

KNOWLEDGE AS AN ECONOMIC GOOD: EXHAUSTIBILITY VS APPROPRIABILITY

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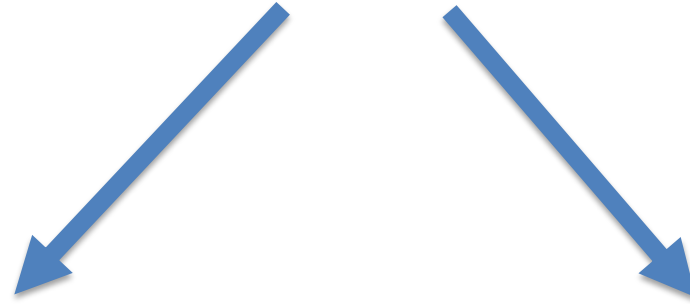
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- The analysis of knowledge as an economic good has paid much attention to its limited appropriability. Lesser attention has been paid to its limited exhaustibility. The effects of the limited exhaustibility of knowledge may compensate the effects of its limited appropriability. The Arrowian knowledge market failure takes place only when and if the downward shift of the intertemporal derived demand for non-exhaustible knowledge engendered by the limited appropriability of knowledge and the consequent decline of the price of innovated goods is larger than the downward shift of the intertemporal derived demand of standard capital goods engendered by their obsolescence.

- The distinction between imitation and knowledge externalities is relevant to assess the appropriability trade-off. Imitation externalities stemming from intra-industrial spillovers favor the entry of new competitors that benefit of knowledge ready-to-use with negative effects that are far stronger than the positive ones. Knowledge externalities stemming from inter-industrial spillovers take place when knowledge spilling from one party can be used as an input in the knowledge generation function with positive effects that are far larger than the negative ones.

- The appreciation of the joint effects of the limited exhaustibility of knowledge and of the knowledge appropriability trade-off calls for the design of a new knowledge policy framework based upon the differentiation of both public subsidies with respect to their actual additionality and intellectual property rights with respect to terms and levels of exclusivity.

SPIILLOVER



IMITATION
EXTERNALITIES

$$Y = K L T_I T_E$$

KNOWLEDGE
EXTERNALITIES

$$T = R D T_I (t-1) T_E (t-1)$$

The intertemporal derived demand of capital goods

The intertemporal derived demand of capital goods assuming that the current period were t_1 and the initial year t_0 and taking into account depreciation/obsolescence (d), is:

$$D = \sum_{t=t_0}^{t_1} (1 - d)^{t_1 - t} P_Y P_{K_t}$$

- FIGURE 1. THE DERIVED DEMAND FOR KNOWLEDGE AND STANDARD ECONOMIC GOODS WITH DIFFERENT LEVELS OF EXHAUSTIBILITY AND APPROPRIABILITY

