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Platform Ecosystems: How Developers Invert the Firm

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Abstract

For a period starting in 2015, Apple, Google, and Microsoft became the most valuable companies in the world. Each was marked by an external developer ecosystem. Anecdotally, at least, developers matter. Using a formal model of code spillovers, we show how a rising number of developers can invert the firm. That is, firms will choose to innovate using open external contracts in preference to closed vertical integration. The locus of value creation moves from inside the firm to outside. Distinct from physical goods, digital goods afford firms the chance to optimize spillovers. Further, firms that pursue high risk innovations with more developers can be more profitable than firms that pursue low risk innovations with fewer developers. More developers give platform firms more chances at success. Our contribution is to show why developers might cause a shift in organizational form and to provide a theory of how platform firms optimize their own intellectual property regimes in order to maximize growth. We use stylized facts from multiple platform firms to illustrate our theory and results.

Keywords: Open innovation, sequential innovation, platforms, R&D spillovers, intellectual property, network effects, network externalities, bundling, two-sided networks, two-sided markets, vertical integration, standard setting organizations, platform