

## THE NEW ECONOMY MACROECONOMICS: THE LATE “GOLDEN AGE OF DIMINISHED EXPECTATIONS”?

### YENİ EKONOMİ MAKROEKONOMİSİ: SON “AZALAN BEKLEYİŞLER ALTIN ÇAĞI”?

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**ABSTRACT** : The remarkable economic success of the US in the late 1990s led many economists to talk about a ‘New Economy’, according to which technological advances had brought on a higher sustained level of productivity growth that allowed faster economic growth with less inflation, and very low unemployment. But given the events since 2000-the long, steep stock market downturn, the falloff in business investment and the subsequent recession-many questions arose based on whether anything in the New Economy view is valid. This essay provides a detailed overview of the main issues, many of them closely linked to the rise of the Internet.

**Keywords:** New Economy, Productivity Growth, Information and Communication Technology (ICT).

**ÖZET** : Birleşik Devletlerin, 1990’ların sonlarındaki olağanüstü ekonomik başarısı pek çok ekonomisti ‘Yeni Ekonomi’ ile ilgili mülahazalara sevk etmiştir. ‘Yeni Ekonomi’ anlayışına göre, teknolojik gelişmeler, yüksek oranlı sürdürülebilir üretkenlik artışına, bu da çok düşük işsizlik ve daha az enflasyonun eşlik ettiği daha hızlı bir ekonomik büyümeye neden olmuştur. Fakat, 2000’den bu yana devam eden gelişmeler-borsada uzun ve derin başaşağı inişler, işletmelerin yatırımlarındaki azalışlar ve bunları takip eden durgunluk- Yeni Ekonomi görüşünün hala geçerli olup olmadığı hakkında birçok soruyu gündeme getirmiştir. Bu makale, pekçoğu internetin yükselişi ile sıkı sıkıya bağlantılı Yeni Ekonominin temel konularını detaylı bir biçimde gözden geçirmektedir.

**Anahtar Kelimeler:** Yeni Ekonomi, Üretkenlik Büyümesi, Enformasyon ve Komünikasyon Teknolojisi (EKT).

### I. Introduction

“Productivity isn’t everything, but in the long run it is almost everything. A country’s ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker...Yet overall our economy has done far worse over the past generation than anyone would have predicted. We have entered an era in which economic progress has become a doubtful thing. Many Americans feel that they live worse than their parents; even more fear that their children will be worse off than themselves” (Krugman, 1998:2-11).

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\* The title of Paul Krugman (1998), *The Age of Diminished Expectations: U.S. Economic Policy in the 1990s*. Third Edition. The MIT Press. Cambridge, Massachusetts.

In the late 1990s, many economists and policymakers agreed that there have been fundamental changes in the US economy, of which remarkable economic performance has been the subject of so much excited comment and analysis (see, for example, Gordon, 2002 and 2000; Temple, 2002; Baily, 2001; DeLong and Summers, 2001; Claussen and Staehr, 2001). The surprising economic performance, including low unemployment and accelerated productivity growth with low inflation, is the key driver of the New Economy in the US. The starting point for the New Economy proponents is that the development, adoption and the use of new information and communication technology (ICT) have reshaped the economy in fundamental ways. Furthermore, many economies have become more integrated into the world economy with increased openness for trade, capital and intellectual ideas; a process partly following from improved information technologies. Although those who hold this view consider accelerated productivity growth fundamental to the late 1990s boom, other forces are also at work. These include the earlier deregulation of key US industries, financial innovation and a more intense pressure of competition. Despite of this, the flood of Internet-related businesses and the spectacular rise in their stock valuations led some economists to redeem the New Economy as solely an Internet phenomenon (Formaini *et al.*, 2003: 5; Baily, 2001: 2; DeLong *et al.*, 2001: 16-18).

