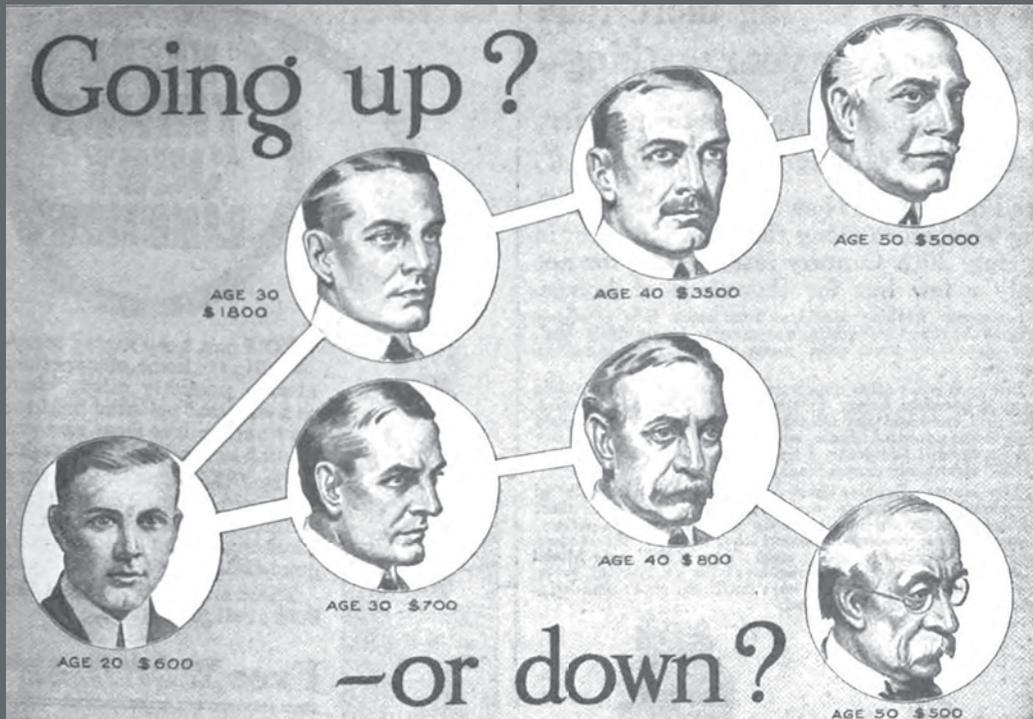


The American Economy



A European view



Anton Brender
Florence Pisani

THE AMERICAN ECONOMY

A EUROPEAN VIEW

ANTON BRENDER

AND

FLORENCE PISANI

CENTRE FOR EUROPEAN POLICY STUDIES (CEPS)

BRUSSELS

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FOREWORD

Viewed from Europe, the strength of the US economy can elicit envy, especially in terms of the low unemployment rate it has long enjoyed and to which the country returned much more quickly than the EU in the years following the Great Financial Crisis. As this book shows, however, the use of fiscal and, more recently, monetary policy, although successful in rapidly re-establishing full employment, has done little to offset the increasing inequality that undermines both the country's growth potential and its social harmony.

Looking back over more than a century of political and economic developments, Anton Brender and Florence Pisani document not only the continuing economic leadership of the US, but also the increasing gulf between labour and capital that has left the US economy as polarised as its politics. They assert that this is accepted due to a cultural 'aversion to public intervention'. But only by revisiting this stance can the whole of the US hope to prosper in a world of increasing international competition and continuous technological progress.

This sweeping assessment of the US provides the European reader with a comprehensive background against which to assess developments in the EU, and in particular the eurozone, for example by comparing US monetary policy and its effects with the steps taken by the European Central Bank and their outcomes. Both the American and European economies have been subjected to broadly the same forces. The imbalances across the US economy noted by Brender and Pisani are reflected in similar imbalances affecting the EU, although, more often than not, they are ascribed to individual countries.

I trust this book will encourage Europeans to seek a fuller understanding of the forces that are shaping the economies on both sides of the Atlantic today and in the future.

Daniel Gros
Director of CEPS
Brussels, March 2018

INTRODUCTION

Each year, a quarter of the world's output is produced by a population accounting for less than 5% of the planet's total. The juxtaposition of these two figures gives an idea of the power of the American economy. Not only is it the most productive of the major developed economies, it is also the place where new products are constantly being invented, as well as new services and new production methods, which, as we are daily reminded, then spread throughout the world. Even so, for all its efficiency and its capacity for innovation, worrying signs of dysfunction are progressively manifest. Since the 1970s, the American economy is experiencing increasing difficulty in generating social progress. Worse still, in the past twenty years signs of actual regression are becoming more and more numerous. How can this paradox be explained? Answering this question is the thread running throughout this book, which offers an overview of the history and structure of the American economy, guided by a concern to shed light on the problems it faces today.

Chapter I recalls the trailblazing character of the economy and the original nature of the social model, which for more than a century inspired its formidable dynamism. At its core lies an aversion to public intervention that is much more deeply ingrained than it ever was in Europe. If the prosperity of all depends on the work of each person, nothing must be allowed to discourage individual effort; on the contrary, what each receives must depend on his own work alone – provided that work for all is to be found. Until World War I, this latter problem hardly ever arose: the exploitation of vast natural resources and later the industrial development of an immense territory called for an abundance of manpower that only a huge inflow of migrants could satisfy. The crisis of the 1930s, triggered by a financial cataclysm, brought about sweeping change. The distress associated with the rise in mass unemployment obliged the federal government to establish institutions which are still today at the heart of American social solidarity arrangements. At the same time, the deep depression in activity, which had been impossible to prevent or stem, drew attention to a new reality: the maintenance of full employment in an industrial economy is no simple matter.

In the aftermath of World War II, the development of the American economy gathered pace and the sectoral composition of the income generated changed substantially (Chapter II). The growth of labour productivity, made possible by mechanisation and automation, was particularly rapid in the goods-producing sectors, where prices fell steadily by comparison with those of services. As decade followed decade, the share of domestic spending, especially by households, devoted to services – or, rather, a small number of them – grew constantly. Reflecting this tendency, the share of national income emanating from the tertiary sector became largely predominant. This ‘tertiarisation’ of income formation was further reinforced by the intensification of international trade: the American economy became specialised in services, while at the same time ‘de-specialising’ away from the production of goods, or, to be more precise, manufactured goods. Following the agricultural sector, it was now the turn of the industrial sector to see its share of American value-added decline. For the most part, it was wages and not profits that were most affected. The result was that the evolution in the sectoral composition of employment was even more marked than for GDP as a whole and this helped to throw the American social model out of kilter.

Contrary to a widely held belief, jobs in the tertiary sector are not, on average, less remunerated than those in industry (Chapter III). Admittedly, the sector includes many unskilled and relatively poorly paid jobs, but also many that are as well, or even better, paid than those in industry. However, to perform most of these jobs it is necessary to have skills that, unlike the situation that had long prevailed in industry, are difficult to acquire simply by experience. Technical progress and international trade, by sharply reducing industrial employment, have ‘freed’ a pool of manpower which, lacking the possibility of obtaining relatively well-paid service jobs, had no other choice than to accept the less well-paid ones. The result has been permanent downward pressure on the remuneration of the least-skilled jobs and a constant rise in inequalities. Aggravated still further by an increasingly uneven distribution of wealth, this increased inequality is nevertheless due less to technical change or international trade than to the aversion to public intervention. The underlying belief is that these factors are in themselves favourable for all and that no particular effort is required on the part of government to enable society to reap their benefits.

The weakness of transfer mechanisms, both between the federated states and between individuals, as well as the reluctance to undertake public spending, have done much to deprive the federal government of the resources needed to finance efforts, necessary though these are, to adapt

structures for training and reskilling workers and reinvigorating regions or cities (Chapter IV). In the absence of such action, the government's principal contribution has been to make efforts to give everyone the possibility of finding a job by keeping the economy as close as possible to full employment. In making these efforts, even if it cannot curb the rise in inequality, government can at least prevent the bottom levels of remuneration from falling further still. For several decades, fiscal policy has played a central role in this respect. From the mid-1980s on, however, the concerns raised by the increase in public borrowing have tended to reduce the federal budget's role in the management of the economy, with monetary policy stepping in. Instead of relying on an increase in public borrowing to stimulate activity when the economy deviated from full employment, it was additional private borrowing that for many years performed this role.

Monetary policy has turned out to be spectacularly effective in this respect (Chapter V). By manipulating more and more adroitly the level of interest rates, the Fed succeeded in preventing the American economy from diverging too far from full employment, despite the severe shocks confronting the economy: the scale of the bursting of the stock market bubble that took place at the beginning of the 2000s was comparable to that of the 1929 crash but depressed activity only slightly. Moreover, during these prosperous years, monetary policy not only helped the economy to absorb cyclical shocks, it also averted a rise in unemployment at a time when countries in the rest of the world, through the rise in the oil price and the rapid growth of their exports of manufactures, were cornering an increasing portion of American domestic spending. The maintenance, against all odds, of relative full employment was hence made possible by continuous growth in private borrowing. This accumulation of debt was not accompanied, however, by the increased surveillance of the financial system, as it should have been. Here again, the aversion to public intervention inspired the belief that 'market discipline' would be sufficient to prevent any collapse on the financial markets.

