

Has the US Economy Lost Its Long-term Growth Potential?*

Péter Tóth

*Robert J. Gordon:
Rise and Fall of the American Growth
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Economic productivity and 20th century economic history can be viewed from a techno-pessimist and a techno-optimist perspective. According to techno-optimists, such as Klaus Schwab, founder of the World Economic Forum, the “Fourth Industrial Revolution” based on digitalisation will have unprecedented economic consequences. Robert J. Gordon is a pessimistic economist, who believes that techno-optimists exaggerate the impact of digitalisation. He maintains that this is confirmed by the decades after the American Civil War, during which the US was completely transformed due to the discovery of electricity, the invention of the internal combustion engine and the spread of motor vehicles. Gordon argues that the Golden Age of American economic growth is over.

The 1870s were the dawn of the United States. Over the next six decades, innovations and discoveries transformed all walks of everyday life. By 1929, all urban homes had electricity, gas pipes, telephone, sewer systems and clean running water. By 1929, horses had disappeared almost completely from the streets, replaced by motorised vehicles. In 1929, the opportunities for the public’s entertainment included the radio, listening to music on a phonograph and motion pictures. By 1929, maternal mortality had dropped to almost zero, and medicine had almost reached its current standard. The number of hours spent working decreased, and electric appliances made household chores considerably easier. This transformation progressed slowly, and then after 1900 it gained traction due to electrification and the spread of motorised vehicles. The 1870s laid the foundations of our modern age. Electric lighting, the first reliable internal combustion engine and wireless telecommunication were all invented in 1879, within a three-month period, and they were followed by the appearance of the telephone and the phonograph within a decade. The quality of food consumption, i.e. varied diets, developed at a slow pace, but the quantitative change was significant. Average calories consumed in 1870

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Péter Tóth is the head of the New York office of the Magyar Nemzeti Bank. E-mail: tothp@mnk.org.hu

exceeded those in the 1920s. Clothing did not change much from a qualitative and quantitative perspective between 1870 and 1930, but the situation of housewives improved considerably. Thanks to the increasing efficiency of textile manufacturing and the spread of mail-order catalogues, the price of clothes plunged, which, coupled with the increasing income of households, enabled women to buy clothes, thereby saving them much work. The slow growth in food and clothing consumption is not a paradox because households spent the money they saved on those items on purchasing the latest discoveries. Nonetheless, it is highly likely that the growth in food and clothing consumption was underestimated due to the distortion of the price index. The price index does not take into account that as chain stores appeared, consumers were able to buy food significantly cheaper than earlier. According to the author's calculations, in 1911 chain stores were cheaper than traditional stores by 22 per cent on average. We can see a similar distorting effect in clothing prices, and in this case mail-order, catalogue-based merchants were the cheaper alternative to tailors. In addition to the distorting effect of the price index affecting food and clothing, the considerable improvement in living conditions shows that a change in real consumption does not necessarily reflect the public's living standards. Can we assign economic value to the transition to fully equipped homes? The answer lies in the connection between prices and rents of homes and the various levels of amenities. Homes equipped with a bathroom were 82 per cent more expensive in the period under review than those without one, and homes with central heating cost 28 per cent more on average than unheated flats. No studies have been prepared concerning the price of homes furnished with electricity, but Gordon believes that they must have had a premium of at least 28 per cent on the market. *The revolutionary change in the living standards provided by US residential buildings is one of the main topics of this book. These were innovations that can only arise once in humanity's history.* Although it took over 50 years for the above-mentioned solutions providing all the necessary amenities to spread throughout the entire population, the process was completed by the mid-20th century. Sustained economic growth required a steady flow of innovation; most electric household appliances targeting consumers were invented before 1940, and it was only a matter of time for them to reach all households. The author argues that with the exception of air conditioning, no invention after 1940 was able to radically transform people's daily lives. *Homes with full amenities and vehicles using internal combustion engines boosted the living standards of the American population so tremendously that the author believes that this cannot be repeated.* The dramatic change in transportation is portrayed by Gordon through three major channels. The first channel is the development of the uncoordinated, low-quality railway system before 1870. By 1940, train speeds had increased from 20–25 miles per hour to 70–75 miles per hour, and due to infrastructure developments, trains were now able to cover large distances. The introduction of air-conditioned trains in 1940 contributed to the improvement of travel comfort. The second channel is linked to the development