Baily (2001: 201-211) argues that the late 1990s boom may be attributed to the emergence and diffusion of new ICT, which led to improvement in the functioning of the labour market, increases in productivity growth directly, and improvement in functioning of product markets, and that, as a consequence, led to stronger economic performance. He further argues that although one may use the expression New Economy to describe this period, the term 'New Economy' may be viewed too broadly, suggesting more fundamental and permanent changes than actually occurred. The term 'Information Economy', on the other hand, tends to be too narrow in explaining the set of interrelated forces bringing about change in the economy, which include increased globalisation, rapid development and the flood of Internet-related businesses.

The New Economy discussion is in essence about two related issues: First, what are the factors behind the remarkable growth experience in the US? Second, what are the factors that have kept down inflation in an environment of rapid economic growth and falling unemployment? Also, the link between ICT and economic performance is worth being explored. The New Economy view has as its starting point the belief that two broad autonomous, but mutually reinforcing, trends are changing the economy in a fundamental way. The emergence and diffusion of ICT has strong impact on the labour market and product market, leading to increases in productivity due to an exogenous surge in innovation and capability in the high-tech sector. The rapid growth and dynamism of the high-tech sector is exogenous for it is indeed changing traditional industries, but is also being driven by the demand from traditional industries. The idea behind the change in the functioning of the labour market is that, for example, Internet job sites represent a more efficient mechanism for matching workers and jobs than what has been available before. Along with the tight labour market, high-pressure economy, and low unemployment rate of the late 1990s may be seen as a product of the accelerated productivity that is largely driven by the technological advances in data processing and data communications.

The arrival of the new economy had also been accompanied by a very large increase in the value of corporate equities, a rapid rate of increase in consumption and a very large increase in the inflow of capital to the US (Baily, 2001 : 239). Through 1999, the performance of the US stock market was extraordinary, as there was a massive boom (Temple, 2002 : 22-25). Price-earning ratios for the aggregate US market were at the highest levels ever observed in the Twentieth Century. For a comparison, for example, the market value was a mere \$7.4 trillion in January of 1996, and the market value of publicly held corporate stock reached \$17.5 trillion, in December 1999, hit a monthly peak in August of 2000 at \$18.9 trillion, and had fallen to \$15.5 trillion in April of 2001 (Baily, 2001 : 239). The most dramatic and glamorous aspect of the boom was the rise of the internet companies and dotcoms, many of which exploited huge gains for their founders almost overnight, and gave plenty of freedom to those who challenged that the old economic rules were being rewritten, and the old economy firms were doomed (Formaini *et al.*, 2003: 8; Temple, 2002: 2). The grossly overvalued NASDAQ collapsed, and the broad stock market has fallen by about 30 per cent. As the decline in the stock market has created a feeling of vertigo in many investors, in November 2002 the National Bureau of Economic Research announced that the US economy had slipped into a recession in March 2001 (Baily, 2001: 239; DeLong *et al.*, 2001: 25-27; Temple, 2002: 2). This announcement provided official confirmation that the heady days of the 1990s were over. The collapse of the NASDAQ had already taken the shine off the optimism surrounding the New Economy. In addition, the terrorist attacks of the World Trade Centre in New York and the Pentagon in Washington on September 11, 2001 have created a long-term disruption and increased the uncertainty of the economic outlook (DeLong *et al.*, 2001: 11). The US expansion, which came to an end in 2001, had lasted exactly five years, one of the longest unbroken expansions ever recorded by an industrial country. For one time, one may have heard arguments that the business cycle was dead in the New Economy, now it is feared that the economy is stuck in an extended period of stagnation with little hope of speedy recovery (Formaini *et al.*, 2003: 6-7). There is one dimension along that the New Economy is a source of macroeconomic danger. The decade in the past century, which saw the fastest productivity growth and the greatest degree of structural change was the 1920s, and the booming 1920s were followed by the disastrous 1930s. Indeed, there was no necessary reason that a decade as good as the 1920s had to be followed by the Great Depression (DeLong *et al.*, 2001 : 29-30).

