

# Chapter VI

## The Macroeconomic Benefits of Intelligent Enterprise

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### ABSTRACT

*New information technologies, including e-commerce and the Internet, have brought fundamental changes to 21<sup>st</sup> century businesses by making more and better information available quickly and inexpensively. Intelligent enterprises are those firms that make the most from new information technologies and Internet business solutions to increase revenue and productivity, hold down costs, and expand markets and opportunities. In this chapter, the macroeconomic benefits that intelligent enterprises can have on the U.S. economy are explored. We find that the U.S. economy has become less volatile, with demand volatility nearly matching sales volatility, particularly in the durable goods sector. Evidence also suggests that firms are utilizing new information technologies to lower inventory levels relative to sales, leading to higher productivity growth, lower prices, and more competitive markets.*

### INTRODUCTION

Schumpeter (1939, 1950) presents arguments that innovation's transforming effects on economies is nothing new. In fact, because the macroeconomic benefits from the development and implementation of new technologies are positive and significant, the process he describes as "creative destruction" should be embraced. Railroads, steam power,

illumination, cable lines, electricity, air transportation, air conditioning ... all these inventions, and many more, have contributed to "economic evolution." That is, free-market economies are in a process of continuous change, where new ideas and new technologies destroy old products and old ways of doing things. This evolutionary process has profound consequences for what is produced, where things are produced, and who

will produce them. Intelligent enterprises of the 21<sup>st</sup> century know and understand this, and work to position themselves to take advantage of new opportunities and new markets in this rapidly changing environment.

Clearly, the process of creative destruction—also referred to as “the churn”—can be upsetting and turbulent, as old industries disappear, existing jobs are redefined, and new industries created. As Cox and Alm (1992) point out, “innovation has always had the direct effect of creating new businesses and industries and the indirect effect of destroying many of the jobs in the existing industries that they eclipsed.” As a result, the job mix changes, but the total labor market expands and macroeconomic productivity increases, thereby raising incomes and overall living standards for individuals in the economy.

Today, the churn is at work in the so-called “New Economy”—a view adopted in the late 1990s that is characterized by a higher sustained level of productivity growth brought on primarily by the implementation of new technologies, enabling faster economic growth with less inflation. While some may argue that the New Economy was smoke and mirrors because of misguided claims that the business cycle would end and stock prices for Internet-related firms would rise forever, Formaini and Siems (2003) argue that the reality of the New Economy is a more resilient and flexible economy. Faster productivity growth has led to higher real wages, as well as lower unemployment and lower inflation.

A number of researchers have documented the productivity acceleration of the late 1990s. Oliner and Sichel (2000) calculate that information technology capital—computer hardware, software, and communications equipment—added 0.5 percent per year to economic growth in the 1980s. By the late 1990s, however, the contribution to economic growth from information technology capital grew to 1.4 percent per year. Moreover, the percentage of income earned in the economy from information technology capital more than doubled

over this time period, rising from 3.3 percent in the 1980s to 7.0 percent by the late 1990s.

In addition to Oliner and Sichel’s research, studies by Jorgenson and Stiroh (2000) and the Council of Economic Advisers (2001) show a large pick-up in labor productivity growth in the non-farm business sector during the late 1990s. Consistent among the studies is the finding that shows the extent to which the rapid accumulation of new information technologies contributed to the rising rate of labor productivity growth. The main message here is that the development and implementation of new information technologies drove a large fraction of the recent productivity acceleration.<sup>1</sup>

While “New Economy companies” in the computer and semiconductor sectors contributed a great deal to the overall acceleration of productivity growth, “Old Economy” (traditional manufacturing) firms also largely contributed. Old Economy companies’ demand for new information technologies increased as they found many efficiency-enhancing ways to use the new innovations. DeLong and Summers (2001) suggest that the principal effects of the New Economy are more likely to be “microeconomic” than “macroeconomic,” although improvements at the firm level eventually produce macroeconomic gains. Competitive pressures require that successful firms employ information technologies effectively to reduce costs and improve profitability.

Such intelligent enterprises come in all sizes and shapes. They are Internet-related New Economy companies and Old Economy manufacturers. They are new start-ups and 100-year-old enterprises. Baily (2001) uses data from the Bureau of Economic Analysis to show labor productivity growth by industry over two periods: 1989-1995 and 1995-1999. Labor productivity growth is computed by dividing each industry’s output as measured by the value added in that industry (gross product originating) by the number of full-time equivalent employees. The results reveal that service industries, particularly wholesale

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