

## **„Does the Traditional Economics Help Us to Understand the “New Economy”?**

### **1. Introduction**

The "new economy" is a term that began to be used more frequently mid-way through the 1990s, particularly in relation to the economy of the United States. This was followed by the appearance in literature of another new term -- „new economics.” The question arises -- have sufficient qualitative changes of an essential nature occurred in the economy of the United States to warrant the application of this new term to describe it? A second issue requiring consideration is whether traditional economics provides analytical tools which can be used to describe and explain these qualitatively new phenomena and relations, or has it become necessary to expand the field of economics to encompass a "new economics." On one hand, we must determine if the changes that have occurred relate to economics and not solely to technology.<sup>1</sup> On the other hand, the core problem remains whether it will be enough to re-calibrate old economic laws, or whether they will have to be formulated anew (D'Andrea Tyson, 1999).

Searching for answers to these questions is particularly important in the context of the post-socialist economies which are undergoing transformation. Even Polish economists and politicians have begun to voice the view that during certain special periods selected fundamental relations cease to be valid or acquire new qualitative characteristics. As a result, there is a risk that certain controversial, untested concepts will be "imported" for the purpose of demonstrating that economic policy can be steered in such a way as to avoid making difficult choices and circumvent existing limitations.

In chronological terms, the concept of the "new economy" is linked to the period of highly favorable economic conditions and growth experienced by the United States during the 1990s. Certain authors have also applied this concept to Great Britain and Denmark (Nielsen, 1999), due to the existence of economically favorable conditions in these countries. Taylor (1998) is of the opinion it is correct to use the term „long economic boom” to describe the more than fifteen year period of relatively stable economic expansion experienced by the United States, which began in November of 1982 and was interrupted solely by the short and mild

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<sup>1</sup> As Stiroh (1999) puts it, „*Technology changes. Economic laws do not*”.

recession which occurred in the second half of 1990. A decided majority of authors use the term "new economy" within the context of discussions on the rapid changes which occurred in the late 1990s.

The recent significant improvement in the economic situation of the United States surprised observers because the previous several years provided few if any signs that it would occur. The situation began to improve clearly around 1996 although it is difficult to point to any specific changes in the unfavorable phenomena which were dominant at the time. What is more, positive tendencies were strengthened during the crisis in Asia, a crisis which had a significant detrimental effect on the world economic situation. We can say that the positive dynamics (not only in the real economy, but on stock exchanges as well) surprised all economists, although - as is underlined by Palley (2000) - economists representing unorthodox traditions ("progressive") were more surprised than were representatives of the main streams of economic thought.

Up to the present, researchers have produced relatively few deep analytical studies of the "new economy." This may partly derive from the appearance within this relatively short time of a cumulation of new phenomena which are difficult to interpret. It is nevertheless difficult to acknowledge the scientific discourse which is occurring as adequate to the scale of challenges which the "new economy" poses to researchers. Some exceptional economists (Gordon, 2000) have, as a result, expressed wonderment at the fact that the current debate is far less heated than were the earlier great disputes between economists, regarding, for instance, the reasons for the increase in inflation during the 1960s, the hypothesis of the natural rate of unemployment, or supply shocks. The media have, on the other hand, engaged in far more heated discussions. The relatively small number of strictly scientific studies has made it possible for radical or weakly documented hypotheses to be presented in journalistic texts. As a result, many new myths have appeared about the "new economy," myths propounded by both opponents and proponents of the concept.<sup>2</sup>

## **2. The Essence of the Phenomenon**

Although there is no single, universally accepted definition for the "new economy," it is usually deemed be characterized, as a constituent element, by an increasing significance of globalization and information technology, which factors underlie any changes of an economic

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<sup>2</sup> In a paper on this subject, Atkinson (2000) discusses and compares to reality five myths which appear among the statements of commentators skeptical of the „new economy” concept and four myths which appear in the discussions of proponents of the

nature. As Nakamura (2000) would have it, the „new economy” or „new paradigm” denotes "a view, according to which innovations in advanced technologies and the globalization of world markets have changed our economy to an extent which requires us to think about it and operate within it in an entirely different manner." Often the essence of the "new economy" is defined by comparing it to the „old economy” (e.g. Jorgenson and Stiroh, 2000A). In these instances, the "new economy" denotes the search for sources of more rapid economic growth and structural change through the development of information technology, and the rapid commercialization of the Internet in particular, which factors modify at a fundamental level the way business is done. The "old economy" should be viewed as synonymous with a position characterized by the „sluggishness” of the American economy during the first half of the 1990s and the complex of favorable but temporary shocks which occurred during the second half of the decade. Given this view of the issue, the following questions come to mind (compare Tyson, 1999): will the unfavorable relation between inflation and unemployment be restored when the positive effects of short-term shock have expired, or has this relation been permanently modified as a result of technological change and through a strengthening of international competition? Will the economy return to its previous, lower "speed limit" once restructuring resulting from the application of new technologies has been completed, or has this advance in technology permanently raised rates of productivity and economic growth?