Thus, the remarkable performance of the US economy in the 1990s has been much discussed. The increase in the rate of productivity growth in the second half of the 1990s has been one of the most important factors at work in driving faster GDP growth, lower inflation, lower unemployment, faster real wage growth, an inflow of capital, budget surpluses, and improved living standards. Possible economic consequences of these events may have been important beyond the US. Since new technologies are easily transferred across national borders, the economic dynamism of the US might rapidly spread outwards to the developed and developing countries. Nevertheless, Temple (2002: 2) suggests that popular commentators have tended to imply that the US experience is unique, and have used it to criticise the apparent lack of progress in other countries, especially those of Europe. Governments outside the

US are routinely castigated for presiding over sluggish economies that are over-regulated and slow to innovate.

This essay attempts to review the principal reasons and possible consequences of the New Economy in the US. The essay is set out as follows. Following this introduction, Section II reviews analyses of the New Economy paradigm. Section III investigates the accelerated productivity growth and the accompanying boom in equipment investment. Section IV examines the combination of low inflation and falling unemployment during the second half of the 1990s. Finally, Section V concludes.

## **II. What is The New Economy?**

“World War II veterans came home to an economy that doubled its productivity over the next 25 years; as a result they found themselves achieving living standards their parents had never imagined. Vietnam veterans came home to an economy that raised its productivity less than 10 percent in 15 years; as a result, they found themselves living no better-and in many cases worse-than their parents” (Krugman, 1998 : 11).

The performance of the US economy after World War II was very strong with rapid growth, relatively low employment, and moderate inflation. Compared with the problems of war and the turmoil of the depression, a new, stronger, and more stable economy emerged. After 1973, economic performance deteriorated, and chronic problems with inflation, unemployment, and slower growth arose (Krugman, 1998: 11). The first two rows of Table 1 exhibit this contrast. Real GDP growth and real GDP per capita growth dropped by nearly a third after 1973. Average unemployment rose by nearly 40 per cent and average core inflation more than doubled. As can be seen in Table 2, over the 1990s, as a whole, productivity growth was unremarkable by the standards of 1980s. The case for the importance of the New Economy rests on the second half of the decade, when the boom continued for much longer than most observers, and growth rates in excess of 4% a year were repeatedly recorded (Baily, 2001: 203; Temple, 2002 : 6). Growth rates for the period from the fourth quarter of 1995 until the fourth quarter of 2001, with growth rates for two earlier periods, essentially the 1950s and 1960s, and the period of the productivity slowdown that began in the early 1970s. It can be seen that in the New Economy period, which is the second half of the 1990s, the productivity growth, although better than in the late 1970s and early 1990s, has not yet achieved the heights of the early 1960s. As can be seen in Table 1, the period 1990 to 2000, as a whole, looks pretty good compared to the 1973-1990 period in terms of average core inflation and average unemployment. Both variables improved greatly, and compare well with the golden years before 1973. Nevertheless, the story does not seem so clear in terms of growth. Growth for the whole decade was ahead of the slow growth period after 1973, but slower than in the 1960s. In fact, all of the growth acceleration is concentrated in the second half of the decade. The five years after 1995, i.e. the New Economy period, are a remarkable but very short period of rapid growth, low unemployment, and low inflation.

**Table 1. Indicators of Macroeconomic Performance**

Period	Real GDP Growth	Real GDP per Capita Growth	Average Unemployment	Average Core Inflation*
1959-1973	4.2	2.9	4.9	2.7
1973-1990	2.9	1.0	7.0	5.9
1990-2000	3.2	2.2	5.6	2.4
1990-1995	2.4	1.3	6.6	3.0
1995-2000	4.1	3.2	4.6	1.7

\* Chain price index for personal consumption expenditure, excluding food and energy.

Source: Baily (2001, Table 1).

**Table 2. US Growth Rates 1950-2001**

Period	Real GDP Growth	Productivity Growth
1950:2-1972:2	3.9%	2.7%
1972:2-1995:4	2.9%	1.4%
1995:4-2001:4	3.5%	2.4%

Source: Temple (2002, Table 1).

