



## Special Section: The Digital Transformation of Vertical Organizational Relationships

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# Special Section: The Digital Transformation of Vertical Organizational Relationships

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In many industries, ranging from academia to industrial and consumer goods, one can observe—all along the various value chains—a “digital transformation.” Firms’ inputs and outputs are imbued with an increasing portion of information, thus reducing the relative importance of the physical aspect for a broad variety of goods. As an example, downstream outputs (finished goods), such as cars,

electronic devices, or media are more and more infused with and complemented by information, which may be used to update, enhance, or—in the case of media—replace the physical product altogether. Similarly, firms rely on increasingly information-based inputs to solve problems, innovate, and improve their operations. Each of the two papers selected for this special section addresses the mounting digital aspect of vertical relationships, and together they address two pertinent examples, relating to firms' inputs and outputs, respectively.

Antino Kim's contribution on the apparently "Doubly-Bound Relationship between Publisher and Retailer: The Curious Mix of Wholesale and Agency Models" examines the tension in the book market between the physical and digital versions of the same content. At the center of his discussion is Amazon, a worldwide player in both markets, which sells both versions side-by-side across their respective channels—using the same platform. The author observes that the shift (against Amazon's initial will) from the traditional wholesale pricing model for e-books to an agency model with revenue sharing, where publishers control retail prices, has prompted a price increase and a concomitant drop in demand for the digital products, quite possibly against a casual observer's intuition and expectation. One of the main takeaways from this article is that the coexistence of digital and print versions, with different modes of vertical contracting, has led to a misalignment of incentives between upstream and downstream parties who—as the author shows in Proposition 5 of his article—are quite fundamentally unable to agree on one of the two vertical contracting options.

Zooming out to the broader context, as well as shifting the perspective from end products to firm inputs, Jing Gong, Yili Hong, and Alejandro Zentner provide insights on "Role of Monetary Incentives in the Digital and Physical Inter-Border Data Flows." Using secondary data, they compare fluctuations of physical and digital labor flows in response to exchange-rate shocks between the United States and various foreign countries. While physical labor flows have proven to be fairly unresponsive to such monetary shocks, short-term digital labor flows do react, and all the more the higher developed the information and communications technologies (ICTs) are in the worker-originating countries. The study illustrates that there are few restrictions for firms to seek help globally when labor input can be provided digitally. They can thus turn to countries with the currently least elastic labor supply, at least for short-term engagements. The authors also point to the flipside, namely the importance for countries to increase the quality of ICTs to become a more attractive exporter of digital labor.

While these two contributions may at first glance appear to be studies or snapshots of particular developments relating to particular industries and particular inputs or outputs (labor and books), we are keen to suggest several more comprehensive implications. First, misalignments of incentives caused by the digital transformation of supply chains are likely to be only temporary and therefore ultimately present opportunities for competitive advantage by overcoming difficulties early. For example, the apparent conflict over contracting modes in the book

industry, discussed in the first article, sends a clear message that new modes of contracting are necessary to restore supply-chain coordination, to achieve efficient outcomes for the supply chains, akin to the historical problem of having to overcome double marginalization by revenue-sharing contracts. Second, the shift in emphasis from the physical to the informational components of inputs and outputs allows for new linkages among supply-chain partners, as well as to and from consumers and workers. Depending on the strategies employed on either side of the equation, this may lead to a marked increase in substitutability of supply-chain partners, as long as the information content remains fungible, in line with the conclusions of the second article. Finally, if we indulge the possibility of light at the end of “the digital-transformation tunnel,” there may appear a world where digital protocols and smart contracts enable sufficiently high levels of trust and ease of matching between strangers on open platforms so that intermediaries and aggregators of inputs or outputs (e.g., Monster or Amazon) lose at least some of their market power. This will not only increase the surplus of individuals, with their gains from trade untaxed, but augment aggregate social welfare as well, through broader participation and decreased deadweight losses.

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