In the discussion on the essence of the "new economy", a very important place is occupied by the issue of whether the benefits deriving from the application of information technology will be in any way comparable to the positive effects generated by earlier technological revolutions. Much seems to point to this, however, specialists differ significantly in their views on the consequences of the present "revolution" (for a broader discussion of this issue see Woodall, 2000).<sup>3</sup>

Another important trait which is considered to define the essence of the "new economy" is the high degree of its transparency.<sup>4</sup> The Internet enables both sellers and purchasers to compare prices more easily. All manner of middle men have become superfluous, as a result of which transaction costs are lower. Barriers to entering a specific business have also been limited. On the other hand, a basic question of a normative nature relates to whether and to what extent

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concept.

<sup>3</sup> Serious controversies have developed around the issue of the Internet's potential long-term influence on the efficiency of the economy. As „The Economist”(April 1, 2000 r.) humorously notes, „it is assumed that the Internet is supposed to shorten distances and bring people closer together. However, it looks as though it has had the opposite effect on economists, who are divided in their opinions on the effects which the Internet is going to bring about."

<sup>4</sup> For this reason, some have suggested that instead of using the concept of the „new economy,” we should be using the term

the "new economy" denotes a "better economy."

If we assume that acceleration of technical advancement in the IT sector is the primal, irreducible reason for the appearance of the "new economy," then the series of dependencies deriving from this phenomenon can, in its most abbreviated form, be presented as follows (Gordon, 2000). Increased work efficiency allowed inflation to be maintained at low levels despite more rapid increases in wages. Low inflation allowed the Federal Reserve System to maintain interest rates at more or more less the same level for five years, while interest on long-term government bonds remained clearly lower. A flexible monetary policy and rapid economic growth caused unprecedented growth in profits which, coupled with the wave of optimism accompanying accelerated technological advancement, resulted in even more rapid increases in stock prices. The deriving growth in the wealth of households (affluence effect) resulted in an increase in consumer expenditures which decidedly exceeded growth in disposable income and lead to the disappearance of household savings (in any case, savings measured in the conventional manner).

To summarize, the fundamental manifestation and proof of the qualitative change which constitutes the "new economy" is, in the opinion of its proponents, the maintenance of basic macroeconomic values, and specifically - the combination of rapid economic growth, very low inflation and unemployment levels, and record breaking stock market performance. The microeconomic basis of this change is the far-reaching transformation which has occurred (and which continues) in the manner in which companies do business, resulting from the ever-broadening application of information technology. It is underlined that between 1995 and 1998, the information technology sector contributed 35% to economic growth, while its share in generating the GDP was only 8%.

Some economists believe that the functioning of the new economy cannot be explained using orthodox (neoclassical) economics. In their opinion, growing revenues play a significant role in branches of business which rely on exchanges of knowledge. Growing revenues assume the form of so-called network effects and are favorable to the creation of monopoly positions. These effects influence both production and consumption. The common characteristic of new technologies is that their value to each individual user increases in proportion to the increase in the total number of its users. If a given product makes a place for itself on the market, demand for similar products will disintegrate; consumers may therefore be forced to use a lower quality product, which should be viewed as a demonstration of inefficiency by the market in question. In

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„nude economy.”

the eyes of other economists, although network effects and the inefficiencies deriving from them do occur, one need not go beyond neoclassical economics to explain them. In their opinion, a market demonstrates inefficiency solely when a lower quality product retains its market position even though the benefits which can be drawn from shifting to a different, better product are greater than the costs of that shift. However, if the lower quality product retains its position because the costs of shifting to an alternate product are high, then this accords with the theses of traditional economics: the shift would constitute a demonstration of inefficiency. Therefore, taking the costs of "product shifting" into account significantly reduces the breadth of any related market inefficiencies. What is more, both consumers and the producers who incur losses as a result of this market inefficiency will search for a way to escape the "inferior product trap."

Nakamura (2000) points to another type of restriction which mainstream economics encounters in trying to explain the most important aspects and mechanisms of the "new economy." This author adopts the methodological standpoint of J. Hicks, according to whom economic science must adapt to the changing nature of economies, and hypothesizes that the "new economy" can be better understood through J. Schumpeter's "paradigm of creative destruction" than through the "paradigm of the invisible hand" (perfect competition) which dominates contemporary economics. This derives above all from the increased significance of innovation in the American economy, which is reflected in an increased share of so-called creative staff in total employment numbers.<sup>5</sup> The perfect competition paradigm was developed on the basis of the theories of Smith by Jevons, Walras and Menger. It was well-devised for the conditions which characterized economies at the beginning of the 20th century when direct production of goods and services dominated. In Nakamura's opinion, this paradigm becomes problematic to describing economic reality when such a large number of employees perform tasks requiring creativity.<sup>6</sup> This derives from the fact that the "paradigm of the invisible hand" treats both benefits deriving from scale as well as creativity (which is deemed to include technological advancement) as exogenous values, which at a basic level lie beyond the scope of interest of economics. In contrast to this, Schumpeter, in his theories, views profits deriving from the creativity of entrepreneurs as one of the basic factors effecting the development of capitalism. Consequently, his evaluation of the role of monopoly generated profit is entirely different as

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<sup>5</sup> In the narrowest sense, this group, which encompasses engineers and architects, scientists, writers, designers and artists, accounted for 5.7% of total employment in 1999 (as compared to 1.9% in 1950). In its broadest sense, this group additionally includes managers and technical employees who are becoming in creative activities to an ever greater extent (in 1999, this group made up 33% of total employment, while in 1950 it accounted for 17%).