Gordon (1998) suggests that the American economy of the mid-1990s has been a source of envy for the world and of puzzlement for macroeconomics. What is the New Economy? Is the New Economy paradigm simply Pollyanna economics? Or is it rooted in reality? Many use the term New Economy to refer to events expected to result in always-rising corporate revenues, higher sustainable corporate valuations and end of the business cycles (Formaini *et al.*, 2003: 5). Baily (2001: 204) argues that although evaluating the performance of the stock market tends to be very sensitive to starting and ending points, one of the most remarkable signs of the New Economy has probably been the strong performance of the US stock market. However, Formaini *et al.* (2003: 5) argue that the New Economy has not produced ever-increasing stock prices or tamed business cycles. The US Department of Commerce (1998) defines the New Economy as an economy in which ICT and related investment drive higher rates of productivity growth. The new technologies have remarkably influenced productivity in the whole economy as ICT are adopted in many sectors. ICT are believed to increase the efficiency of labour and capital and thereby influence productivity directly. Furthermore, the new technologies are likely to be embodied in equipment, increasing the profitability of investment. Higher investment might also add to productivity gains. There has been heightened competition in an increasingly deregulated economy facing strong international competition. ICT innovation is driven by the demand for improved technologies in the using industries. It is argued that the policy environment in the 1990s in the US contributed to the creation of the right environment for growth and innovation (DeLong *et al.*, 2001: 38). Accordingly, policies to maintain domestic competition and increase international competition have been stressed, and funds have been provided to support basic research and education. Most importantly, the mix of monetary and fiscal policy has lowered interest rates and encouraged investment (Baily, 2001: 210). According to DeLong *et al.* (2001 : 15), the New Economy employs technology to substantively alter production or consumption processes or both. The term became popular in considering the remarkable economic performance of the US in the 1990s, and especially the 1995-2000. Council of Economic

Advisors' *The Economic Report of the President* (January 2001: 23) defines the New Economy as the extraordinary gains in performance, including rapid productivity growth, rising incomes, low unemployment, and moderate inflation, that have resulted from this combination of mutually reinforcing advances in technologies, business practices, and economic policies.

Some economists argue that the productivity revival may come from cyclical effects and from the surge in productivity growth within the computer sector (Gordon, 2000). Cyclical dynamics were explored by Gordon (2000) who argued that the huge rate of decline in computer prices of the post-1995 cannot continue indefinitely, and there will inevitably be diminishing returns to investment in ICT capital. Further, Gordon (2000) examined the impact of ICT on the increase in productivity growth and found that it had only a minor impact on the increase in productivity growth in the economy outside the computer producing industries. Oliner *et al.* (2000) found that the increased use of ICT contributed to approximately three fourth of the increase in labour productivity. The Council of Economic Advisors (CEA) (2001) estimated that an important share of the uptake in multifactor productivity is due to increased productivity in sectors other than the computer industry. Excitement over new technology's potential for lowering expenses, boosting profits and expanding market share sometimes leads analysts and investors to believe the good times will never end. For example, in the midst of the 1990s boom, Dornbusch (1998) once proclaimed that the remarkable expansion would run forever, and the US economy would never see a recession for years to come. Of course, less than three years later the expansion did end. Hence, business cycles are not dead and never will be. Nevertheless, there are still further reasons for seeing the successful macroeconomic performance of the US economy in the 1990s as special. Over the last decade, inflation in the US has been surprisingly low and stable. As measured by the deflator for personal consumption expenditure, inflation averaged 2.5% in the 1990s as a whole, compared to an average of around 5% in the 1980s, and more than 6% in the 1970s (Temple, 2002: 6). The inflation performance is the most remarkable sign taking into account the real economic developments. The expansion is the longest in history, and by April 2000, the unemployment rate had steadily fallen to just 3.9%, a thirty-year low (Claussen *et al.*, 2001: 2). Still, even more remarkably, despite this very low rate of unemployment, inflation has remained subdued. These developments are difficult to reconcile with the standard perception that, *ceteris paribus*, low unemployment and accelerated growth is associated with high inflation. Overall, the economy displayed much lower volatility in growth, unemployment and inflation than in previous decades, leading some to hail the death of the business cycle (Formaini *et al.*, 2003: 5; Temple, 2002: 20). The evidence for a New Economy was often closely linked to the increasingly high profile of the Internet. Considerable excitement surrounded the spectacular rise of the internet companies and dotcoms.