This belief turned out to be misplaced. The recession that began at the end of 2008, in the wake of the financial crisis, was to be the worst the United States had seen since the 1930s. It took ten years of emergency monetary policy to bring the unemployment rate back to its pre-crisis level (Chapter VI). And even then, the policy was unable to put the American economy back on a growth path that was sufficiently solid, if not to reduce inequalities, at least to keep the lowest wage incomes rising at a steady rate. The election of Donald Trump exposed the resentment and frustration this situation provoked in an increasing number of Americans. Unfortunately, his

promises regarding restricting the openness of the United States to the rest of the world and cutting the taxation of corporate profits have little chance of restoring the American economy's lost dynamism.

1. A TRAILBLAZING ECONOMY

For more than a century now, the United States has led the way for the other industrialised countries. Not only has the trajectory of these other countries' GDP per head – a crude but simple measure of an economy's level of development – tracked that of the United States, but the structure of their activity has tended to converge with that of the American economy. At the same time, they have emulated its modes of production and consumption. However, the social model associated with this pioneering role played by the United States has remained virtually unique. In very few other countries has there been such a reluctance to accept state intervention. The 'flexibility' of the labour market has remained greater than in other countries. The incentive to work is reinforced by financial aids whose ambition is limited, while the scope of social insurance against the risks involved in a life without work (sickness, retirement, unemployment, and so on) is more restricted.

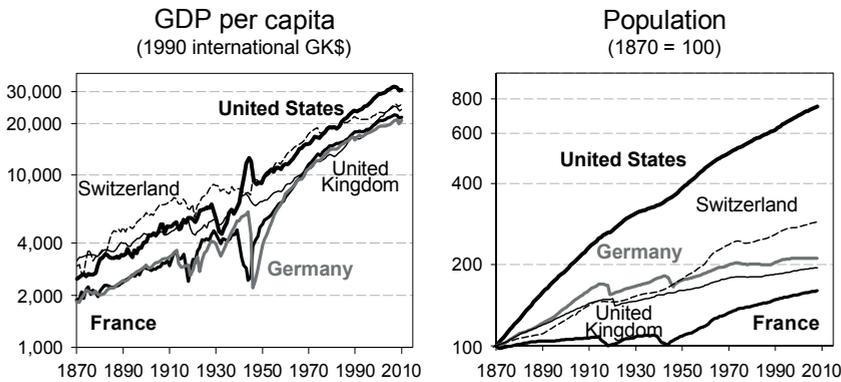
This 'model', sometimes regarded as exemplary, has for several decades now shown increasingly clear signs of dysfunction. The crisis triggered a few years ago by financial *laissez-faire* was no doubt the most spectacular of these signs but not the most profound. Admittedly, the US economy is still one of the most productive, and in many sectors its companies are the most innovative. For almost 40 years now, however, the continuous growth in economic activity has ceased to fuel social progress. The standard of living of Americans occupying the lower half of the distribution of income has barely risen and inequalities in the distribution of income and wealth have reached a point at which the country's social and political equilibrium could at some stage be placed in jeopardy.

Before discussing the symptoms of this widening gap between the ever-increasing power of the American economy and the weakness of the social progress it generates, it is necessary to recall the major features of the American 'model' and how its cornerstones have come to be set in place. This model, currently in crisis, has nevertheless made it possible for this economy to follow an exemplary trajectory for more than a century.

1.1 An exemplary economic trajectory

Data compiled by Angus Maddison permit long-period comparison of the trajectories followed by certain developed economies. Graph 1 (left-hand side) shows for some of them the growth in their GDPs per head since the end of the 19th century. It can be seen that until World War II the growth rates were much the same, despite somewhat different starting points, and up to 1939 the ranking had remained unchanged. Throughout this period, Switzerland remained in first place,¹ constantly followed, neck and neck, by the United Kingdom and the United States and, somewhat further back, by France and Germany, also neck and neck.

Graph 1. Evolution of GDP per head and population since 1870 (logarithmic scale)



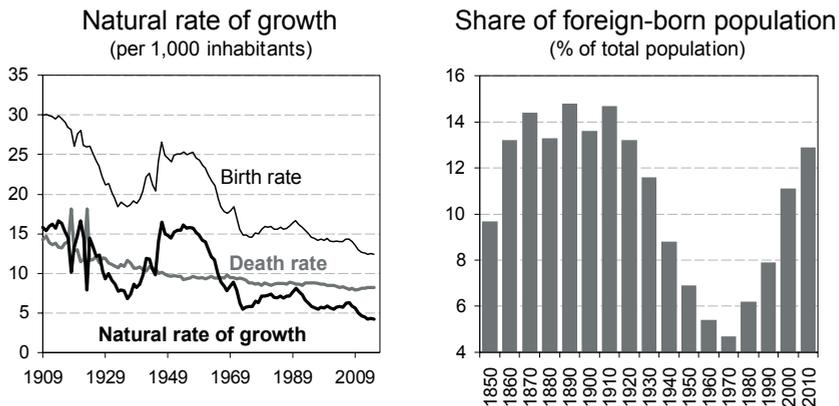
Source: Maddison Project (www.ggdc.net/maddison/maddison-project/home.htm, 2013 version).

The distinctive feature of the United States economy can be seen on the right-hand side of Graph 1, which shows that, while United States GDP per head had admittedly still not caught up with that of Switzerland, its population trebled during these seven decades whereas that of Switzerland rose by barely 60%. Between 1870 and 1939 the American population rose from 40 million to over 130 million inhabitants. There can be no better illustration of the origins of what has been called “the American dream”. The economy had become sufficiently dynamic for the hope of a better life to attract an ever-increasing number of immigrants, coming mainly from European countries or neighbouring Canada. During the period, the natural

¹ The Swiss economy is used as a yardstick, despite its small size, because it was unaffected by the wars marking the 20th century.

growth of the population born in the United States was substantial – close to 2% per year – but above all immigration was exceptionally large: between 1870 and the end of the 1920s, despite strong natural growth of the population born in the United States, the proportion of immigrants in the American population remained particularly high at almost 14% (Graph 2).

Graph 2. Natural rate of growth of US population and share of foreign-born population, 1909-2010 and 1850-2010



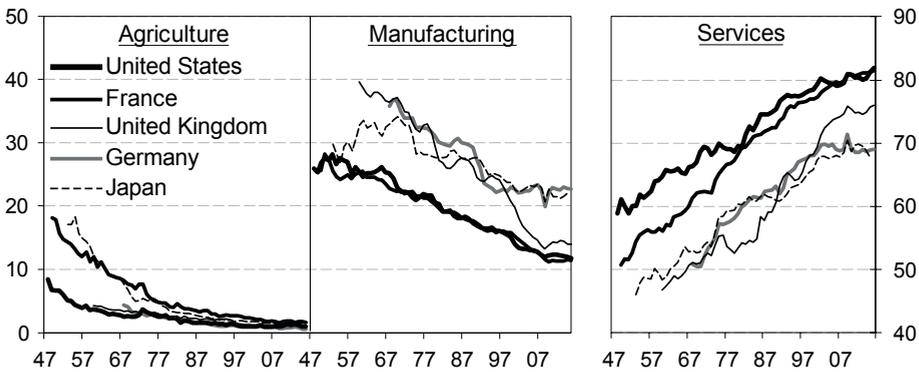
Source: US Census Bureau.

The figures for the following period provide an even better illustration of the pioneering status of the American economy. Immediately following World War II, its GDP per head had caught up with that of Switzerland and the two economies were now sole joint leaders; it would take two decades for France, Germany and the United Kingdom to reduce the backlogs accumulated during the war. Starting in the early 1970s, GDP per inhabitant in the United States would finally move ahead of that of Switzerland. Now the unrivalled leader, the US economy would continue to increase its advance despite its faster population growth (between 1939 and 2010 its population would rise from 130 million to over 310 million). However, despite being more rapid than elsewhere, United States demographic growth was distinctly slower during this period than before the Great Depression, whose effects, combined with those of the war, contributed to a decline in the natural growth rate, while at the same time the flow of immigrants diminished significantly. By 1970, the share of foreign-born inhabitants in the American population had declined to 5% before beginning a slow rise to the levels seen in the first part of the 20th century. This movement was accompanied by a radical change in their continental origins. By the beginning of the present century, the vast majority were from Latin

America or Asia, with the share of those of European origin falling to less than 20%. There is one more notable feature: whereas in 1950 more than half the immigrants had acquired American nationality, the proportion was only half as great fifty years later.

The American advance in terms of economic development can also be seen in the convergence between the sectoral composition of activity in other industrialised economies and that seen in the United States. As the gap between their development levels and that of the United States narrowed, the importance of primary sectors (mining and agriculture) and manufacturing tended to decline and that of private and public services rose, in each case tending towards American levels (Graph 3). The American primary sector, which accounted for 10% of GDP in 1950, was equivalent to no more than 5% from 1970 on, a proportion that would be reached in European countries three decades later. As for the proportion attained by manufacturing industry, this too in all countries, with the exception of Germany and Japan, has fallen below 15% of GDP. These tendencies are the reflection of a convergence between the other countries' modes of production - and often also consumption - and those of the United States.

