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The Impact of Aggregate and Sectoral Fluctuations on Training Decisions

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The Impact of Aggregate and Sectoral Fluctuations on Training Decisions*

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Abstract

The literature has not yet resolved whether the effect of macroeconomic fluctuations on training decisions is positive or negative. On the one hand, the opportunity cost to train is lower during downturns, and thus training should be counter-cyclical. On the other hand, a positive shock may be related to the adoption of new technologies and increased returns to skill, making training incidence pro-cyclical. Using the Canadian panel of Workplace and Employee Survey (WES), we document another important channel at work: the relative position of a sector also matters. We find not only that training moves counter-cyclically with the aggregate business cycle (more training during downturns), but also that the idiosyncratic sectoral shocks have a positive impact on training incidence (more training in sectors doing relatively better). These findings help us better understand training decisions by firms.

JEL Classification: J24, E32

Keywords: Training; Human capital; Business cycles; Sectoral shocks.

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Executive Summary

Does training rise or fall with economic fluctuations? On the one hand, a negative productivity shock may be associated with increased training, since the opportunity cost to train workers is lower in downturns. On the other hand, a positive shock may be related to the adoption of new technologies which may require training and can provide increased returns to skill. Both the counter-cyclical and pro-cyclical arguments have sound theoretical justifications, yet we have little evidence which one will hold true or dominate the other empirically.

Our contribution is to provide a unifying framework where two channels coexist. We bring empirical evidence that training is counter-cyclical - as expected, the aggregate output shock has a negative impact on the incidence of firm training. More importantly, we show that the idiosyncratic sectoral shocks are pro-cyclical - firms from sectors which experience a positive shock relative to the rest of the economy have an incentive to train more, even after conditioning for innovation and adoption of new technologies. We contend, and bring some related evidence, that sectors doing relatively better attract workers from sectors doing relatively worse, and these workers may require remedial training in specific skills.

To measure the effect of aggregate and sectoral output fluctuations on training incidence we use the panel of the Canadian Workplace and Employee Survey (WES) together with statistics on industrial output. We consider two main definitions for training by firms: a binary indicator whether the firm has provided training or not, which we call “extensive margin of training,” and a continuous measure of training which we call “intensive margin” (conditional on firms who train) expressed either as a percentage of workforce trained or as training expenditures per worker. Our major findings are that (i) training moves counter-cyclically with the aggregate output fluctuations (more training in downturns), while at the same time (ii) the relative position of sectoral output has a positive impact on training decisions (more training in a sector doing relatively better). The magnitude of these two channels is comparable. We find that a one-percentage point increase in the deviation of aggregate output relative to its trend decreases the probability of training by 1.5 percentage points and decreases training expenditures by \$7 per worker. A one-percentage point increase in the share of a sector’s output – controlling for aggregate shocks and for innovation and adoption of new technologies – increases the probability of training by 0.7 percentage points and increases training expenditures per worker by \$19 for the firms who train.

The finding that two opposing channels through which output fluctuations affect training decisions is relevant for at three main reasons: (i) it gives us better insights into firms’ training decisions over the business cycle, (ii) it quantifies how aggregate and sectoral shocks play into the human capital accumulation decision, and (iii) it helps policy-makers understand that fluctuations in training incidence that may be an optimal response to macroeconomic shocks, and not necessarily an indicator of underinvestment in training.

From a theoretical standpoint, this study highlights the importance for any models of firm training to incorporate mechanisms coming from both aggregate and sectoral output fluctuations. To frame our empirical results, we add training to the Mortensen-Pissarides search model. The equilibrium adjustments with aggregate and sectoral shocks illustrate the mechanisms that are highlighted in our empirical analysis. The aggregate and sectoral output fluctuations documented here can help inform policy-makers on whether observed trends in training are dictated by economic circumstances, or whether firms under-invest in training, which may suggest an area where government policy intervention can be explored.