The term 'New Economy' refers to a golden, or at least gilded, age in the late 1990s that was driven by optimism about the financial prospects for information technology. There were three back-to-back investment shocks during this period: telecommunications deregulation in 1996, the "year 2K" problem in 1998-1999, and the "dot.com" boom in 1999-2000. These events stimulated significant investment in

information technology in a number of industries, leading to a very rapid expansion of IT-producing industries (Varian, 2001: 65).

The increase in productivity growth in the late 1990s is often attributed to the investment in ICT, mostly in computers, during the first half of that decade (see, for example, Brynjolfsson and Hitt, 2000; Temple, 2002). The rise in internet stock valuations between 1998 and 2000 may be considered one of the most remarkable asset pricing phenomena of our time. Temple (2002: 22-25) argues that there does not, however, exist straightforward relationship between the productivity growth of the late 1990s and the rise of the internet; for even at its peak the internet-related sector accounted for a relatively low share of total US stock market capitalisation. Most internet shares were trading on very large multiples of earnings, suggesting that relatively few internet companies were making a noticeable contribution to growth in productivity and output.

Overall, it is important to recognise the fact that the US economy in the New Economy era looks rather different to that of the 1970s and 1980s. The unprecedented length of the great expansion may be explained by the continued strength of productivity growth, soaring equipment investment, and the stability of inflation despite declining unemployment. Further, a good understanding of the sources of productivity growth is essential in exploring whether or not rapid growth is sustainable.

### III. Accelerated Productivity Growth

The rapid rate of the US economic growth achieved after World War II was largely driven by productivity growth close to 3 per cent a year, whilst the decelerated growth after 1973 was associated with a sharp slowdown in productivity to 1.4 per cent per annum. Likewise, the strong growth of the US economy during the second half of the 1990s may be linked to a recovery of productivity growth (Baily, 2001: 205). Temple (2002: 9) argues that the remarkable economic expansion of the 1990s in the US looks much like the 1970s in reverse. The 1970s were notable for substantial adverse supply shocks, the 1990s for their absence. The 1970s saw a steep fall in stock market capitalisation relative to GDP, an unprecedented decline in the rate of productivity growth, rising unemployment and unstable inflation, which is the reverse of the 1990s experience on all accounts. The case for seeing the New Economy as a substantial and important development relies upon the unexpected acceleration of productivity growth in the second half of the 1990s. The productivity acceleration sustained the economic expansion for an unusually long time, raised real wages, prompted the stock market boom, and might also account for a temporary change in the conventional trade-off between inflation and unemployment. In general, studies on the New Economy mainly concentrate upon the productivity acceleration, which tends to be significantly crucial for economic growth and as a consequence, the standard of living, and also increases in productivity is sustainable unlike the stock market boom.

Table 3 reports four alternative estimates of the extent and sources of productivity acceleration, using estimates from Oliner et al. (2000), Gordon (2000), Jorgenson and Stiroh (2000), and CEA (2001). All four estimates exhibit a large increase in labour productivity growth in the non-farm business *sector*, reflecting substantial

improvements of labour productivity acceleration in the second half of the 1990s. All four estimates provide evidence of the remarkably rapid accumulation of ICT capital over this period, leading to acceleration in the rate of labour productivity growth, whereas apparent deceleration in the rate of accumulation of other capital may partially offset the labour productivity contribution from the ICT capital boom. Nevertheless, increases in overall MFP are estimated to contribute half or more of the total productivity acceleration. The accelerated rate of MFP growth, shown in the antepenultimate row, is partitioned into the production of computer hardware sector, shown in the penultimate line and the rate of MFP growth in the broad economy that is the part of the economy not involved directly in computer production. The latter is shown in the final row. It is apparent that computer sector productivity and other NF productivity contribute heavily to the total MFP growth. Thus, rapid productivity growth seems to be driven by the high-tech sector, and more specifically, a combination of productivity gains in computer production and increased investment in computing. The surge of productivity within the high-tech sector itself drove a large fraction of the productivity growth.

