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Online Platforms' Creative Disruption in Organizational Capital - the Accumulated Information of the Firm

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Online platforms based on big data and AI have revolutionized and disrupted the industry sectors they entered. Traditional economic measurement approaches have not timely detected the process of creative disruption by online platforms, most of which were founded only in the past decade and therefore their impacts may not have propagated to firm entries or exits. It is imperative to find an alternative approach to quickly identify the impacts of online platforms on competition, innovation, and welfare. This paper presents a new method centering on organizational capital to examine the impacts caused by the entry of an online platform. An online platform's key disruption in its sector is traditional firms' knowledge derived from their relatively limited amounts of data. This disruption can hence be measured by a firm's organizational capital, the accumulated information of the firm. The approach is supported by our finding that the organization capital of dominant online platforms is highly correlated with the rising global data flow, the first empirical evidence that successfully links the explosive global data flow to an economic value. The major findings based on the firm-level data of the U.S. hospitality and the transportation industries during the period of 2002 to 2018 are as follows. When an online platform enters the industry, the effect of the online platform operates through the depreciation of organizational capital of traditional firms. The existing incumbents with a lower degree of digital transformation have a higher depreciation rate of organizational capital. This is the first empirical evidence of the anticipated effect of new business innovations on the depreciation rate of organizational capital. However, there is no immediate impact on the output, the employment, or the total factor productivity of existing incumbents. In the increasing digitally and physically inter-connected world, new online platforms' disruptions in traditional industries are going to be significant, fast, and on a massive scale. Our paper provides a new methodology to measure online platforms' disruptions in traditional brick-and-mortar firms in a timely manner.