<sup>6</sup> In an effort to show the implications of both paradigms, Nakamura quotes the metaphor of the art of cooking taken from the work of P. Romer. Romer compares direct production to cooking according to existing recipes and creativity to making up new

well. Smith treats it as a manifestation of economic inefficiency. Schumpeter, on the other hand, underlines just how greatly significant to the development of capitalism is the possibility for entrepreneurs to retain (in the form of short-term monopoly generated profit) a part of the benefits deriving from the introduction of new products and processes.

According to Nakamura, the basic elements of Schumpeter's theory can be observed in the theory of endogenous growth which developed so dynamically in recent years. Although it is difficult to question, classifying the authors of this theory as proponents of the "creative destruction paradigm" should be viewed as arbitrary. This would mean that they have been excluded from mainstream economics, which contradicts the dominant classification schemes applied to contemporary economic thought and would probably go against the opinion of the interested parties themselves. We can, however, accept that this is a manifestation of the increased complication observable in the structure of contemporary economics, more specifically - the gradual incorporation by the mainstream of certain concepts which in the past seemed to stand in strong opposition to it.

There are more direct implications to Nakamura's discussions of the "new economy." The dominance of the "invisible hand paradigm" has meant that statistics have relatively weakly reflected the significance of creativity. The means for measuring creativity leave much to be desired<sup>7</sup>, which in turn results in the recording of lower than actual rates of growth, savings rates, and profits. So although the shift to the new paradigm should manifest itself through better explanation of available economic data, it is impossible to demonstrate its superiority compared to the previous paradigm through a mere reformulation of the methods used in calculating many important indicators. Independent of these difficulties, the author shows that the paradigm of creative destruction allows for the explanation of growing differences in income resulting from competition between employers and employees.

Views which accent the significance of the network effect and growing revenues constitute the most radical variant of the "new economy" concept. Stiroh (1999) defines this as the "new sources of growth" variant and states that it is the most interesting, the most controversial, and the hardest to prove. The remaining two variants are generally more moderate. In accordance with the first of these, the long-term growth rates have increased. Thanks to higher levels of productivity, an economy can grow more rapidly without any increase in inflationary pressures. The third variant on the other hand accents changes in the economic

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recipes.

<sup>7</sup> At issue above all is the fact that, generally speaking, creativity is not treated as an investment.

cycle, and specifically -- in the nature of the short-term relations between inflation and unemployment. Common to all three versions of the "new economy" concept is an approach under which globalization and computerization are treated not as manifestations of the influence of other factors, but as the driving force behind fundamental changes in the economy. According to Stiroh the two most radical hypotheses formulated by proponents of the "new economy" concept are a) that relating to the „death“ („end of the era of“) inflation and b) that which posits the „death“ of the economic cycle.

Opponents of the concept of the "new economy" state that although globalization and computerization have had a very significant effect on the American economy, it is still too early to say if serious structural change has occurred. They note that the positive economic dynamic in the 1990s could, to a significant degree, be explained through the simultaneous occurrence of several favorable supply shocks.

### **3. Economic Change in the 1990s: the Result of "Higher Quality" Monetary Policies?**

A very important place in this discussion belongs to the issue of whether, and to what extent, the very favorable macroeconomic situation of the United States in the 1990s is the result of immanent traits of that economy, and to what extent it derives from pursuit of correct economic policies. An example of a position which entirely negates the significance of government policy is that of Sahlman (1999). In his opinion, the excellent situation of the American economy will be maintained as long as the government refrains from intervening in any way whatsoever. Sahlman perceives the economy as threatened not by high rates of growth, but by artificial measures aimed at limiting growth through an increase in interest rates. In his opinion, the American economy is strong due to the following factors: a) the high status which is enjoyed by entrepreneurs who search for new solutions, b) the high degree of tolerance which is exhibited towards failure, which is where a significant share of new enterprises ends, c) the easy access to capital which new businesses enjoy, d) the attraction of the most talented employees by the enterprise sector (and not by the financial sector, as was the case in the past).

The views expressed by Taylor (1998) are an example of a diametrically opposite position. In reviewing the factors which could explain the longevity of the "long boom" in the United States (increase in the significance of the service sector, better management of stocks, favorable supply shocks), this author concludes that their significance is not nearly large enough. Turning to the role which macroeconomic policy might have played, Taylor states that it is also

necessary to reject any theses on the positive impact of fiscal policy. In his opinion, the "long boom" can be very convincingly explained using the monetary policy pursued by the Federal Reserve System (FRS). The key to success were the aggressive reactions of the FRS to any increases in inflationary pressures throughout the period of the "long boom," reactions which were far more aggressive than in previous periods. This approach allowed inflation to be maintained at lower and more stable levels.

The change in FRS policy, which began to be referred to as a shift towards applying preemptive strikes, is also noted by other authors. In the opinion of Blinder (1999, p. 17), the breakthrough which led to the popularization of this far more future-oriented policy among central banks was its application by the FRS at the beginning of 1994 for the purpose of preventing the economy from over-heating and allowing it a „soft landing”.<sup>8</sup> In the opinion of most specialists, the FRS carried out an even more refined preemptive strike in the year 2000, although it is still too early for a final verdict on the effectiveness of that move.