of transportation within city limits. Until 1870, urban transportation was provided by horse-drawn carriages, at a speed of 3–6 miles per hour. By 1902, horse-drawn vehicles of public transportation had been replaced almost completely by trams and trolleys. On account of the frequent traffic jams in large cities, underground and elevated rapid transit railways were built shortly after the introduction of trams, and they were first used within the city limits, then they became suitable for travelling between cities. The third and most important channel was the appearance of cars, which transformed both urban and rural life between 1910 and 1930. Henry Ford's Model T could be purchased for a quarter or half of the average annual income in the 1920s, as a result of which this car was available to the entire public. By 1926, 93 per cent of farmers from Iowa and other northern states had a car. *Between 1870 and 1940, the US population rose from the period of isolation thanks to innovations in communication and the entertainment industry.* In 1938, one-third of the total US population, i.e. over 40 million people, listened to the broadcast about the competition between Sea Biscuit and War Admiral, at one of the most famous horse races of all time. Between 1870 and 1940, a drop in infant mortality and contagious diseases can be observed. *The increase in life expectancy was twice as high in the first half of the 20th century as in the second.* The favourable health developments can be mainly attributed to the establishment of urban sewerage systems and clean running water. According to estimates, 75 per cent of the decrease in infant mortality was due to the provision of clean running water. Furthermore, growing hygiene awareness also has to be mentioned, just like the preservation of food and the introduction of regulations pertaining to the contamination of food, as these all contributed to the reduction of contagious diseases. Between 1890 and 1930, the environment and conditions of work experienced an unprecedented change. The number of hours worked per week and occupational accidents dropped, a much larger portion of the young generation could take part in education as child labour was abolished, and the innovations used in households made the life of housewives easier. The Great Depression and the Second World War interrupted these developments, but 25 years after the war, the impact of improving working conditions could be felt throughout the population. The reduction in the marginal disutility of work occurred in three dimensions, one of which was the decline in working hours per week from 60 to 40.¹ The second dimension was a shift in the distribution of labour from demanding and dangerous blue-collar work towards white-collar work. The third and most important dimension was the invention of household appliances that eased the burden on housewives.

Economic growth started decelerating in 1940 and especially in 1970. This claim can be considered evident if we examine the changes in the quality of consumer goods and services providing basic necessities, i.e. food, clothing and shelter.

¹ In the steel industry, the average number of hours worked per week fell from 72 to 40.

The better part of the development in food and clothing occurred between 1870 and 1940. The spread of frozen food after 1940 merely provided another alternative to canned food that had been eaten for decades. As households' income increased, the share of spending on food declined from 45 per cent to 13 per cent between 1870 and 2012. The number of cars increased rapidly until 1970, and then this rise decelerated between 1970 and 1990 and halted completely after 1990. Miles travelled by car increased until 2000 at a diminishing pace, and then shrank continuously between 2000 and 2014, which, according to Gordon, can be probably attributed to the drop in the share of the population holding a driving licence. In contrast to the areas examined earlier, no slowdown could be observed in entertainment after 1970. Among the components of the US living standards, entertainment opportunities increased the most between 1940 and 2014. Today, households can access services linked to entertainment that did not even exist in 1940. As a result of the development in information technology, ideas were born that fundamentally reformed human communication and data storage habits. Gordon Moore, the co-founder of Intel, gave a very accurate estimate in 1965. He believed that the memory of computer chips would double every two years. Between 1990 and 2006, computing capacities doubled every 16 months, however, the pace of development declined after 2006, and currently the memory of IT devices doubles every 4–6 years. According to the author, this is because there is no demand for the engineering expense to reduce the size of chips, since their current size and capacity are perfectly suitable for completing the tasks on desktop and laptop computers. The emergence of the Internet has transformed users' communication and shopping habits. Information has become free, and new communication channels, such as Facebook, Twitter and Skype, have appeared. Despite the rising costs of healthcare, the positive impact of the development of the technologies used in medicine falls short of the effects seen between 1940 and 1970. Large-scale healthcare spending on medical research and treatment will undoubtedly continue to raise the life expectancy of the US population at a slow pace, but it is unlikely to cause radical changes in the living standards of Americans. Since 1940, working and living conditions have improved considerably, but at a significantly slower pace than before 1940. Between 1940 and 1970, the trend that started in the early 20th century continued: tough physical labour was replaced by safer and less demanding activities. By 1970, household appliances had become almost universal among the population, which lifted the burden of household chores from women. Although between 1940 and 1970 modern working conditions became established, the transformation of women's role in society and the labour market started only in the mid-1960s. Rising educational attainment was the main reason behind the spread of white-collar work. Child labour was abolished in the US before the Second World War, and by 1970 three-quarters of the total population had a secondary school diploma. As a result of the passing of the social security legislation in the 1930s, most workers retired at 62, which, coupled with