Graph 3. Share of GDP accounted for by agriculture, manufacturing and services, 1947-2016 (%)



Notes: The shares of agriculture and manufacturing are shown on the left-hand scale and the share of the services sector on the right. The mining and construction sectors do not appear in the graphs (their shares were relatively stable during the period, with the exception of the UK mining sector, which rose strongly from the end of the 1970s before falling back again in the mid-1980s).

Sources: Maddison Project and US Census Bureau.

1.2 An aversion to public intervention

For several decades now, the American economy has been leading the way both for the most advanced economies and for others that have been rapidly making up their backlogs. However, the development of its economy has been based on a social order that still retains a somewhat original character, being in fact still deeply rooted in the values of the 'founding fathers' who at the end of the 18th century achieved the independence of the United States from British domination and 'conservatism'. Their preference for non-intervention was based on an ideology that differed from that which was prevalent in European countries. In particular, it was in opposition to the ideas underlying the order established by the British Crown, by its stress on individualism, the power of the people and *laissez-faire*. These 'bourgeois' values, espoused by the colonisers and pioneers who founded the economy whose astonishing expansion has been described above, have retained so great a power of appeal that more than two centuries later they still act as powerful forces tending to maintain American society's adherence to this native form of *laissez-faire*. These forces favour reducing public intervention to the minimum, especially that of the federal government. The right to private ownership and the liberties this entails are enshrined in a constitution that despite frequent amendments has remained fundamentally unchanged for more than two centuries, with the Supreme Court ever-vigilant to ensure that they are respected. The result has been extreme wariness of regulation of any sort and also of any excesses in the field of social solidarity that might reduce incentives to hard work and personal initiative. Only in cases of dramatic crisis or under pressure from overwhelming political will has this reluctance been momentarily eclipsed.

The birth at the beginning of the 20th century of what was to become the Food and Drug Administration (FDA) provides an anecdotal, but revealing, illustration of this reluctance as regards measures aimed, for example, at regulating working conditions. Upton Sinclair's classic novel *The Jungle* contains a description of the appalling conditions that prevailed at the time in the Chicago slaughterhouses. Sinclair, known for his socialist sympathies, was aiming to denounce the evils of unbridled capitalism. He was hoping to trigger a wave of public opinion in favour of the introduction of stricter working regulations and a minimum wage. The success of his novel did indeed lead to the setting up of a new organisation, but one only with the task of imposing respect for rules relating to food security and health. This makes it unsurprising that it was not until the Great Depression of the 1930s that the federal government laid the foundations for institutions

of a radically new type that would restrict what had previously been the almost unfettered freedom of firms in their dealings with their employees and provide at least part of the population with certain forms of insurance of which they had until then been deprived. The creation of these institutions, intended partly to repair the damage provoked by the crisis, seemed at the time sufficiently essential to override, for the time being at least, the penchant for non-intervention (Cowie, 2016). Not all of them were destined to last.

The initial aim of the 1933 Banking Act (more generally known as the Glass Steagall Act) was to tackle the immediate causes of the crisis and in particular to prevent any future stock market crash from having similarly dramatic economic and social consequences. How could this be done other than by imposing strict operating regulations on the banks? Several American banks had in fact speculated hugely on a continuing rise in stock market prices (or lent large sums to other speculators, which amounted to the same thing). Account-holders throughout the country, fearing a collapse of their banks, rushed to withdraw their deposits. This rapidly converted a stock market crash into a major banking liquidity crisis, which in turn produced a drying-up of lending and a collapse of economic activity. The Glass Steagall Act was meant to draw lessons from this experience. In the first place, it would prohibit deposit banks from intervening on the stock markets, such intervention henceforth being reserved to investment banks. Second, it would provide for the introduction of a federal insurance system to which all the deposit banks would have to subscribe. Lastly, in order to avoid dangerous competition for deposits, remuneration of these deposits would be capped. These rules, laid down in the aftermath of the 1929 crisis, remained in place until the end of the 1970s, when the preference for *laissez-faire* would again take the upper hand, clearing the way for sweeping financial deregulation. The social measures aimed at alleviating the consequences of the Great Depression would, at least in the case of those not aimed solely at providing immediate relief to the neediest, survive longer, remaining even today the cornerstones of the American social edifice.

The social advances of the New Deal

In the aftermath of the stock market crash, the number of unemployed did in fact rise dramatically and most American households, having seen the value of their savings melt away, found themselves facing the prospect of a miserable old age. To ward off this threat, the 1935 Social Security Act set up two social programmes: a federal system of old-age insurance and an

unemployment insurance mechanism. These were run by individual States but with finance provided by federal subsidies. The old age insurance programme – Social Security Old Age Insurance – came into operation on the eve of the Second World War. However, it by no means covered the totality of the workforce, as farm workers and domestic employees, most of them black, were ineligible. Having since become Old-Age, Survivors, and Disability Insurance (OASDI), it is commonly known simply as Social Security. With its financing provided by social contributions, it constitutes the public ‘pillar’ of the American retirement pension system, ensuring to all those who have held a job a pension guaranteed by the federal government of an amount that is a function of past contributions. As regards the Unemployment Insurance programme, it was not until 1937, when a Supreme Court decision confirmed its constitutionality that all states agreed to implement it. This programme, also financed by social contributions, pays those who have lost their jobs an allowance for a period that is usually relatively brief.

The Great Depression did more than just trigger the introduction of these two major social programmes. This was because the high level of unemployment – the rate remained above 15% for practically the whole of the 1930s – had not only deprived many Americans of much of their income but had also considerably reduced the bargaining power of those with jobs and this in turn was inevitably unfavourable to the evolution in their earnings. In 1935, the National Labor Relations Act (better known as the Wagner Act) remedied this situation by instituting collective negotiation of working conditions and wages as well as setting out the conditions for strike action. Within each establishment, the principle became that of unique union representation of workers in dealings with the employers, while recourse by the latter to ‘unfair’ practices aimed at dissuading the putting forward of claims by the former was banned. The Act therefore considerably improved the bargaining position of workers in their dealings with their employers, at least in those sectors where it applied (yet again farm workers and domestic workers were not included in its coverage, nor were workers in the public sector). The adoption of this Act was made possible by the exceptional political configuration born out of the social drama of the Great Depression.

The sit-down strike at the Flint General Motors plant would lead at the beginning of 1937 to the first union victory: after a 44-day strike, the workers finally obtained a wage rise of 5% -- not to mention the right to talk to each other during lunch breaks. This event gave instant legitimacy to the United Auto Workers (UAW) union and would be followed by a spectacular rise in the rate of unionisation: from 10% in 1936 to more than 30% in 1943. In the

post-war period, in 1950, the leader of the UAW, Walter Reuther, managed to obtain a further, highly generous agreement regarding health coverage and pension entitlement, as well as indexation of wages on the cost of living for workers not only at General Motors but also at Ford and Chrysler. Known as the Treaty of Detroit, this agreement constituted the UAW's high-water mark. Little by little, following a period in which the War had enabled the unemployment rate to fall to its lowest level, there was now a rebalancing of political forces, this time to the detriment of the workers. As early as 1947, the Taft Hartley Act would amend some of the provisions of the Wagner Act: this time it was 'unfair' practices on the part of unions that were banned, while at the same time the conditions for strike action were tightened.

As early as the beginning of the 1930s, another measure had initially been envisaged to ward off, more directly than through collective bargaining, the threat of a decline in the general wage level linked to a weakening of workers' bargaining power, namely through the setting of a minimum wage at federal level. Similar measures had been under discussion since the beginning of the century but had been constantly rejected by the Supreme Court, which saw in them a limitation on the freedoms guaranteed by the Constitution. It was finally instituted in 1933, when it was set at \$0.25 per hour by the National Industry Recovery Act, one of the major planks of the New Deal. However, this too was declared unconstitutional and abolished two years later before being finally reinstated in 1938 through the Fair Labor Standards Act, which at the same time set the working week at 40 hours and the remuneration of overtime at 1½ times the hourly rate. These stipulations were also referred to the Supreme Court, finally being declared in conformity with the Constitution in 1941. In the following decades, the minimum wage would suffer a fate similar to that of the Wagner Act: with the disappearance of the social urgency, preference for the free interplay of market forces would once again win the day. In the absence of regular revaluation by Congress, the minimum would gradually be eroded in real terms starting at the end of the 1970s, thus marking the end of upward legislative influence on wages.

The war on poverty

The other major social measures put in place by the federal government are more recent. These were introduced at another dramatic turning point in the country's history, when President Kennedy's assassination rocked American society to its foundations and blacks were granted their civil rights. When declaring his War on Poverty in his first State of the Union address in January

1964, President Johnson stated: “Unfortunately, many Americans live on the outskirts of hope – some because of their poverty and some because of their colour, and all too many because of both.” Alongside measures to provide immediate assistance, he announced others of a more long-term nature. The Elementary and Secondary Education Act was signed in 1965 and has been regularly renewed since then. This aimed to correct inequalities in the quality of the primary and secondary education received by children from poor families.