Some evidence of the decidedly "higher quality" of FRS policy over the last dozen plus years is provided in the results of Romer's (1999) studies of the economic cycle. The analysis done by this author demonstrates that the scope of cyclical fluctuations after the second world war was not radically reduced in comparison with fluctuations during the inter-war period and the time prior to World War I. Nevertheless, periods of expansion have been longer and there has been a reduced number of serious recessions. However, there has been a very serious change in the factors which prompt cyclical fluctuations. After World War II macroeconomic policies and economic reform eradicated or limited many of the shocks which had prompted recessions in the past. At the same time, however, recessions brought on by policies aimed at limiting inflation began to appear. As the author notes, „we replaced pre-war cycles driven by animal spirits and instances of financial panic with post-war cycles driven by economic policy."

The results arrived at by Romer give rise to the question, why inflation became a much more serious problem in the period after the second world war. In her search for an answer to this question, the author formulates the view that the errors committed by economic policy makers played a fundamental role in this. The problem lay not in the lack of appropriate tools, but in their inappropriate use. In her opinion, there was evolution in the nature of the errors committed as well. During the 1960s and 1970s, errors additionally became more systematic and deliberate.

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<sup>8</sup> Although basing monetary policy on "preemptive strikes" may seem like an obvious solution, applying it in practice may bring serious difficulties. This is because a policy of this type may be viewed as erroneous and meet with serious criticism. If, in the face of increasing inflationary pressures, the central bank tightens its policy and prevents any acceleration in inflation, although the action would be a clear success, the bank would likely face the accusation that it unnecessarily slowed the rate of growth.



Romer expresses the opinion that the increased stability of macroeconomic indicators after 1985 was achieved above all through far more strict control of inflation. Macroeconomic policy ceased generating periods of accelerated inflation, as a result of which it became unnecessary to bring about recessions aimed at taming it. A more balanced policy of controlling demand contributed far more to the rise of the "new economy" than did structural change, globalization and the information technology revolution. It remains debatable, however, to what extent improved policy derived from the development of economic knowledge, or from the qualifications of individual economic policy makers and greater consensus as to the aims which are achievable through the application of economic policy.

It should, however, be noted that in terms of changes in the economic cycle, the American economy is rather atypical. Studies conducted by Zarnovitz (1999) on a sample of seven large and seven small economies demonstrate that recessions were more frequent during the second part of the post-war period than they were during the first. Also, he found no empirical evidence to suggest that decision makers are able to anticipate recessions and take effective preventive action. These results are contradicted by the studies of Ball (1999), which show that among G-7 countries, the approach of authorities responsible for monetary policy varied given the risk of recession. At the beginning of the 1980s, a marked dichotomy appeared between the countries of North America (the United States and Canada) and European countries. In the face of most recessions, the U.S. and Canada sharply cut nominal interest rates, while in European countries interest rates remained at the same levels or increased slightly. In Ball's opinion, this data contradicts the dominant, conventional view that FRS policy was, throughout this period, invariably directed towards combating inflation. In reality, the FRS applied a more restrictive policy in periods preceding recessions, but loosened policy as soon as recessions began even though inflation had not been brought down significantly. According to Ball, the „superior quality” of this policy consists of the fact that it does not give rise to costs in the form of permanently higher unemployment (which does occur given a passive policy in the face of recession).

#### **4. Controversies Surrounding Changes in Efficiency**

In the case of the "higher rate of growth" variant highlighted by Stiroh (1999), fundamental importance is assigned to evaluating the nature of change in work efficiency. One of the axes of controversy on this issue is the so-called Solov paradox. Some time ago, this

author noted that "at present, the computer age is visible everywhere except in statistics on work efficiency." Although data suggests that in recent periods there has been a certain acceleration in the growth rate of work efficiency, it would nevertheless be untrue to state that Solov's paradox is a part of history. It would probably be more accurate to observe that discussions on the paradox have become more subtle. Data pertaining to changes in work efficiency still give no clear picture. Proponents of the concept of the "new economy" underline that between 1996 and 1998 the business sector (excluding the government sector, non-profit institutions, and self-employed persons), which accounts for more or less 3/4 of GDP, production, calculated in terms of working hours, increased by an annual average of 2.2%, clearly more than at the beginning of the 1990s and throughout most of the 1980s. They also point to the existence of much evidence deriving from simple observation of the behavior of specific businesses or sectors (so-called anecdotal evidence). However, the skeptical among researchers are of the opinion that there has been improvement solely in relation to the particularly unfavorable period of the late 1980s and early 1990s. What's more, they believe that the observed acceleration in the growth rate of efficiency is decidedly cyclical in nature. We should remember that in the past (1975-78 and 1983-86) there were similar accelerations in growth rates which proved to be far from permanent. It is interesting to note that Great Britain, which is often cited as an example of a country with a healthy economy which achieved favorable economic results in the 1990s, has yet to record any increase in the growth rate of efficiency relative to levels from the mid 1980s. As it turns out, in these terms Great Britain remains behind both Germany and France, which is thought to derive, among other things, from greater cartelization of its markets and a weaker small business sector.

It is often underlined in discussions on changes in efficiency rates that actual efficiency rates are under reported in official statistics. This supposition is used as the basis for concluding that the observable higher rates of economic growth derive from acceleration in the rate of efficiency which was not fully captured in statistics. However, as Krugman (1998) showed distinctly, this thinking is tainted by an error in logic. Specifically, in official statistics estimates of work efficiency are shown as GDP per worker. Underestimation of one value would therefore denote the under estimation of the second value. It is therefore impossible for unmeasurable increases in efficiency to be responsible for higher, measurable increases in GDP.

