

Stylistic Differentiation
Along (Un)Seen Dimensions

By

Ishaan Dey

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Supervised by Federico Ciliberto

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Abstract

Consumer goods are often differentiated along attributes unobservable to the researcher, such as visual style. Tools in artificial intelligence enable the identification of said visual characteristics from product images, allowing for the quantification of style. I generate a Hotelling-like product location space of prescription eyeglass frames using low-dimensional representations of images known as neural embeddings. Through hedonic price regressions, I find that neural embeddings increase the explained variation in price by a 5.2 percentage points, or 10.4%. I argue that neural embeddings not only capture finer detail than traditional descriptors of style, but are relevant to economic agents. I further estimate that consumers place an average marginal willingness-to-pay between \$0.44 to \$0.49 for a one standard-deviation increase in stylistic differentiation relative to other frames of the same material, showing positive returns to differentiation.

Keywords: Product differentiation, hedonic price, deep learning, neural network

*Department of Economics, University of Virginia; ishaan.dey@virginia.edu.

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