Two other programmes, whose scale has constantly been increasing, were also introduced. These were aimed at mitigating another flagrant inequality, namely that affecting Americans’ situations regarding healthcare, which medical progress was making more and more costly. The situation at the time was that only those with a job (and their families) were entitled to benefit from health insurance plans of varying generosity sponsored by employers as part of collective agreements. Two federal programmes, Medicaid and Medicare, were introduced in 1965 by means of amendments to the Social Insurance Act adopted 30 years earlier. The Medicare programme provided health coverage for people over 65 years of age, while Medicaid, in theory at least, provided coverage for the poorest citizens. However, almost half a century later, several tens of millions of Americans were still without any insurance against health risks. The 2010 Patient Protection and Affordable Care Act (better known as Obamacare) was an attempt to remedy this situation: it simultaneously obliged all Americans to subscribe to an insurance plan and provided subsidies to help those who could not afford to do so. A few years later, a Republican Congress and a Republican president, on the pretext of a preference for freedom to choose whether or not to be insured, decided to call this programme into question. There could be no better illustration of the restraining force that continues to be exercised by the aversion to public intervention ingrained in the minds of the early pioneers.

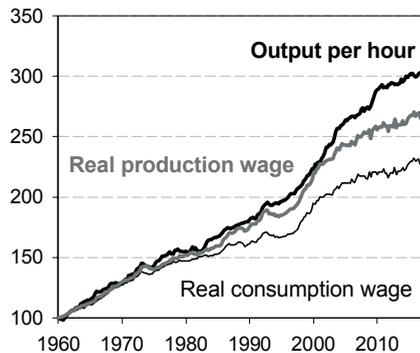
1.3 Social progress running out of steam

The economic expansion of the United States has hence been based on a fairly parsimonious social model in which public intervention has remained relatively limited. For most Americans of working age, retirement pensions and health insurance are ‘benefits’ whose importance depends on negotiation at the level of the individual firm and for which nothing is imposed by the federal government. The same is true of paid holidays and

sick leave. And while it is true that the federal government has introduced a mechanism for unemployment compensation, this is normally payable only for a few months. Finally, employers remain largely unrestricted in their freedom to lay off workers. In the private sector, they can terminate work contracts without notice or explanation, provided that their decision cannot be judged to be 'unfair' (only layoffs involving more than fifty people are slightly more constrained). According to a ranking established by the OECD, the American economy is among those with the lowest employment protection index. Frequently cited as an example, especially during the 1980s, this 'American model' has since precisely this period been in difficulty. With hindsight, it can in fact be seen that, confronted by an economy whose structure has changed as development has proceeded and in which a considerable quantity of productive capital and hence of financial wealth has been accumulated, the country has been unable to transform a significant part of the gains in efficiency into social progress.

An initial simple illustration of this point can be found in the average evolution of the purchasing power of American wage income: at a time when, as we have seen, the American economy was becoming the most advanced in the world, the evolution in the real hourly wage of workers in the private sector started to diverge from that of labour productivity. This divergence has in fact been increasing since the beginning of the 1980s, so that by mid-2017 it amounted to 25 percentage points. For almost four decades the average annual growth in real wages in fact barely exceeded 1%, as against productivity growth of close to 2%. This tendency is explained by the interplay of two forces of different kinds. The first of these relates to the warping of the distribution of private sector firms' value added in favour of profits, whose share of the total rose by more than three percentage points between the early 1980s and the mid-2010s. The second relates to an evolution in relative prices that is also to the detriment of the purchasing power of wages, with the prices of goods and services consumed by American households tending to rise more rapidly than those of corporate value added. This distortion of relative prices, which has been especially noticeable since the early 1980s, has largely contributed to a widening of the divergences between the respective evolutions in productivity and wage purchasing power (Graph 4).

Graph 4. Evolution of real hourly wages and productivity* in the United States, 1960-2017 (1960 = 100)



* Output per hour for the non-farm business sector.

Notes: The “real production wage” is calculated using the non-farm business sector implicit price deflator. The “real consumption wage” is calculated using the BEA personal consumption expenditure deflator (and not the BLS consumer price index).

Source: Thomson Reuters Datastream.

By themselves, these observations are obviously not sufficient to show that since the beginning of the 1980s social progress has broken down in the United States. While the *average* purchasing power of private sector wages certainly grew more slowly than labour productivity, it nevertheless grew steadily. The same cannot be said, however, of the median wage: in fact, *for almost 40 years the purchasing power of the wages of half of American full-time jobs has barely increased*. This difference in the respective evolutions of the median wage and the mean wage reflects an increasing divergence in the rate of evolution of wages: the corollary of the fact that half of American wages grew more slowly than the mean is that the other half grew faster than the mean. In recent decades the gap between the lowest and the highest wages has continuously widened.

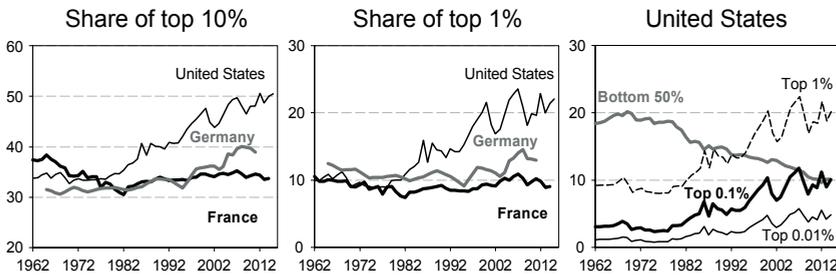
Broadening the analysis to include not only the incomes Americans derive from their work but also the incomes obtained from their financial or property wealth makes no difference to this conclusion. Adjusted for the rise in consumer prices, the sum of these two components – personal income before transfers and taxes – received by American adults in the lower half of the income scale has shown no increase since the 1980s (Piketty et al., 2016). This is hardly surprising: the distribution of wealth income has shown even more inequality than has labour income and proceeded in a direction unfavourable to the lowest-paid workers (Box 1). The effects of this evolution have been all the greater in that the ratio of financial assets to the total wage

bill has almost doubled between 1980 and 2017, rising from 4.8 to 9.4! In the end, it is only the impact of public redistribution that seems to have permitted some slight progress in real terms in the level of Americans' median disposable income. The taxes paid by those with remunerations in the bottom half of the scale have risen more slowly than the transfers they receive from the government.

Box 1. Increasingly uneven income distribution

The new World Wealth and Income Database (WID), created as a prolongation of the research by T. Piketty, E. Saez and G. Zucman, makes it possible to compare income distributions and to examine, in particular, the share of income accruing to the wealthiest beneficiaries. For present purposes, households' taxable income has been used. This includes all sources of income as well as realised capital gains. Tax data have the advantage of taking better account of the higher incomes but, *a contrario*, lead to under-representation of households at the bottom of the scale (since these are not obliged to submit declarations). Furthermore, they are subject to tax optimisation practices and are not always perfectly homogeneous between countries. Their evolutions are nevertheless broadly similar to those obtained in the Distributional National Accounts prepared by Piketty et al. (2016).

Graph 5. Income distribution in the United States, Germany and France, 1962-2014 (%)



* Fiscal income per tax unit, except for the right-hand side chart where fiscal income is per adult (with equal split within couples).

Source: World Wealth and Income Database.

Of the developed countries, it is the United States where the evolution in income distribution has been most spectacular, with the share of the top decile higher today than it was at the beginning of the 20th century and the share of the 0.1% highest earners now larger than that of the 50% earning the least (Graph 5)!

The end of the American dream

The above remarks concern only the distribution of income in a given year, however. They say nothing about the income received by each American during a whole lifetime. The fact that the purchasing power of half of the remunerations received by wage earners has not risen in many years does not necessarily mean that, during these same years, there has been no growth in the incomes of half of the American people. The 'American dream' of social advancement was based precisely on the notion that any individual, even starting from the very bottom of the ladder, could hope to see his standard of living improve, and that of his children improve even more. Unfortunately, several indicators converge to suggest that it is indeed the foundations of this 'American dream' that are now being called into question.

This expression was coined in 1931 by J.T. Adams, who defined it as "that dream of a land in which life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement". The immediate post-war situation provided support for this optimism, with Americans seeing their incomes increase rapidly throughout their career and achieving a better standard of living than their parents. Here again, the 1970s were to mark the end of an epoch: half of the men who entered the labour market at the beginning of the 1980s would have real income over their working life that was at least 10% below the median income of the preceding generation (Guvenen et al., 2017). Intergenerational mobility was set to fade substantially in the following decades. While in 1970 more than 90% of 30-year-old Americans earned more than their parents, the proportion had fallen to only one in two by 2010. In the intervening period growth had indeed slowed down, but this slowdown was not as responsible for the decline as the increase in inequalities in the way the fruits of growth were shared (Chetty et al., 2016): intergenerational mobility fell because remuneration stagnated for workers occupying a large portion of the income scale.