Efforts have been made recently to eliminate the problems involved in correctly measuring efficiency rates. Firstly, the Department of Trade revised and improved the set of data it collects. Following these corrections, it became apparent that acceleration in the efficiency rate was higher in recent years than previously estimated. Secondly, expenditures on software are

currently treated as investments and therefore constitute a part of GDP. Thirdly, techniques for estimating inflation and efficiency have been improved. The new data gives a clearer picture of the American economy; among other things, it has become apparent on the basis of this data that it is far more difficult to defend the hypothesis that the acceleration in the efficiency rate observed in recent years is primarily cyclical in nature. Gordon (1999A) used the new data to test his earlier conclusions on the relatively small so-called spillover effect between the computer manufacturing sector and the remaining sectors of the economy. His previous studies showed that improvements in efficiency rates derived approximately 1/3 from measurement errors, another 1/3 from factors of a cyclical nature, and 1/3 from increases in the efficiency with which computers are produced. At the same time it turned out that in the remaining sectors of the processing industry, efficiency rates adjusted for the effects of cyclical factors actually declined. The picture becomes somewhat different once newly designed time series are taken into account. There was a significant decline (to approximately 10%) in the share accorded to errors in measurement. A greater share than before (approx. 40%) is assigned to cyclical factors. Approximately one half of the acceleration in the efficiency rate is linked to increased efficiency in the production of computers and software. However, the results obtained by Gordon do little to support the basic hypotheses underlying the concept of the new economy. As it turns out, there is still no clear evidence of accelerated efficiency rates in the remaining industrial sectors.

Apart from the work of Gordon, two other serious studies were devoted to changes in productivity. Both the work of Jorgenson and Stiroh (2000A), and Oliner and Sichel (2000) provided similar results in terms of defining the sources for acceleration in the rate of work efficiency during the second half of the 1990s. In both cases, the increase was estimated to be at 1 percent. This is encouraging given the differences in the methods applied. The difference between the studies lies in the higher contribution to acceleration in work efficiency which Oliner and Sichel accord to information technology (0.5 and 0.3 of a percentage point, respectively). In contrast to the work of Gordon, no attempt was made in either of these studies to separate changes in real efficiency into trend-based change and change of a cyclical nature. In spite of these differences, all three studies demonstrated the dominance of IT as a source of acceleration in the rate of growth of real work efficiency. In comparing these results, Sichel (2000) concludes that a consensus was reached on this issue. In his opinion, however, no consensus was reached as to the degree to which the observed acceleration is a permanent phenomenon, and to what degree it is temporary (cyclical). This author expresses the fear that a more reliable response to this question will only become possible once a recession has been

experienced.

In relating the study results directly to the hypothesis of the "new economy," Jorgenson and Stiroh (2000A) note that its proponents still have an important task ahead of them, namely, to explain why very high outlays for advanced technologies are accompanied by relatively low rates of productivity in services which rely to a great extent on computers (finance, insurance, real estate). At present, empirical data provide little support for the contention that there is significant spillover of positive productivity impulses from sectors which manufacture IT products to sectors which use them.

The results obtained by Jorgenson and Stiroh confirm conclusions drawn from an earlier analysis done by these authors of the „computer revolution” in the United States (Jorgenson and Stiroh, 1999). This revolution was characterized by a relatively rapid decline in prices, huge investment in IT devices, and rapid replacement of other production outlays with these devices. It was surprising, however, that this revolution was not accompanied by technological change in the economic sense of this word, because profits were realized almost exclusively by computer producers and their clients, and spillover benefiting other sectors was relatively low.

Gordon (1999B) in turn attempts to evaluate the significance of the current technological revolution by assuming a very long-term, more than century-long perspective which encompasses earlier revolutions. Based on data relating to productivity deriving from multiple factors (which best fulfill the requirement of comparability), Gordon demonstrates that productivity grew at a rate of more or less 1% annually between 1891-1950 and 1972-1979, which was clearly lower than that observed between 1950-1972 (1.7%-1.8%), but clearly higher when compared with the periods between 1870-1891 and 1979-1996. Gordon proposes „the most obvious and simultaneously the most undervalued explanation for such vast differences in productivity rates." Namely, he believes that inventions which appeared towards the end of the 19th century and at the beginning of the 20th had a decidedly greater effect on work efficiency than those which appeared in the "era of electronics and the Internet." He groups these earlier inventions into four clusters: 1. electricity (the electric motor, electric light, and electric household devices), 2. the combustion engine (road transport, air transport, expressways, supermarkets, and suburbs), 3. „molecular engineering” (petrochemical products, plastics, and pharmaceuticals), 4. communications/entertainment (the telephone, radio, film, television).

Understanding something as complicated and heterogeneous as changes in productivity requires the ability to overcome the many difficulties which are involved in measuring this phenomenon at the level of the economy as a whole, as well as disaggregation of available data.

The research undertaken in this area demonstrates the highly varying contributions which specific sectors make towards the change in the total factors of production (TFP) in the American economy (Jorgenson and Stiroh, 2000B). Comparative studies (between the United States and Canada) at the level of specific industrial branches have also been initiated (Gu and Ho, 2000).<sup>9</sup>

The latest available data (for the second quarter of the year 2000) show that growth in work efficiency has not just remained at its previous high level, it has in fact accelerated significantly: production per working hour was 5.1% higher than a year before (this denotes a growth rate approximately 3 percentage points higher).<sup>10</sup> These results are likely to add heat to the debate about whether this phenomenon is cyclical in nature, or whether it is a reflection of deeper structural change in the American economy.

