the effects of international trade on intra-industry reallocation of firms and on aggregate industry productivity.

Our paper adopts a growth approach to explain how heterogeneous firms producing in a particular period of time are the result of subsequent waves of process innovations which allow more recent firms to produce using more productive techniques. The contemporaneous production of firms characterized by different productivity levels results in a variety of prices set by firms which reflect productivity differences. The latter are also responsible for patents' price differences, given that patent prices of more profitable varieties are higher. Moreover, demand and market shares of older less efficient firms decrease over time as long as new patents, which allow the production of new goods along the technological frontier, are produced in the innovative sector.

In this work we assume that old firms are unable to implement the more productive production processes due to high switching or implementing costs required to adopt the new production processes. However, demand for these firms is still positive given the Dixit and Stiglitz approach, which postulates love for variety in consumption. The assumption of goods which are imperfect substitutes together with that of productivity heterogeneity results in different equilibrium prices for different varieties. Moreover, our results suggest that policy intervention may have a role given that specific policies could be set in order to reduce switching costs when they are particularly high in order to implement a redistribution of the production activity toward the innovative sector with an associated higher rate of innovation and of growth of the overall economy.

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Appendix A

As in the text, we define h in such a way that $m = 1, 2, ..., (h = i)$. Once there is an improvement along the learning curve described by (19), the series continues in the following way: $m = 1, 2, ..., h, (h + 1 = i)$. In this appendix we show when process innovations which increase the value of h as defined above, end up with a smaller (higher) value of b_i. In other words, we show when b_h is higher (lower) than b_{h+1}.

We know from the definition (26) that

$$b_h \equiv \frac{n_h \gamma_h^{1-\sigma}}{\sum_{j=1}^{h} n_j \gamma_j^{1-\sigma}} \quad \text{and} \quad b_{h+1} \equiv \frac{n_{h+1} \gamma_{h+1}^{1-\sigma}}{\sum_{j=1}^{h+1} n_j \gamma_j^{1-\sigma}}$$

Hence, we derive that $b_h > b_{h+1}$ when

$$n_h \gamma_h^{1-\sigma} \sum_{j=1}^{h+1} n_j \gamma_j^{1-\sigma} > n_{h+1} \gamma_{h+1}^{1-\sigma} \sum_{j=1}^{h} n_j \gamma_j^{1-\sigma}$$