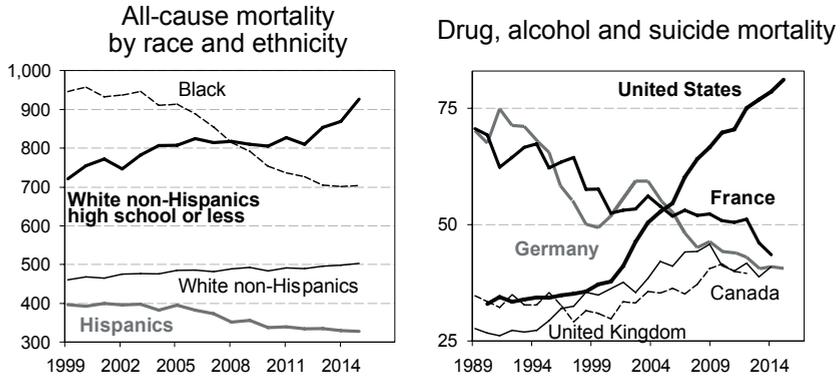
Another observation is just as disturbing: schooling and education, which had previously been a strong point of the American economy and a factor in upward mobility, became increasingly less so. As the decades have passed, the likelihood of obtaining a higher qualification than one's parents has tended to decline. Not only has the entry rate to universities (and the success rate once there) for children from modest families remained much lower than for better-off families, these rates have risen much less rapidly for the former than for the latter (Bailey & Dynarski, 2011). The increase in

educational inequality has led to a decline in intergenerational mobility as regards education levels: the share of individuals with lower qualifications than their parents has risen from 10% in 1970 to almost 20% in the 1990s (Hout & Janus, 2011). This tendency is due to the levelling off of the high school graduation rate, which stopped increasing in the beginning of the 1970s and has even fallen if one excludes from the official statistics holders of a certificate of General Educational Development (Heckman et al., 2010).

The small increase in the number of those successfully completing the university cycle today now largely involves children from the middle and upper classes. Whereas the average level of education of current generations is higher than it has ever been, the risk that children from the more disadvantaged groups will fail to reach the level attained by their parents has never been greater. Above all, it is also possible that the continued widening of inequalities will further reduce this mobility in the coming years. Krueger (2012) has in fact shown that there was a positive correlation between the intensity of inequalities and the likelihood that a child will inherit the relative position of the parents. This relationship – known as the “Great Gatsby curve” and observed first at international level – seems to operate within the United States also: the regions in which income inequality is greatest are also those in which the mobility of children from disadvantaged families is least.

The relative size of the American middle class – defined as the proportion of households earning between two-thirds and twice the median disposable income – is now smaller than anywhere else (Kochhar, 2017), partly as a result of the increase in the proportion of the most disadvantaged (those earning less than two-thirds of the median income)! Observations by two researchers (Case & Deaton, 2017) regarding mortality rates for 50-year-olds are also alarming. They note, within this population, a spectacular rise in deaths due to drugs, alcohol or suicide: the death rate in this group has almost trebled since the beginning of the 1990s, exceeding 80 per 100,000 inhabitants in the United States, whereas they have steadily fallen in most of the other developed countries. The authors also observe that while mortality rates for 50-year-olds have continued to decline in most developed countries, in the United States they have risen since the early 1990s for white non-Hispanics. Here again, the populations most affected are the least qualified: the mortality rate for whites in the 50-54 group with no more than a high school diploma has substantially increased. Note, however, that while the mortality rate for 50-year-olds has continued to fall in the case of the Hispanic population and even more for the black population, for the latter it remained substantially higher than for the rest of the population (Graph 6).

Graph 6. Mortality for men and women aged 50 to 54, 1999-2015 and 1989-2015 (deaths per 100,000)



Source: Case & Deaton (2017).

These symptoms suggest that the United States, while still the trailblazer in terms of the strength of its economy and its capacity for innovation, has now reached a social impasse. Following the rapid development the country has experienced, with its accompanying change in the composition of activity, the aversion to public intervention that was once a source of dynamism has become a cause of social disintegration. The evolution in the composition of demand for firms' products, technical progress but also the greater openness to international trade have in fact transformed the nature of the jobs available, just when policies aimed at facilitating this transformation - or mitigating its consequences - remained particularly hesitant. It is the determinants of this transformation of the US economy into a 'tertiary' economy that will now be described, before going on to examine the consequences for employment and the formation of household income.

2. 'TERTIARISATION' OF INCOME

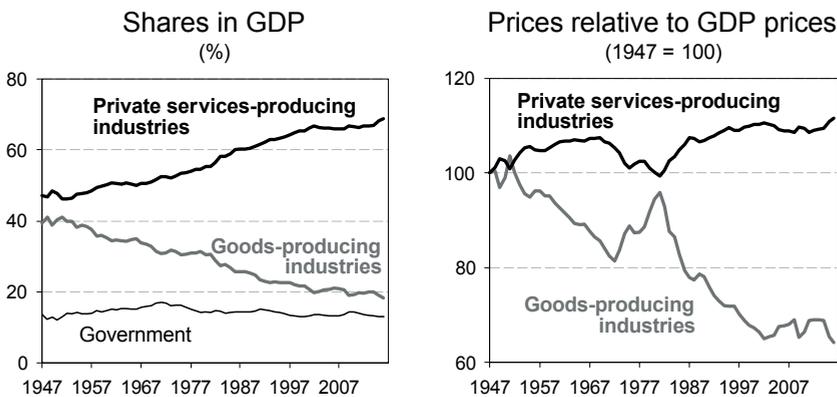
Between the end of World War II and the beginning of the 21st century, the sectoral composition of American GDP underwent profound changes. While the public sector's share remained relatively stable, the structure of private value added was considerably modified, with the share of GDP accounted for by the goods-producing sectors (manufacturing, construction, agriculture, mining) cut by half to less than 20% and that of the service-producing sectors increasing by more than 20 percentage points. This 'tertiarisation', in which most of the other industrial economies also seem to be currently engaged, was already becoming discernible several decades ago. In the middle of the 20th century, Colin Clark [1940] noted, concerning the developed economies of the time: "As real income per head increases, it is quite clear that the relative demand for agricultural products falls all the time and that the relative demand for manufacture first rises, and then falls in favour of services." While predictable, this evolution was nonetheless particularly marked in the United States and the aim of this chapter is to discuss the underlying determining factors. Two preliminary remarks have to be made, however: evolutions in relative prices have played a decisive role in the shift in the sectoral composition of value added; and this shift is due to the increase in importance of only a handful of service activities.

A major shift in relative prices

The change in the composition of national income has, in the United States as elsewhere, been in large part the reflection of the differentiated evolution in the prices at which firms in the goods and service sectors, respectively, 'sell' what they actually produce, i.e. their value added. Between these two broad sectors, not only have there been great differences in technical progress but also in competitive conditions and in the intensity of demand, with the prices of value added in the goods sector falling considerably by comparison with those in the service sector (Graph 7). *This distortion of relative prices on its own explains most of the decline in the relative importance of the goods sector in American GDP.* As an illustration, between 1947 and 2016 the value added of firms in the manufacturing sector, measured in volume this time, rose eightfold, i.e. almost as much as GDP, whereas the value

added of those in the agricultural sector, also measured in volume, rose six-fold. Clearly, the reality of the 'volumes' concerned may seem somewhat abstract, being the result, it must be remembered, of the efforts made by national accountants to take into account, period by period, the evolution not only in the quantities of the goods and services produced but also in their quality, i.e. the fact that a TV set produced today is associated with a 'volume' of production that is considerably greater than that of a set produced fifty years ago. Even allowing for the possible imperfections of this accounting for improvement in quality, the above multiples, compared with an increase in population amounting to only 50%, nevertheless show that even after 'tertiarisation', the American economy continues to produce a massive amount of goods. The value of these goods has sharply declined, however, by comparison with that of the production of services. And it is in terms of value and not volume that the sectoral distribution of national income is determined. The tertiarisation of the American economy therefore reflects a change in the relative importance of the sectors in which the formation of profits and wages takes place: almost four-fifths of the income of firms and households active in the private sector are now derived from services, compared to only one-half in the aftermath of World War II.

Graph 7. Relative evolution of goods and services sectors, 1947-2016



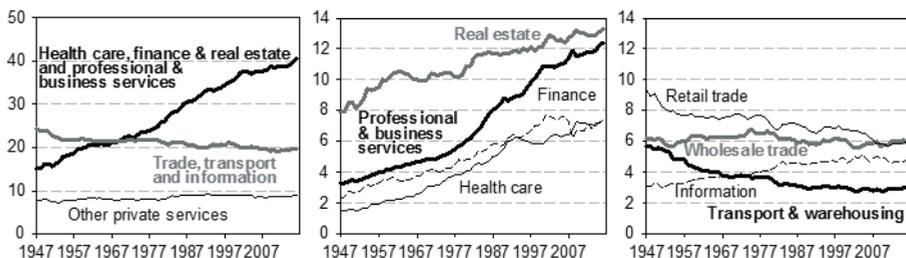
Note: The "goods-producing industries" consist of agriculture, forestry, fishing, and hunting; mining; construction and manufacturing. The "private services-producing industries" consist of utilities; wholesale trade; retail trade; transportation and warehousing; information; finance, insurance, real estate, rental, and leasing; professional and business services; educational services, healthcare, and social assistance; arts, entertainment, recreation, accommodation, and food services; and other services, except government.