## **5. Permanently Lower Levels of Inflation and Unemployment?**

Debates surrounding the issue of whether there has been a permanent increase in efficiency rates are exceptionally significant from the point of view of one of the most important hypotheses put forward by proponents of the "new economy." According to this view, advancement in information technology has raised the "speed limit," that is, the rate at which the economy can safely grow (i.e. without being exposed to the risk of accelerated inflation). Sahlman (1999), one of the proponents of the new economy, states outright that it has exerted such strong pressure on price reductions that one can speak of the "death of inflation" without fear of committing an error. In reality, of course, matters are far more complicated. Even if the growth rate of efficiency has been permanently accelerated, the risk of inflation has been far from eradicated. If the economy grows at a rate that is higher than the sum of growth in efficiency and growth in the supply of labor, the unemployment rate will decline. However, when the unemployment rate drops below a certain level, inflationary pressures appear. During the 1960s, efficiency grew at a rate of more than 3% per year. Because GDP grew at a rate of 4%, unemployment declined from 5.5% to 3.5%; the rate of inflation, on the other hand, increased from 2% at the beginning of the decade to 5% at its end. An increase in the growth rate of productivity also means that wages can grow at an accelerated rate without generating inflationary pressure. Therefore, if the productivity growth rate increases from 1% to 2%, then growth in wages of 4% rather than 3% can be reconciled with a 2% increase in the unit cost of

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<sup>9</sup> One of the surprising conclusions is that the contribution of productivity growth to growth in production in both countries throughout the period analyzed (1961-1995) came to approximately 20%.

labor.<sup>11</sup> If, however, low unemployment causes the growth rate of wages to accelerate to 5%, then the rate of increase of the unit cost of labor will be accelerated and inflation will, as a result, rise. This relationship can also be understood in the following manner: high productivity rates may find reflection in a lower rate of inflation given a specified rate of increase in wages.

In its standard form, the theory basically states that increases in productivity translate into higher rates of growth in real wages. The theory, however, stops short of defining whether this growth will occur in the form of increased nominal earnings or a lower rate of inflation. When productivity growth slowed after the oil crisis of the 1970s, the resulting drop in the growth of real wages took the form of accelerated inflation, rather than a limitation of wage demands. It is for this reason, as Browne (1999) notes, the degree to which a higher rate of productivity is reflected in inflationary decline may disguise inflationary pressure which actually derives from the labor market. This is a temporary phenomenon because when the rate of increase of real wages finally matches improvements in work efficiency growth, the effect of lower unemployment on inflation should become visible. The question is, how long can this temporary phenomenon be maintained?

The positive way in which the Internet affects production and prices can be shown using simple graphs of the total demand and total supply curves (compare *Internet*, 2000). The cost reductions achieved through the use of the Internet to complete business to business transactions causes the total supply curve to shift to the right, meaning that the new state of equilibrium is achieved given a higher production level and lower prices (inflation slows during this shifting process). However, the Internet cannot effect a permanent decline in inflation, because inflation is a monetary phenomenon. If the central bank decides to maintain its previously accepted inflationary objective, inflation will not change in the long term. If, thanks to the Internet, inflation drops below the objective, the central bank will reduce interest rates allowing for more rapid economic growth and inflation will remain unchanged. Product prices susceptible to the effects generated by the Internet may decline, but this will be compensated for quickly by more rapid increases in the prices of remaining goods and services. Higher levels of productivity may in turn raise the "speed limit" above the level at which inflation begins to accelerate.

The Internet may also cause a shift in the total demand curve. If stock market investors expect more rapid increases in production and profits and thus are the source for a stock market

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<sup>10</sup> According to „The Economist”, August 12, 2000.

<sup>11</sup> This relation can be illustrated using actual data from the first half of the year 2000. The previously mentioned strong acceleration (to 5.1%) in the rate of work efficiency (the highest in 17 years) was accompanied by a decline in unit labor costs of 0.4%, even though hourly wages increased by 4.7% in the same period. Source: „The Economist,” August 12, 2000.

boom, then - through the affluence effect - households increase their consumer expenditures before there is any increase in supply. In addition, higher stock prices denote lower capital costs, which may increase investment demand. Whether or not the "safe speed limit" can be modified will in reality depend on whether benefits deriving from higher rates of productivity are neutralized by increased demand brought about through a stock market boom. If demand were to increase faster than supply, this would result in increased inflationary pressure.