Baily (2001) notes that the US appears to be a major producer of the high-tech products and that the pace of technical innovation may explain why the US grew so rapidly in the late 1990s. Oliner *et al.* (2000) point out that investment in computers and related hardware equipment in the US increased more than fourfold between 1995-1999. Despite Gordon's (1999 and 2000) criticisms, these productivity gains led to the price of computers declining at an even faster rate, and prompted much wider use of computers. Perhaps, almost world-wide use of the Internet, allowing to access all distributed global database of information, prompts growth in computer investment. The economic salience of the high-tech sector tends to rise over time. Oliner *et al.* (2000) suggest that while during the 1980s the high-tech capital, including computer hardware, software, and telecommunications equipment, accounted for 3.3 per cent of the income earned in the economy, and contributed 0.5 per cent per year to economic growth, by the late 1990s, the high-tech capital accounted for 7.0 per cent of income earned in the economy and contributed 1.4 per cent per year to economic growth.

**Table 3. Decomposition of the Productivity Growth**

	Oliner-Sichel	Gordon	Jorgenson-Stiroh	CEA
<b>Labour Productivity Non-farm Business (NF)</b>	1.38	1.53	1.01	1.63
<b>Cyclical Effect</b>	n.a.	0.30	n.a.	0.04
<b>ICT Capital</b>	0.70	0.70	0.44	0.62
<b>Other Capital</b>	-0.26	-0.26	0.09	-0.23
<b>Measurement Effects</b>	n.a.	0.15	n.a.	n.a.
<b>Labour Quality</b>	0.04	0.04	-0.23	0.00
<b>Total Multifactor Productivity (MFP)</b>	0.90	0.60	0.71	1.19
<b>Computer Sector MFP</b>	0.31	0.31	0.31	0.18
<b>Other NF MFP</b>	0.59	0.29	0.40	1.00

**Notes:** Annual percentage rates of growth. Compares 1995-2000 with 1973-1995. Includes consumer durables and farm sector.

**Source:** Baily (2001, Table 2) was extracted from Oliner *et al.* (2000); Gordon (2000); Jorgenson *et al.* (2000); and CEA (2001).

As have already been mentioned in the preceding sections, the rapid growth of the high-tech sector is endogenous. While it leads the ‘Old Economy’ companies to change, it is also being driven by the demand from the conventional industries. The fact is that conventional industries, such as the manufacturing industry in the US, may be the biggest user of the high-tech capital goods. Whilst some manufacturing jobs may disappear, sector output remains steady (Formaini *et al.*, 2003: 8). Some economists emphasise possible cyclical effects that may be responsible for the recent acceleration in productivity expansion (Baily, 2001: 216; DeLong, 2001: 28; Temple, 2002: 14). A euphoric boom is a period during which people stop thinking as intensely about problems of macroeconomic management and the business cycle. Ironically, it is precisely during euphoria that counter-cyclical policy becomes less important. But it is in the aftermath of euphoria that counter-cyclical policy becomes more important than at any other time. For example, nobody in Japan in the late 1980s paid any attention to problems of business cycle management. Few in Japan in the early 1990s paid sufficient attention to the business cycle. Consequently, the Japanese economy as well as the world economy today suffers from that lapse (DeLong, 2001: 28-30). Thus, the largest short-run impact of the New Economy may be that it increases the stakes at risk in macroeconomic management. Nobody doubts that cyclical effects have played a significant role, in particular given the steep fall in unemployment. The magnitude of the required adjustments is more controversial, partly because trend/cycle decompositions are inherently difficult, and partly because the 1990s expansion was one of the longest on record. The length of the expansion suggests that much of the productivity growth should be sustainable.

To recognise the rapid expansion in productivity growth was undoubtedly important. Otherwise, the 1990s boom might easily have been perceived as unsustainable, and policymakers would have been wary of the economy overheating. Yet, productivity growth does not in itself explain why inflation remained low even when the unemployment rate fell below most estimates of the natural rate. Hence, the New Economy paradigm relies not only upon rapid productivity expansion, but also on the remarkable behaviour of inflation and unemployment, and a level of overall economic stability not seen since the 1960s.

