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Comment Gustavo Manso

Joel Waldfogel's chapter 8 (this volume) studies the impact of digitization on creative products and labor markets. It argues that digitization reduces the costs of creating, distributing, and promoting products, allowing for the introduction of new high-value products. In the context of movies, television, and books, estimated welfare gains are substantial. While labor activity increases with digitization, earnings per worker fall.

Previous research has argued that digitization on product markets increases welfare by giving access to a "long tail" of low-demand products not available in local brick-and-mortar stores (Brynjolffson, Hu, and Smith 2003). The black bars in figure 8.C.1, which represents the sales of products facilitated by digitization, illustrate such welfare gains.

The innovation in chapter 8 is to note that digitization reduces the costs of experimentation, allowing potentially blockbuster products to be discovered. Rather than the conventional long tail depicted in the figures above, Waldfogel argues for a random long tail, represented by the black bars in figure 8.C.2. Digitization produces not only inferior products but also blockbusters that were previously unknown. The welfare gains implied by the random long tail are large compared to the welfare gains implied by the conventional long tail (9 times as large for books, 13 times as large for television, 4 times as large for books).

There are numerous examples of successful artists who likely would have remained unknown if not for digitization. The duo Jack & Jack made it to the top of the iTunes album chart in 2015.[1] Also in 2015, writer Mark

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1. See https://www.forbes.com/sites/natalierobehmed/2015/07/24/how-these-independent-artists-reached-no-1-on-the-itunes-chart/#4a18c16262a0.

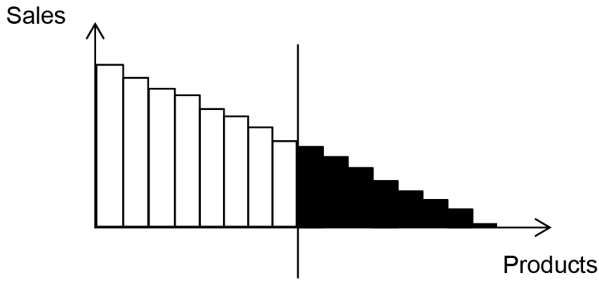

Fig. 8.C.1 Conventional long tail

Note: Open bars represent sales of products that were in the market before digitization, while shaded bars represent sales of products facilitated by digitization. This figure represents the conventional long tail view according to which products facilitated by digitization have lower overall.

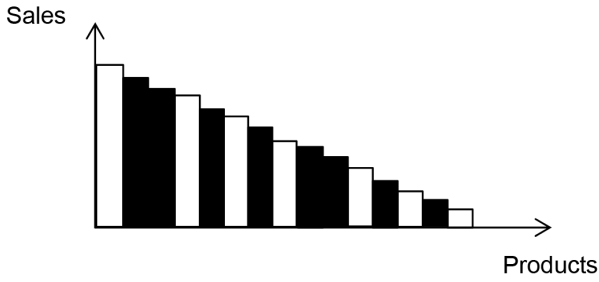

Fig. 8.C.2 Random long tail

Note: Open bars represent sales of products that were in the market before digitization, while shaded bars represent sales of products facilitated by digitization. This figure represents the random long tail view according to which some products facilitated by digitization may be breakthroughs and have higher overall sales.

Dawson was reported to be earning $450,000 a year from the books he self-published at Amazon Kindle Direct Publishing.[2]

Chapter 8 also shows that digitization leads to increased activity in these creative labor markets. However, the abovementioned examples of success are the exception to the rule, as average pay per creative worker decreases with digitization.

My discussion of the chapter revolves around estimation challenges and the relationship to the existing literature. Concerning estimation challenges, I will focus on (1) product success prediction, (2) substitution and cannibalization, and (3) sales vs. total surplus.

2. See https://www.forbes.com/sites/jaymcgregor/2015/04/17/mark-dawson-made-750000-from-self-published-amazon-books/#7dde47a76b5b.

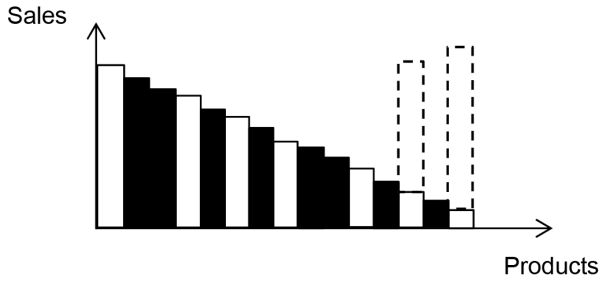

Fig. 8.C.3 Substitution or cannibalization

Note: Open bars represent sales of products that were in the market before digitization, shaded bars represent sales of products facilitated by digitization, and dashed bars represent lost sales of pre-existing products due to the introduction of products facilitated by digitization.

Chapter 8 attempts to estimate the welfare increase implied by the random vs. conventional long tail hypotheses. To predict which products were made possible by digitization, Waldfogel relies on LASSO regressions with sales as the dependent variable and product characteristics as independent variables. Products that have low predicted sales are the ones made possible by digitization, and they are associated with random long tail welfare gains.