Proponents of the "new economy" question the limitations pointed out by the analysis presented above. Cox and Alm (1999) are of the opinion that any analysis based on aggregate values is of questionable value above all because of the fact that it simultaneously encompasses business sectors characterized by both growing and shrinking benefits of scale. In their opinion, average costs have a tendency to rise above all in traditional branches of the economy in which a key role is played by variable costs. However, within modern branches (like production of computers, software, pharmaceuticals), average costs often decline as production increases because high fixed costs are distributed between a large number of purchasers. Whether GDP can continue to grow without the economy suffering any consequences in the form of accelerated inflation is determined by the degree to which economic expansion occurs through the input of economic branches of the second type.<sup>12</sup>

Because theoretical arguments fall short of providing any definitive answers to questions about the change in the "speed limit" of the American economy, the results of at least some empirical studies are worth mentioning. Rudebusch (2000) attempted to use Okun's law to estimate the potential rate of GDP growth in the years 1996-1999. His analysis, which took account of possible changes in the natural rate of unemployment, showed the average potential rate of GDP growth at 3.75%, which is a somewhat higher estimate than that arrived at under other studies (CBO and a survey of economists employed in business estimated the rate to be at approximately 3.2%). It is characteristic that the OECD, which was relatively skeptical about the permanence of the U.S. economic boom, raised its estimate of the value of the permanent increase in the growth rate to 4% in the autumn edition of its "Economic Outlook."<sup>13</sup>

Kouparitsas (1999) also subjects the hypothesis of "new economy" proponents - stating that technological innovation has resulted in modifying the GDP trend - to formal testing. Growth corresponding with the trend is understood as the GDP growth rate at which inflation remains constant. The rate of growth of GDP thus defined in the years 1996-1998 was estimated

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<sup>12</sup> The fact that the Cox and Alma paper appeared in the annual report of one of the regional offices of the Federal Reserve System should be viewed as relatively surprising.

at approximately 3.1%. It is significant that calculations suggest that there was no acceleration in the trend. Rather, the growth rate reverted to levels recorded in the 1970s and 1980s. This author is of the opinion that the rates of growth observed during the 1990s were the result of cyclical factors and permanent increases in production capabilities, which were nevertheless not accompanied by a change in the trend.

One of the most important lines within the concept of the "new economy" accents the disintegration of the relation between inflation and unemployment, which relation was characterized by a significant degree of stability throughout the late 80s and early 90s. For example, when in 1988 and 1989 the unemployment rate declined to 5.5%, the rate of inflation increased. Conversely, when unemployment began to exceed 6%, inflation began to slow down. Similarly, when the unemployment rate remained above 6% throughout most of 1994, there was a slow down in inflation. Then, during 1994 and 1995 the Phillips curve became much less reliable: the unemployment rate fell to 5.5% and though inflation increased somewhat, it did not increase as much as it should have under the model (and this in spite of rising oil prices). The discrepancies between the actual behavior of these two values and their behavior as projected on the basis of the model became very clear during 1997 and 1998 when unemployment declined to 4.3% and inflation experienced further declines (from 3.3% in 1996 to 1.7% in 1997 and 1.6% in 1998).

One of the most obvious explanations for the change in the relation linking unemployment and inflation seems to be the decline in the NAIRU. We should, however, remember, that only a few years earlier, there were those who voiced the opinion that the level of the NAIRU in the United States had actually increased (e.g. Weiner, 1993). Either way, there is the question of what factors were responsible for the decline in the NAIRU. Proponents of the "new economy" concept maintain that globalization plays an important part by forcing American companies to compete against inexpensive imports and inexpensive labor abroad, which acts to keep prices under control. At the same time, new information technologies allow companies to increase efficiency and lower costs without increasing wages. More skeptical authors nevertheless note that proponents of the "new economy" concept have, as yet, been unable to go beyond generalizations and demonstrate in a specific manner the essence of the direct relation which exists between improvements in efficiency and increased competition on one hand, and changes in the labor market on the other, which relation actually determines the level of the NAIRU. We can, however, imagine how new technologies improve the flow of information and

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<sup>13</sup> „The Economist,” November 25, 2000.



reduce transaction costs, and how foreign competition may change the relation between labor and capital. Nevertheless, these relations have yet to be integrated into a well-defined analytical scheme for labor market economics (Stiroh, 1999). The hypothesis whereby foreign competition strongly limits inflationary pressures loses credibility in the face of the fact that the service sector constitutes a very large share of the American economy (Krugman, 1998).

Many economists believe that the decline in the NAIRU may be explained in a more traditional manner. For example, one often voiced opinion is that the decline in the NAIRU might have occurred as a result of the appearance of the hysteresis phenomenon: given a protracted growth phase and low unemployment, there may be an increase in the qualifications of labor and a corresponding decline in the NAIRU (Nielsen, 1999; Ball, 1999). Even greater numbers of "new economy" proponents hold the opinion that the change in the relation between unemployment and inflation came about largely through factors (shocks) of a temporary nature.

Another frequently offered view credits unusually low inflation levels in the United States to unused production capacity (unfavorable economic situations) in other parts of the world (Krugman, 1998). If this opinion were to be correct, it should be reflected in certain statistical interdependencies. Above all, within the tradition model of the NAIRU, the „world production capacity" variable should have a direct effect on the level of inflation in the United States. Secondly, there should be a strong inter-relationship between the prices of imports and domestic prices of consumer goods in the United States. As it turns out, empirical analysis fails to confirm the existence of these types of inter-relationships (Tootell, 1998), even though this issue should be viewed as far from settled.

Among other factors of a temporary nature, attention is often drawn to limitation in the growth of non-wage elements of remuneration, which is linked to health care reform. Brinner's (1999) studies, for example, show that once temporary factors of this nature are taken into account, in 1998 prices behaved in accordance with the traditional model of the Phillips curve. This shows that if there was, in fact, a breakdown of traditional relations, it occurred not in the relation between unemployment and remuneration, but between remuneration and prices. It is underlined at the same time that the decline in premiums for social benefits should be neutralized by an increase in wages, as a result of which the relation between total remuneration and inflation should remain unchanged (Browne, 1999).