the rising life expectancy, placed extreme pressure on the US pension system. In order to maintain the financial sustainability of the social security system, most employers started using defined-contribution 401(k) plans instead of the annuity-based plans in the 1980s. The author identifies two factors that have contributed in an unparalleled manner to US economic growth since the 1940s. *The emergence of women on the labour market and decreasing discrimination against the African American population paved the way for the efficient allocation of investments in human capital.* One study found that this labour market transformation contributed 15–20 per cent to the economic growth between 1960 and 1990. The unique nature of the transition can be seen in the fact that the female labour market participation rate has been on the decline since the 2000s, and the difference between the average wages of whites and African Americans has been stagnating since 1990. The other reason behind the decelerating economic expansion is the slower growth of the population's educational attainment. The share of those with a secondary school diploma has been stagnant since the 1970s, and even though the number of graduates increases steadily, many young graduates are unable to find work on the labour market.

Gordon argues that the Great Depression of 1929 and the Second World War contributed directly to the largest economic growth in US history. Without the Great Depression, the New Deal would not have been born, just like the NIRA or Wagner Act, which facilitated the establishment of trade unions. Partly due to unionisation, real wages started rising, and the average hours worked per week decreased from 60 to 40. As a result of higher wages and shorter working hours, economic productivity soared in the early 1930s, before the US entered the Second World War. Owing to the surge in real wages, private sector investments increased, which launched the process of substituting labour with capital. *The other positive effect of the Great Depression was the reform of business models. The cost-cutting measures entailing mass layoffs were inevitable due to diminishing production and profitability. The new and more efficient business models contributed to the productivity growth observed after the Great Depression.* The pressure exerted by the Second World War on the economy had a less speculative effect on productivity. Several economists analysed at length the speed and efficiency of building the Liberty freighter ships. Much to the surprise of the economists, the remarkable labour productivity growth persisted after the war. The drop in military expenditure did not reduce labour productivity in the military industry for a few years after the end of the war. War fostered innovation, and the productivity-boosting effect of new technologies took hold even in peacetime.

According to experts forecasting the impact of innovations, economic output will be increasingly produced by robots. Techno-optimists believe that as a result of future innovations, labour productivity will substantially increase, which will offset the

persistent mass unemployment caused by the machines. *Techno-pessimists forecast that the emergence of technologies will not bring about radical productivity growth, and – similar to the past decades – it will only entail slow economic growth and a gradual decrease in unemployment. Statistics confirm techno-pessimists' view.* Unemployment in the US has dropped from 10 per cent to below 5 per cent since October 2009, and annual labour productivity growth is 0.5 per cent, which is well short of the 2.3 per cent productivity growth seen in the dot-com era between 1994 and 2004. Gordon predicts that labour productivity will increase by 1.2 per cent on average annually between 2015 and 2040, which is far below the standards of 1920–1970 and 1994–2004, but exceeds the average annual percentage growth in the past 11 years, and the 0.5 per cent increase observed in the last five years. The author estimates that in the coming 25 years, the median disposable income of the US population will grow by 0.3 per cent on average each year, which is significantly lower than the 2.25 per cent average between 1920 and 1970, and the 1.46 per cent between 1970 and 2014.