Source: US Bureau of Economic Analysis.

The increased importance of a handful of tertiary sectors

Of the service sectors generating this evolution, three on their own provide practically the entire explanation: health, finance and real estate, together with professional and business services (Graph 8). The sectors that enable goods, persons and information to circulate (trade, transport and warehousing, information and communication) have as a group maintained a virtually unchanged weighting for half a century: their value added today accounts for roughly one-fifth of all market services. Admittedly, the relative importance of both retailing and transport has fallen slightly and that of wholesale trade has remained stable, but the relative importance of the information sector has risen to such an extent that the income derived from these activities, which are increasingly interlinked as the result of technical progress, has, taking the group as a whole, risen at practically the same rate as GDP.

Graph 8. Private service sectors' shares of GDP, 1947-2016 (%)



Note: In the left-hand chart, the “other private services” consist of utilities; educational services; arts, entertainment, recreation; accommodation, and food services; and other services, except government.

Source: US Bureau of Economic Analysis.

To identify the factors underlying this shift in the composition of value added to the detriment of the goods-producing sectors and in favour of certain components of the service sector, it is clearly first necessary to examine the evolution in the composition of demand for the output of American firms: given that the income of some is the expenditure of others, the fact that income formed in some of these sectors has increased may simply be due to the fact that American economic agents have changed the manner in which they spend their income. While it is true that final demand on the part of households and firms – consumption and investment – has indeed shifted in favour of services, this shift explains only part of the changes observed. Another major factor has been the evolution in inter-firm

relations: in the production of goods, firms are having increasing recourse to providers of services, the result being a rise in value added in the service sector at the expense of value added in the production of goods. These domestic factors do not suffice to explain the totality of the decline seen in the importance of the manufacturing sector. For this, a final factor has to be introduced, namely the increasing openness of the United States to the rest of the world, a tendency that has been accompanied by a continuous rise in the trade deficit and an increasingly marked international specialisation of the American economy in services activities.

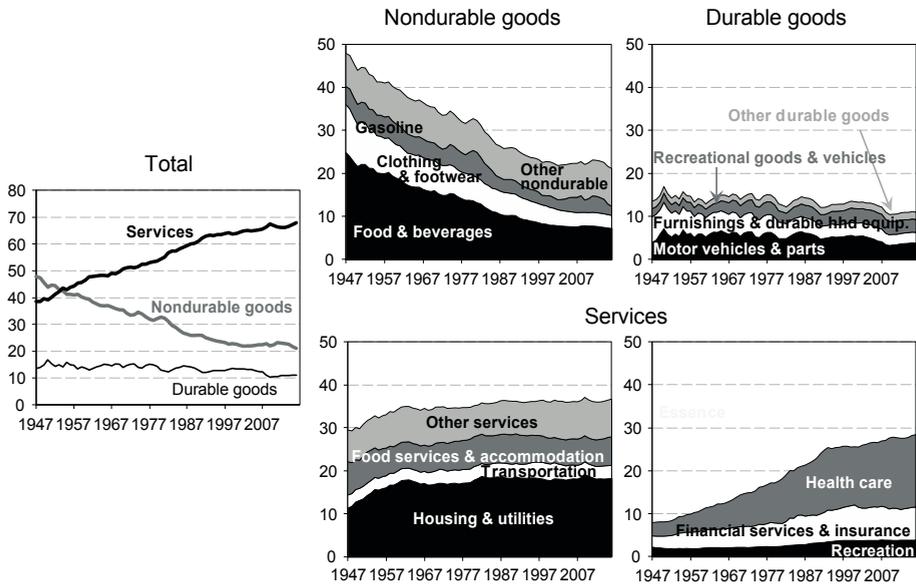
2.1 The role of household consumer spending

Consumer spending by households is the main component of American domestic demand. Today it accounts for more than two-thirds of GDP, compared with only 60% at the beginning of the 1950s. In seven decades, its composition has undergone substantial changes, with the share of services rising by almost 30 percentage points and that of non-durables (food and clothing) falling by 27 points (Graph 9), while that of durable goods fell by only 2 points. The shift in relative prices referred to earlier played a particularly important role in this respect. Despite the spectacular evolution in the share of services in household spending, the 'volume' of the services consumed rose in line with consumption as a whole.

A decline in the importance of purchases of consumer goods

Since 1947, prices of goods, especially durables, have increased much less rapidly than those of services purchased by households (Graph 10). At a time when durable goods were declining slightly as a share of households' spending, *in volume terms* their consumption of these goods has in fact risen distinctly faster than that of services, driven mainly by a spectacular growth in purchases of electronic and computer-related goods. The "recreational goods" of which they form part now account for a larger share of durable goods purchases than furnishing and household equipment and are approaching the level of automobiles. The impressive slump in the proportion of spending devoted to purchases of non-durables is explained, in part at least, by a growth in volume that is smaller than that of total consumption. The effect of this unfavourable tendency in terms of volume was compounded by the fact that the evolution in prices was also less rapid than for consumption as a whole.

Graph 9. Structure of American households' consumption expenditures, 1947-2016 (% of consumption)

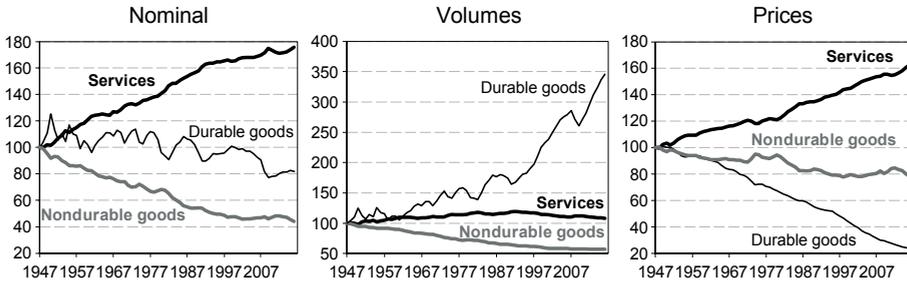


Note: Education services are included in “other services”: they amounted to 2.3% of total consumption and roughly 25% of the other services.

Source: US Bureau of Economic Analysis.

Examination of the difference between consumption of food and beverages and of other non-durable goods is revealing. While in value terms the respective growths in spending on food and clothing were similar, those of the respective volumes differed considerably. Spending on clothing, as indeed on “other non-durable goods” (pharmaceuticals, cosmetics, etc.), rose much faster: since 1947, consumption of clothing items rose each year on average almost two points faster than that of foodstuffs. This decline in the share of foodstuffs was one of the foreseeable consequences of economic development; spending on clothing, as on “other non-durables”, seems on the other hand to have been less sensitive to development. While, as a direct corollary, services have been taking an increasing share of households’ budgets, the process in this case was also far from homogeneous: since the mid-1960s at least, the importance of spending on housing, transport and food services and accommodation has hardly changed; spending on health services, financial services and, to a lesser extent, leisure activities has steadily increased. For many of these services, however, it is important to bear in mind the methods used to evaluate consumer spending.

Graph 10. Relative evolutions of consumption in value and in volume, 1947-2016
(divergences from total consumption, 1947 = 100)

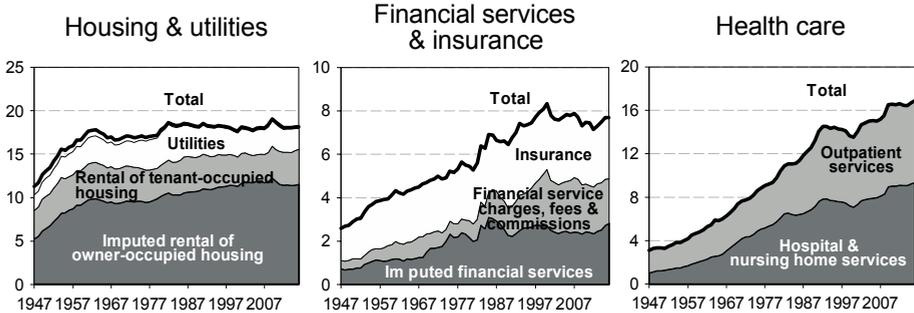


Source: US Bureau of Economic Analysis.

Stability of spending on housing

Spending on housing is today the largest item in household consumption, on level terms with health, accounting for roughly one-sixth of the total (Graph 11). It is important, however, to recall the manner in which national accountants deal with the “housing services” covered by this item. The bulk of the recorded spending – and hence also of the corresponding incomes – is ‘fictitious’. The expenditure of households owning their dwellings is different in nature from that of tenant households: instead of paying rent, they have to deal with maintenance and repair work, pay real estate taxes, service loans, and so on. This spending, while covering the ‘housing service’ which they consume free of charge, also contributes to increasing or preserving the value of their asset. For this reason, the national accountants seek to include in the figure for consumption only the value of housing services consumed by the owning households. To achieve this, they impute to the households a rent, which is supposed to correspond to the one they would pay if they were not owner-occupiers (see Box 2). This ‘imputation’ makes it possible, among other things, to prevent an economy with a high proportion of tenant-occupiers from reporting a higher GDP than one with a lower proportion. Given that the proportion of owner-occupiers in the United States was around 64% at the beginning of 2017, almost two-thirds of the recorded consumption of housing services is ‘imputed’ consumption. The slight increase since the early 1960s in the share of consumption taken by rents – actual and imputed – stems in large part from an observed upward tendency in rents actually paid that was slightly faster than that of consumer prices; given the way in which imputed housing services are calculated, this rise contributed to the increase in the importance of imputed housing services in relation to households’ consumer spending.