#### **IV. Low Inflation-Low Unemployment Puzzle**

One of the most intriguing features of the New Economy is why the inflation rate fell so low and stayed stable in the 1990s, despite the unemployment rate falling to a level that seemed to make pushing up inflation inevitable. The 1990s pose something of challenge to adherents of the natural rate hypothesis even though not an insurmountable one.

One potential explanation is that a series of positive supply shocks decelerated inflation, offsetting the inflationary effect of low unemployment. Gordon (1998) mentions that declining energy prices through 1998, a sharp decline in the rate of increase of health care costs, food and computer prices helped hold down unit costs. As energy and health care prices moved up again in 1999 and 2000, there was some upward movement in wage and price inflation. Nevertheless, supply shocks explanation cannot account for the maintenance of low inflation beyond 1998, given the slowdown in the appreciation of the exchange rate, and rising energy prices.

Studies on the estimation of Phillips curve in the US question whether there exists any systematic relationship between unemployment and inflation. Sims (1999) and Stock (1998) suggest that the unemployment rate seems to be a poor predictor of inflation. Stock (1998) argues that the key puzzle is why unemployment has ceased to have much predictive power for inflation, even while other indices of real activity, such as capacity utilisation and housing starts, continue to play a useful forecasting role. Similarly, Stock and Watson (1999) argue that utilisation of installed production capacity seems to be a better indicator of inflationary pressure than measures of unemployment. Katz and Krueger (1999) point out that the decline in unemployment in the 1990s was associated with a marked shift in the relationship between unemployment and vacancies. Temporary help agencies have accounted for an increasing share of employment, albeit from a very low base, a development that may allow workers and vacancies to be matched more efficiently. Thus, inflation remained stable at such low unemployment rates is that low unemployment was no longer signalling the same tightness in the labour or product markets as in previous periods. These considerations seem to be consistent with a further stylised fact of the New Economy, namely that there has been a particularly steep decline in short-term unemployment, so that the composition of unemployment duration has shifted towards long-term spells.

Ball and Tchiadze (2002) stress that monetary policy implementations under Alan Greenspan management was coincided with the awareness of a decline in the natural rate of unemployment that fell through 1994. This element of the available evidence is indirect, however. The overall arguments are vulnerable to a conventional criticism of the natural rate hypothesis, namely that candidate explanations for movements of the natural rate sometimes look to much like ex-post rationalisations. From this point of view, a potentially more satisfactory explanation of the 1990s record is to link the joint behaviour of unemployment and inflation to the increase in productivity growth. To the extent that workers were initially unaware of the increase, wage demands may have lagged behind productivity growth, implying that inflation could remain stable even while unemployment fell below previous estimates of the natural rate. Strong productivity growth and favourable price shocks allowed the monetary authorities to steer inflation lower in the 1990s while maintaining strong demand in the economy. To sum up, the inflation record of the 1990s in the US may be explained by a series of favourable supply shocks, a decline in the natural rate, unprecedented productivity expansion, or more likely, some combination of all three.

## **V. Conclusion**

Many economists and some observers agreed that faster technical progress in ICT production, operating in an environment of increased globalisation, intense competition, and sound monetary and fiscal policies prompted improved economic performance in the late 1990s in the US. The recent rapid productivity expansion can be attributed to rapid advances in ICT production, which has a direct effect on aggregate productivity, also stimulated greater investments in ICT products, as the relative price of computing power has fallen at an even faster rate. The combined effect of these events helped sustain the 1990s boom for an unusually long time.

It seems that the reasons for the stability of inflation and for the greater overall stability, which was such a marked feature of the US economy in the 1990s, have not been discovered thoroughly yet. Finding a reasonable answer to the question of why unemployment rate remained low and stable without pushing up inflation in an environment with overall economic stability involves the problem that is to discriminate between many competing explanations, some of which are based upon movements in a variable that is not directly observed, namely the natural rate of unemployment.

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