Other frequently mentioned temporary factors include the strong dollar and low oil prices (until recently). Hogan's (1998) studies, for example, show that although there was a decline in the NAIRU, it did not decline enough to be used as an explanation for the way inflation has

behaved. According to this author, the best explanation for the most recent years can be found in favorable price shocks, and, in particular, the decline in import prices caused by appreciation in the value of the dollar. The model proposed by Oswald, Carruth and Hooker (1998) shows that there is no need to refer to the hypothesis of the "new economy" to explain the behavior of the American economy since the mid 1990s because this was determined by a long period of exceptionally low oil prices. It is significant that this model suggests that, from the end of the 1970s to the mid 1990s, changes in oil prices were the more significant statistical factor determining changes in unemployment than were interest rates.

Discussions on the subject also bring out the opinion that a strong investment boom resulted in the creation of production capacity surpluses in the United States (in spite of rapid economic growth), which have made it difficult for companies to shift wage increases onto prices.

Fitoussi, Jestaz, Phelps and Zoega (2000) present a very interesting hypothesis on the relations which exist between the "new economy" and changes in the labor market. The authors analyze the experiences of various countries and show that the two concepts which dominate literature on the subject (and which accent the degree of advancement achieved in reforming the labor market and changes in interest rates and inflation) do not fully explain the different behavior exhibited by unemployment during the 1990s. For this reason they view it as necessary to take a certain additional factor into account; this consists of a separate mechanism through which the appearance of the "new economy" may act upon unemployment in the balance. This mechanism, derived from Phelps's earlier theoretical analyses, is as follows. The progress observed in recent years in the development of information technologies gives rise to strong expectations of an increase in the rate of productivity growth, and therefore in the profit per unit of various types of business assets. These expectations are raised by the profitability of investing in assets which have been re-valued at higher levels. Because labor is one of these assets, this investment boom, driven by expectations, has a positive effect on job creation and causes an increase in real wages.

On the basis of a theoretical model, the authors formulate a hypothesis that can be subjected to empirical testing. This hypothesis states that stock market indexes and market capitalization data are a reflection of asset valuations, which play a key role in determining employment increases. The authors try to test if the discrepancies existing between countries in terms of share price behavior can be used to explain why rates of employment improved beyond all expectations in some countries while in others they declined more than expected. The rank

correlation came to 0.60, which means that the greater the rise in share prices, the smaller the increase (or greater the decline) in average unemployment. The authors are of the opinion that the mechanism they propose does a good job of explaining the situation on the United States labor market in recent years.

A very important place in discussions about the "new economy" and its implications is occupied by the relations which link not only unemployment, but also economic growth and inflation with the boom on stock markets. In the opinion of proponents of the "new economy" concept, unusually strong growth in stock market prices plays an important part in increasing efficiency rates and limiting inflation. According to this thinking, the greater the financial resources which business in the modern sectors receive through the stock market, the greater the pressure these businesses exert on existing participants in the market game, which leads to declines in costs and prices (Sahlman, 1999). Economists who take a traditional stance, however, are of the opinion that growth in share prices amounts to a speculative bubble. They are of the opinion that low inflation is an illusion because official indicators fail to take asset price inflation into account. The discussions about the "death of inflation" may be no more than "highly exaggerated information," because inflation, in fact, appears in another form. Another interesting controversy relates to whether or not the central bank should take action to change the stock market situation. There are fairly strong reasons why the central bank should not react to the stock market (Bernanke and Gertler, 1999). On the other hand, if the Federal Reserve System does not get involved in "popping the bubble," possibilities of a „hard landing” or even a serious economic crisis (Palley, 1999) automatically become more realistic. Although the risk of a „hard landing” has not been entirely eradicated, mid-way through the year 2000 the conviction that FRS activity would probably cool the boom without causing a serious recession began to dominate.

## **6. Concluding Remarks**

Due to the complexity and simultaneous ambiguity of the phenomenon which is referred to as the "new economy," the constituent phenomena which make it up and the controversies which surround them could not be presented in more than a somewhat superficial manner. What is worse, some phenomena had to be entirely omitted from the discussion. One such phenomenon is the disappearance of so-called twin deficits: contrary to situation in the 1980s, the large current account deficit is not accompanied at present by a budget deficit, but rather by a

very large budget surplus.<sup>14</sup>

The theoretical and empirical controversies presented suggest that it is still too early for a relatively clear answer to the question posed in the title of this paper. Nevertheless, we can state that "traditional" economics does not do badly in attempting to explain new phenomena and processes. It is important to note that "traditional" economics does not in this case denote mainstream economics. As it turns out, many theoretical concepts which, for various reasons, remained outside the mainstream of economic thought in the past (e.g. Schumpeter's theory), may be very useful in attempting to understand the essence of the „new economy." We can, therefore, predict with some optimism that the effort to explain this phenomenon will reduce the artificial and often over-inflated divisions drawn in the past between various schools and fields of economic science. Nevertheless, it is likely that Alan Greenspan (1998) is right in his supposition that our grandchildren, and our grandchildren's grandchildren, will from time to time debate whether or not they are living within the "new economy."

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<sup>14</sup> For a broader discussion of the controversies surrounding this aspect of the „new economy" see Friedman (2000).

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