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DETERMINANTS OF THE DEMAND FOR MICROCOMPUTER SOFTWARE: AN ECONOMETRIC ANALYSIS

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ABSTRACT

As an economic good, software has a number of interesting properties. It is relatively expensive to develop but can be almost costless to manufacture. Furthermore, the control of standards may be as critical in the software market as the intrinsic quality of the product. This is because a consumer who purchases a product adhering to industry standards is the beneficiary of a number of positive network externalities in the form of increased compatibility, greater training opportunities, lower learning costs, and a larger number of complementary products.

The purpose of this research is to build and empirically test econometric models to identify and measure those product features that are important in the purchase and pricing decisions for microcomputer software. A special emphasis is to identify the effects of standards. By estimating both the values placed on specific product features (diversity) and the value placed on traits that benefit from network externalities (standards), the relative value of these traits can be analyzed.

Preliminary results from a hedonic regression model are available for the microcomputer spreadsheet market for the time period 1985-1992.

- The results indicate a 10.4% annual decline in the quality-adjusted *real* price of spreadsheet software in this period, even though the *nominal* price was essentially unchanged. This suggests that technical progress in software may be more rapid than previously assumed.
- A second set of results shows the value ascribed to key features of spreadsheet packages. In addition to the intrinsic capabilities of the product, purchasers were found to place significant value on its adherence to standards. For example, packages that support the Lotus 1-2-3 menu interface received an average premium of \$67.
- Finally, the results show how the values for various features change during this period and, in particular, the decline in value of the Lotus 1-2-3 menu interface in the face of the shift to graphical user interfaces (i.e., Microsoft Windows).

This analysis is being extended to other applications. The expected contributions of the research, in addition to a greater understanding of the packaged software industry, may also lead to suggestions on price implications for the US software industry and insights into the pricing of other goods, such as information, that possess some of the same properties as software. Furthermore, novel empirical results may lead to contributions to the growing theoretical work on the economics of standards.