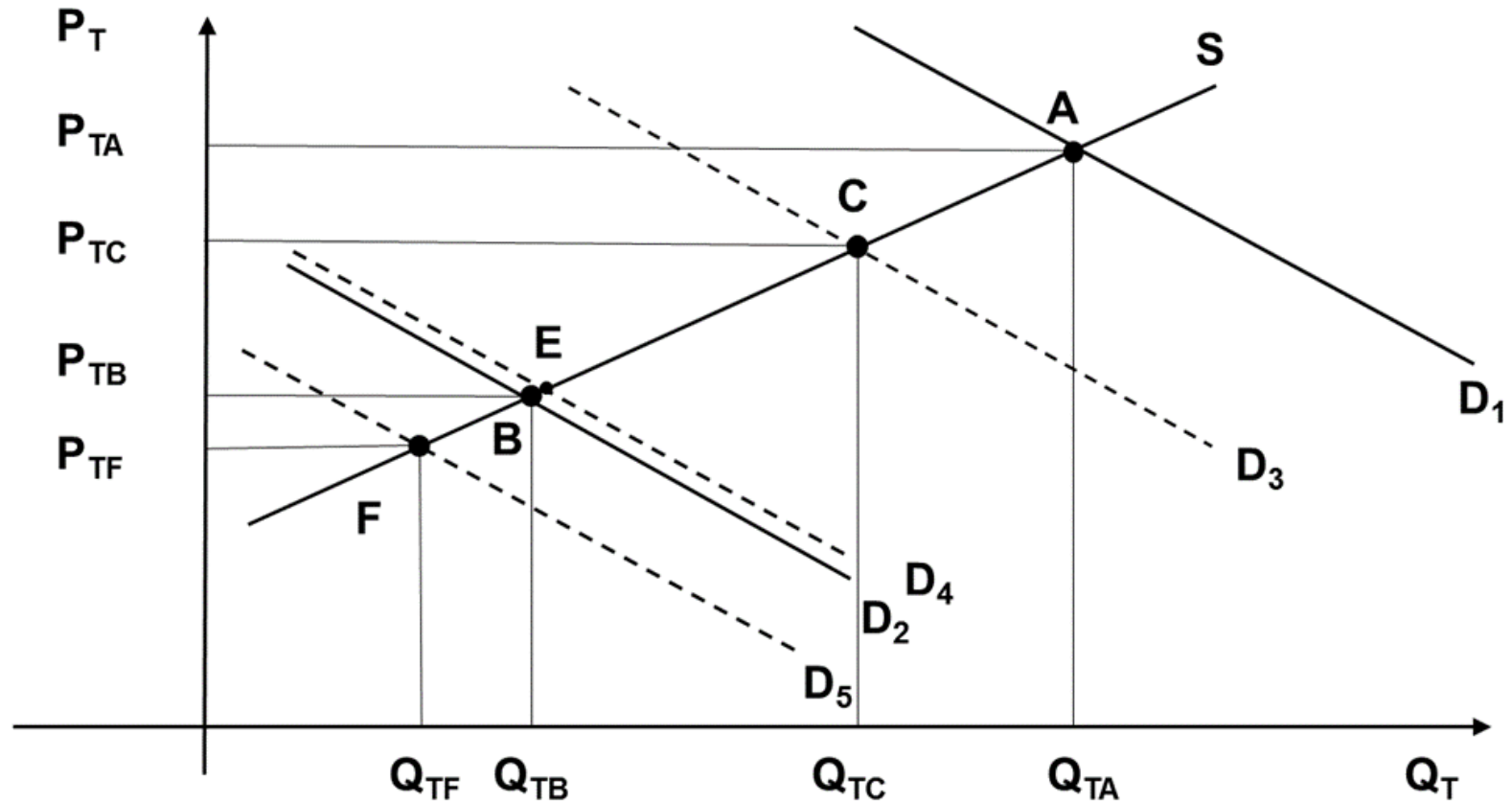


FIGURE 2. THE APPROPRIABILITY TRADE-OFF WITH EXTERNALITIES

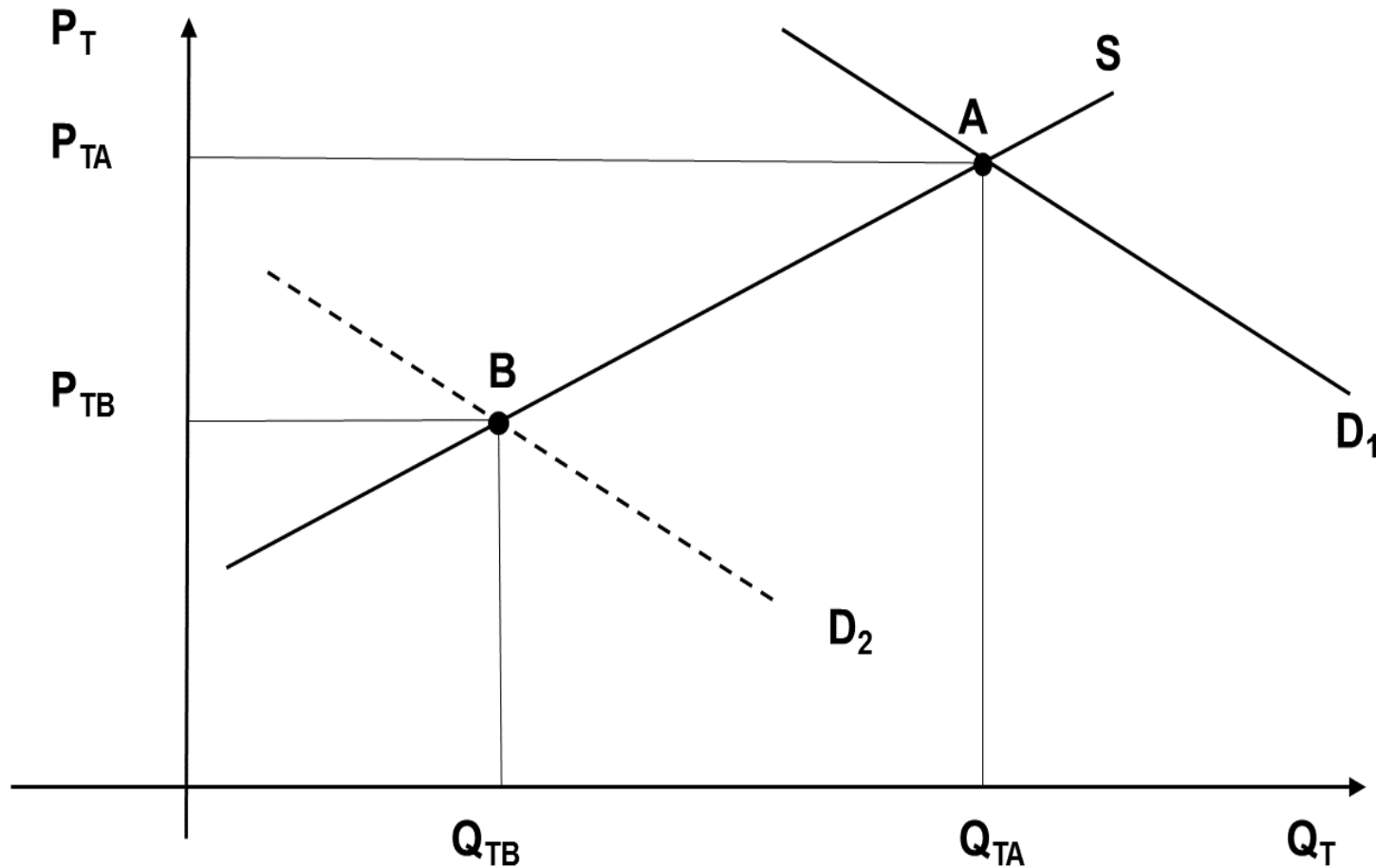
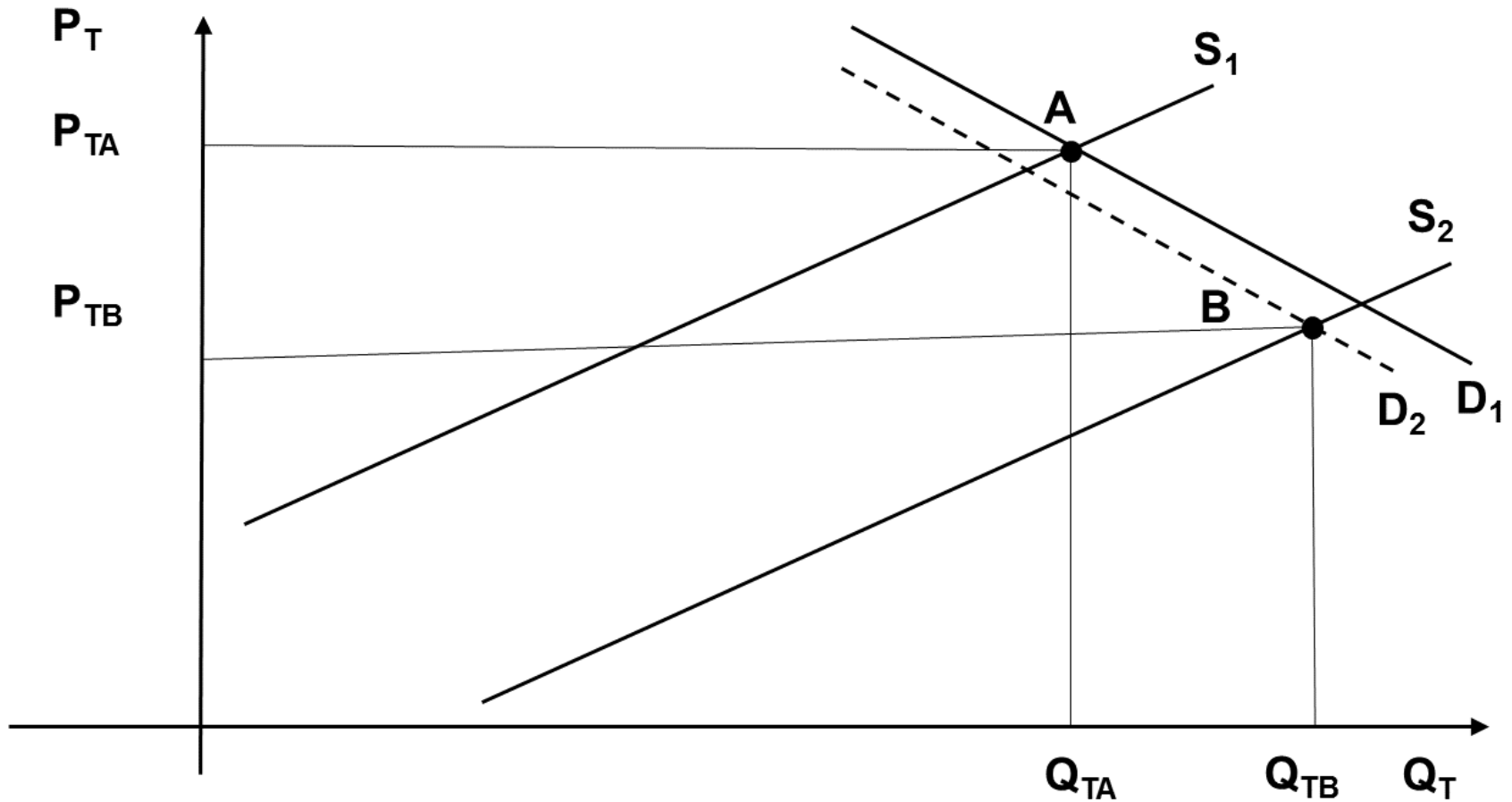


FIGURE 3. THE APPROPRIABILITY TRADE-OFF WITH KNOWLEDGE EXTERNALITIES



- **TABLE 1. TYPES OF KNOWLEDGE AND TYPES OF KNOWLEDGE POLICIES**

	LOW EXHAUSTIBILITY	HIGH EXHAUSTIBILITY
HIGH APPROPRIABILITY	<ul style="list-style-type: none"> -SHORT TERM PATENTS WITH WEAK EXCLUSIVITY -AUTOMATIC R&D SUBSIDIES WITH STRONG ADDITIONALITY REQUIREMENTS -TARGETED R&D PROGRAMS - DIRECT SUPPLY OF KNOWLEDGE 	
LOW APPROPRIABILITY		<ul style="list-style-type: none"> -LONG TERM PATENTS WITH STRONG EXCLUSIVITY -WEAK ADDITIONALITY REQUIREMENTS