Graph 11. Share of housing, financial services and healthcare in consumption, 1947-2016 (%)

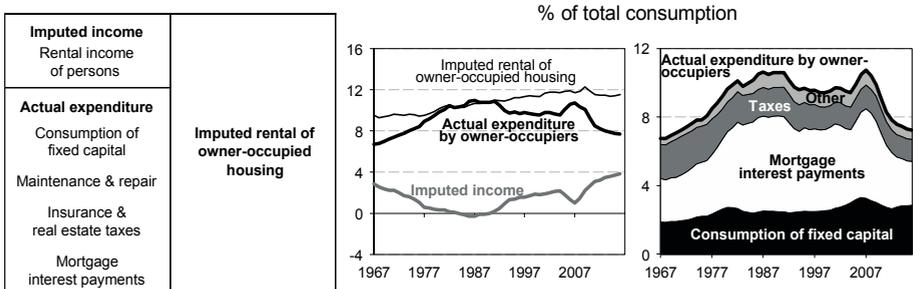


Source: US Bureau of Economic Analysis.

Box 2. Imputed housing services in the American national accounts

The housing services consumed by owner-occupiers are taken into account by means of an imputation corresponding to the rent that the owner would pay if he were a tenant (Mayerhauser & Reinsdorf, 2007). This imputed rent is estimated on the basis of surveys. A net rental income is then calculated as the difference between this imputed rent (the consumption of the housing service) and the actual expenditure by the owner-occupier household (repairs, interest on any mortgage loans, etc.).

Graph 12. Imputed housing services in the national accounts



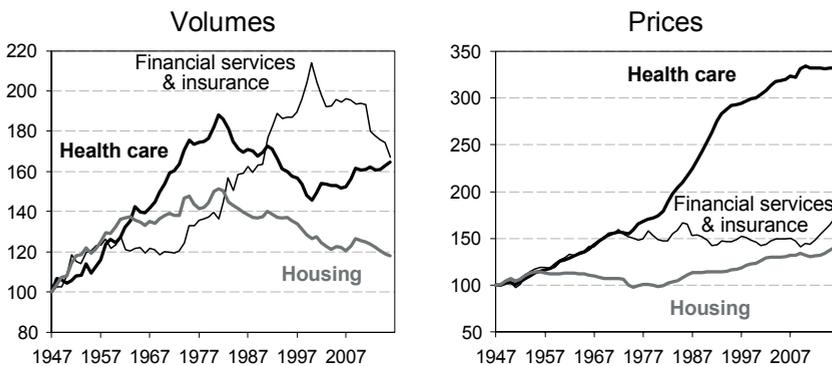
Source: US Bureau of Economic Analysis.

In reality as well as in the national accounts, only the real expenditure by the owner-occupiers will have an impact on household saving. When interest payments and maintenance expenditure increase, their savings will be reduced. A rise in imputed rents, on the other hand, will have no influence on their savings (Graph 12): the net rental income will increase by the amount of the rise in imputed rents. Since the mid-1990s, the consumption of housing services by owner-occupier households has risen faster than their actual expenditure; this disparity has been 'corrected' by the rise in their imputed income.

The increasing importance of financial services

Between 1947 and 2016, the share of financial services in household consumer spending has, for its part, risen substantially, from less than 3% to almost 8%. This figure, too, includes imputed elements calculated by the national accountants in order to take into account the particular nature of financial intermediaries' value added. It results in part from the interest rate spread they achieve by lending at rates higher than those at which they borrow. Given that, in relation to their income, the outstanding amounts of both households' deposits and borrowing have risen, their imputed spending on financial services has also risen. From the 1980s on, the importance of the consumption of financial services also expanded under the impact of actual expenditure: fees of all sorts, expenditure related to credit cards, holding fees, portfolio management costs (including those payable by pension funds, etc.). All in all, the share of financial services (including insurance) in household consumption rose by more than five points in seven decades, contributing in no small part to the rise in the share of services in GDP. Despite containing a certain imputed element, this evolution reflects a genuine reality, corresponding as it does to a huge upsurge in financial operations related to the exponential growth observed in transactions of all kinds; at the same time, seen in "value" terms, it reflects households' increased recourse to credit and to the services of third parties for the purpose of managing the financial wealth they have accumulated.

Graph 13. Consumption of financial services, housing services and health services, 1947-2016 (divergences from total consumption, 1947 = 100)



Data source: US Bureau of Economic Analysis.

... and of healthcare services

The evolution of spending on healthcare is by far the most spectacular and the most factual. This, too, is a foreseeable consequence of economic development, given that medical progress and its diffusion, combined with an increase in life expectancy and ageing of the population, lead naturally to a rise in this form of expenditure. This rise has been particularly marked in the American case: in half a century, it has more than tripled as a proportion of total consumption. Here again, prices have played a particularly important role (Graph 13), rising by an annual average of more than 5% in the past fifty years, compared with 3.5% for average consumer prices. This explains practically four-fifths of the increase in the share taken by healthcare.

The way in which this healthcare spending is currently financed was drastically modified by the introduction of the two federal programmes referred to in the previous chapter. At the end of the 1950s households were bearing the burden of more than 70% of healthcare spending, the bulk of the remainder being paid for by private insurance plans set up by employers or subscribed to on an individual basis. At the beginning of the 2010s, the proportion of healthcare paid for by households had fallen to below 20% and the proportion paid for by private insurance plans was close to 35% (McCully, 2011). The two public programmes, Medicare and Medicaid, set up in the mid-1960s and which have steadily increased their scope since then, now cover a little less than half of households' healthcare spending. Despite this progress, the United States today presents the special feature of being, of all the developed countries, the one in which the government's contribution as a share of healthcare spending is the lowest but where healthcare spending in relation to GDP is by far the highest (OECD, 2015). The performance of the American healthcare system cannot on its own justify this high level, however. It is due also to the complex interrelationships between the various players in the system – doctors, hospitals, laboratories, public and private insurers – which are a source of substantial administrative costs, inefficiency, and even economic rents.

2.2 The role of corporate demand

Since the beginning of the 1950s, corporate investment as a share of GDP, ignoring cyclical fluctuations, has risen slightly. However, its composition, like that of household consumption, has shown a tendency which has also contributed to the tertiarisation of national income. Productive investment

can take widely differing forms. Some of these are strictly physical, such as factories, commercial premises, office space, or purchases of the machinery and equipment to be installed in the structures created. But other types of investment are 'immaterial', resulting from R&D, acquisition of software, build-up of intellectual property (scientific, literary, artistic). These immaterial investments have a much higher services content, notably of professional services, than do buildings or equipment. Their importance has increased considerably in recent decades, rising from less than 1% of GDP at the beginning of the 1950s to almost 4% in 2016. They currently account for roughly one-third of corporate investment, compared with less than 10% just after World War II. In volume terms, the evolution of these immaterial investments has been even more spectacular: between 1947 and 2016 they rose at an annual rate of over 6.5%, two percentage points faster than investment in equipment. This evolution is all the more remarkable in that their prices, after having moved in line with those of equipment, have since the beginning of the 1990s grown slightly faster.

This rise in the prices of immaterial investment in relation to those of equipment may seem somewhat surprising. It is in fact due to a fall in the prices of software that was not as steep as for computer equipment. Here again, the decline in prices of durable goods stands out as one of the principal factors underlying the tertiarisation of the American economy. But it was not the only one. Many industrial firms showed a tendency to relocate the manufacturing process, especially for electronic and computer equipment, maintaining on US soil only the design and marketing activities. For this reason, some are now classified in the wholesale trade sector (Byrne et al., 2013). In part at least, therefore, investment in the computer equipment produced by these firms is the source of US value added in services.

The contribution of outsourcing to the intermediate consumption of services

However, the role of corporate demand in this tertiarisation of the economy is far from being restricted to this shift in the pattern of firms' investment spending. In recent decades, firms have also substantially modified the organisation of their production. On the one hand, they have outsourced an increasing proportion of tasks not directly linked to their main business: cleaning and maintenance and security are obvious examples, but accounting or IT functions have also been subcontracted to external service providers, while at the same time there has been increasing recourse to interim agencies. In parallel with this demand for corporate support services,

there has been an expansion of demand for professional services of a legal, scientific, financial or strategic nature, these services being supplied by consultants or firms specialising in these fields.