One challenge for this approach is that any estimation error in the predictive regression used in chapter 8 tends to overestimate the random long tail welfare gains. If the predictive regression is misspecified (e.g., omitted variable), then we may consider products that would have been around anyway as products made possible by digitization. As a result, our welfare gains may seem to be like the black bars in figure 8.C.2, when in fact, reality is closer to the black bars in figure 8.C.1.

Another challenge is the potential for substitution or cannibalization. What if new products due to digitization are successful at the expense of other traditional products? Figure 8.C.3 illustrates this possibility. The dashed bars represent cannibalization of traditional products. Welfare gains are thus overestimated as they fail to take into account the losses that new products inflict on existing products.

Finally, realized sales may diverge from welfare. For example, digitization may increase competition which leads to lower prices. Sales data would miss a part of the welfare gains. Figure 8.C.4 illustrate this possibility. The dashed bar over the shaded bar represents additional consumer surplus not captured by the sales data.

The "random long tail" hypothesis has parallels in the entrepreneurship and innovation literature. As Waldfogel argues in chapter 8, "no one knows anything" about a product before its launch. This is analogous to the notion that innovation is the result of experimentation with new ideas (Arrow 1969). Weitzman (1979) uses a statistical class of decision problems, called "bandit

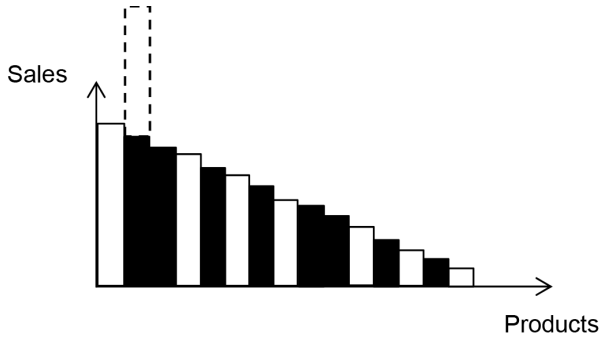

Fig. 8.C.4 Sales price is different from total surplus

Note: Open bars represent sales of products that were in the market before digitization, shaded bars represent sales of products facilitated by digitization, and dashed bars represent additional consumer surplus not captured by the sales data.

problems," to model the experimentation process that results in innovation. Bergemann and Hege (2005) and Manso (2011) consider incentives for innovation in principal-agent models, in which the agent experiments with new ideas in a bandit problem setup.

Digitization reduces the costs of experimentation, since it facilitates product creation, distribution, and promotion of new products. In a related study, Ewens, Nanda, and Rhodes-Kropf (2018) analyze how the introduction of cloud computing services by Amazon in 2006, which reduces the cost of experimentation, affects venture capital (VC) investment strategy. They show that after the introduction of cloud computing, VCs switch to a "spray and pray" strategy, in which they allocate small amounts of funding to many different firms without spending much time on due diligence for each project. Moreover, VCs' new investments tend to be "long-shots," aiming for potential blockbusters. This suggests that the random long tail for VC investments after the introduction of cloud services is large, in line with the results on the effects of digitization for movies, television, and books in chapter 8.

The results that average pay for the creative worker decreases with digitization are related to the literature on the returns to entrepreneurship. Hamilton (2000) and Moskowitz and Vissing-Jørgensen (2002) find that entrepreneurs earn less than salaried workers. Overconfidence, preference for flexibility, and preference for skewness are some of the proposed explanations for why individuals may still choose to become entrepreneurs.

In contrast, Manso (2016) argues that the lower observed cross-sectional payoffs for entrepreneurship do not reflect the lifetime earnings of individuals. Entrepreneurship is the experimentation with new ideas, and many individuals exercise their option to abandon entrepreneurship upon failure, quickly moving back to the salaried workforce. Analyzing panel data, which

takes into account the option value of experimentation, I find that entrepreneurship pays off.

Digitization lowers the cost of experimentation for creative workers. At this lower cost, they may write a book, record a song, or make a movie to learn whether they can succeed as creative workers. The average observed worker pay is thus low, because it encompasses all these attempts at subsistence as a creative worker. Most of these want-to-be creative workers will never succeed and will abandon the enterprise. Few can become big hits, such as the two examples at the beginning of this discussion, and will remain as creative workers.

Dominant platforms, such as Amazon Kindle Direct Publishing, iTunes, and Spotify, may facilitate the discovery of unknown creative workers, contributing to the random long tail. However, they may also help perpetuate incumbent artists. Aguiar and Waldfogel (2018) show that being added to Spotify playlists drives streaming traffic, raising the probability of song success. Therefore, platforms have control over the pipeline of new artists, which can create distortions. As argued by Iyer and Manso (2020), these platforms may lack incentives to search for high quality new artists to be included on their playlists and so may tend to prefer recommending status quo artists.

To conclude, Waldfogel (chapter 8, this volume) argues that digitization reduces the cost of experimentation in creative industries. This allows for the discovery of high-quality artists that would have not come to surface without digitization. Rather than a conventional long tail of inferior products, digitization leads to a larger random long tail, implying significant welfare gain. Consistent with this experimentation story, there is increased activity in labor markets, but falling average earnings per creative worker. While digital platforms help publicize the work of new artists, they may reinforce already successful artists through their recommendation systems, actually preventing experimentation. Waldfogel's chapter proves that digital platforms in the creative industry are a fertile ground for the study of all these and other questions.

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