may not have an incentive

to invest in the job. This is illustrated in Diagram 2. Using the underlying estimates of parameters of the model, the diagram plots the probability of two types of workers – regular and contract, who has been employed for varying years in the present firm, of undergoing training. As can be seen, workers who are directly employed have a greater chance of undergoing training than their counterpart who is employed through a contractor.

In fact, the most interesting finding of our empirical investigation has been to see the link between tenure and the type of worker – clearly being a regular worker with more substantial labour rights gets her a longer tenure than a contract worker. To the extent we can

see the propensity to train as a proxy for expressing a desire to invest in skilling for the job, our results show that regular workers have a greater propensity to train and gain skills rather than contract workers. It can be effectively gathered from this – since a good amount of employment in the manufacturing sector is in the form of contract employment (36 % of the workers in the manufacturing sector are contract workers) – there is a loss of specific human capital formation.

#### POLICY IMPLICATIONS

It has been noted that the Indian state is desirous of skilling workers sufficiently so that Indian manufacturing output and exports

compete in the international market. This cannot be done without enhancing both general and specific human capital – without expanding both categories of human capital, it is hard to imagine up a sizeable skilled workforce. However, for investment in specific human capital to go up, the inherent hold-up problems must be mitigated, and that means having labour institutions in place that can prevent hold-ups on the part of the worker, which in turn implies more secure worker rights. Thus, we need to encourage labour market institutions that result in long-term employment and real wage stability for the skilling policy to be successful.

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