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Technological diversity and cost uncertainty

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In many industries, different technologies are used simultaneously for the production of a homogeneous good. Such diversification is socially beneficial, because it reduces the transmission of factor price volatility, like oil-price shocks, to consumer prices. Therefore, many countries have implemented policies aimed at increasing technological diversification. The question is whether such policies are necessary. We use a two-stage investment model to address this question in the setting of perfect competition and of a monopoly. We show that factor price uncertainty leads to diversification, if capital is not too expensive, and that this diversification is due to each firm investing in a diversified technology portfolio. An important implication of this form of diversification is that technological diversity is socially optimal, even in the case of a monopoly. Thus policy intervention is unnecessary and might even be detrimental.

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