This increasing recourse to outside firms for the provision of services of both low and high value added has been reflected in an increase in intermediate consumption of services: instead of paying wages directly – and having to provide the social benefits laid down through collective bargaining – to employees not directly involved in their main activity, businesses purchase services from specialised firms, as and when needed. In so doing they also concede to these outside firms part of their value added. The same takes place when, instead of immobilising their capital by purchasing the buildings or vehicles they need in order to function, they rent them from others specialising in such activity. Between the beginning of the 1970s and the mid-1990s, purchases of services as a proportion of total intermediate consumption by firms producing either goods or services rose considerably and now stand at 65%. This tendency will be intensified in the future as the result of recourse to cloud computing, a possibility which in fact leads firms to purchase the external services rather than to increase their own hardware investment. All in all, the outsourcing, of which this consumption is the bookkeeping reflection, explains, for the most part, the rise in the share of GDP taken by professional and business services. It also partly explains a similar tendency in the real estate and finance sector.

The forces tending to distort the structure of the various components of demand for the produce of American firms may in each case have been specific, but they nevertheless acted in the same direction, with an increase in the demand for services often at the expense of demand for goods. Taken together, these forces led to an increase in the share of value added of the three main groups of private services referred to at the beginning of this chapter. In addition, the relative stability as a share of GDP of public spending on goods and services was itself also accompanied by a decline in the proportion of purchases of goods by the state, linked in particular to the slump in the importance of public investment. The most dynamic component of public spending concerned the production of public services: at a time when the share of GDP taken by defence services was in steep decline (more than halving between the beginning of the 1960s and the middle of the 2010s), that of education services, after climbing during the 1960s, subsequently stabilised at between 4 and 5 GDP points; activities relating to public order and safety showed steady progress, rising during these same decades from 1 to 2 GDP points.

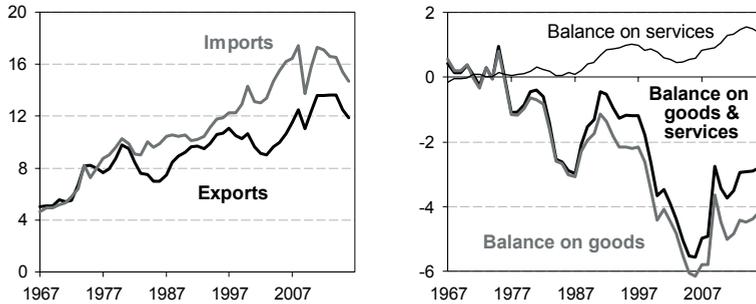
2.3 The role of openness to foreign trade

This rise in the proportion of services in domestic demand and production nevertheless fails to explain the most spectacular change, namely the collapse of the goods-producing sectors' share of GDP. Admittedly, as shown earlier, for several decades the share of industrial products in domestic demand has steadily diminished. However, as a percentage of GDP it has fallen by only 12 points since the beginning of the 1960s, as compared with a larger fall of 20 points in manufacturing value added as a share of GDP. This contrast is the result of the increasing openness of the economy to imports from the rest of the world and the widening of the American external deficit that accompanied it, which in turn reflected continuous borrowing by US agents from the rest of the world, enabling the United States to spend more than it earned. An increasing share of domestic spending therefore had to be met through imports. The value of imported goods was all the greater in that, simultaneously with the opening up of the American economy to international trade, its own specialisation was also becoming tertiarised. It was in fact becoming an economy which, in its trade with the rest of the world, was a seller of services in order to purchase goods (Box 3). This new pattern of specialisation was reflected in increased net exports of services on the part of the United States, the result being that its net imports of goods increased even more than the widening of the current-account deficit would have implied on its own. The upshot was that not only did the share of manufactures in US domestic demand decline, but an increased proportion of the demand for these goods was met through imports especially from low-wage countries.

Box 3. Services: the key element in US international specialisation

Starting at the end of the 1960s, the US balance of trade in goods and services deteriorated sharply, while at the same time its openness to the outside world was increasing (Graph 14). In relation to GDP, this balance nevertheless declined substantially following the financial crisis, the figure being halved between 2007 and 2016. While the balance on trade and services is increasingly in surplus, that on trade in goods is still showing a substantial deficit.

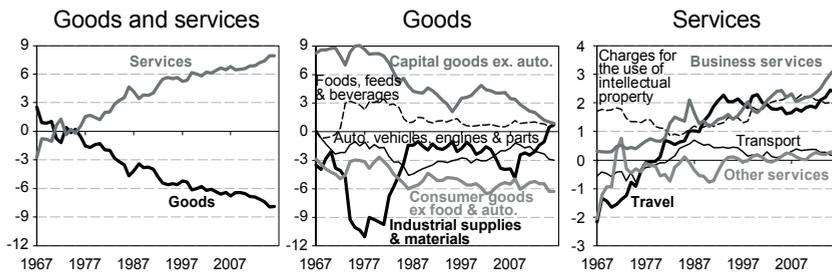
Graph 14. US exports, imports and trade balance in goods and services, 1967-2016 (% of GDP)



Source: US Bureau of Economic Analysis.

The persistence and scale of the US current-account deficit partly mask the spectacular evolution in the specialisation of the US economy during the past half-century. A country whose residents spend more than they earn – as is the case for the United States – can perfectly well be in deficit on all items of its external current account and still enjoy comparative advantages in certain sectors and disadvantages in others. This can be shown quite simply by seeing which items are more (or less) in deficit than the average. The CEPII comparative advantage indicator makes it possible precisely to observe the evolution in a country’s strong and weak points in its international trade by looking at the contribution of each type of product or service to the balance on its current trade (by construction, the sum of all these contributions is equal to zero). The evolution in the international specialisation of the American economy in the past several decades emerges clearly, reflecting quite closely that in its productive system: more than ever, the US economy is today an exporter of services in exchange for goods (Graph 15).

Graph 15. Comparative advantages and disadvantages, 1967-2016 (contributions to the balance of goods and services, % of total trade)



Note: Business services include maintenance and repair services, insurance services, financial services, telecommunication, computer and information services and other business services.

Sources: US Bureau of Economic Analysis; US Census Bureau and authors’ calculations.

Detailed examination of the sectoral evolutions is also enlightening. The contribution of the capital goods sector, which had been the US economy's strong point during the 1960s, has steadily declined (it should be remembered that this sector includes computer equipment); that of consumer goods (excluding cars) has followed a virtually parallel course, to the point of now becoming the economy's weak point. The contribution of commodities, for its part, has followed the opposite course: inasmuch as energy dominates this item, the evolution in the oil price and the exploitation of shale oil explain why, after having been sharply negative during the 1970s, the contribution of commodities (including refined petroleum products) has ceased to be a US weak point – and could even in the future become a strong point if the oil price were to rise.

Turning now to details of the contribution of various service activities, these show evolutions on a smaller scale but just as significant: the improvement in the contribution of the “travel” item – which includes, among other things, spending by foreign students attending American universities – has been remarkable, turning positive during the 1980s. The same is true of services to firms (including financial services) and, to a smaller extent, of income from intellectual property.

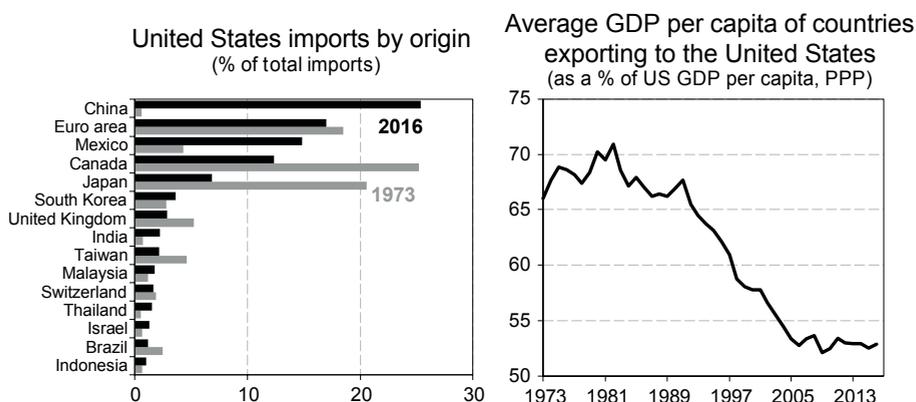
All in all, the position of the United States in world trade in services has strengthened considerably. American firms not only in the finance and insurance sectors but also in manufacturing are the largest ‘exporters’ of services. The latter in fact receive substantial income from intellectual property and supply firms in the rest of the world with support services (for example, repair and maintenance).

One final point deserves to be highlighted: the international role played by US firms goes well beyond their activity based in the United States itself, especially as regards services. Since the mid-2000s, sales of services by foreign affiliates of American firms have grown even more rapidly than those of US-located firms. These sales do not appear in the figures for American exports. Unlike branches, these subsidiaries are in fact legal entities distinct from their parent companies and are treated as resident in the countries where they operate. Because for many types of service proximity on the ground is essential, multinational firms have tended to supply their foreign markets largely through these affiliates. In 2014, net sales of services on the part of these subsidiaries were close to \$600 billion, more than twice the amount of net exports of services from the United States itself.

Pressure concentrated on the manufacturing wage bill

The penetration of the American market accelerated sharply from the early 1990s on, first through the conclusion of a free-trade treaty with Mexico and Canada and then, some years later, through China's membership in the World Trade Organisation, which gave permanency to its access to the US market. The United States, whose imports had previously come from countries with fairly similar levels of development, opened up to countries whose levels of development – and hence of wage rates – were much lower than its own: this can be clearly seen from the widening of the gap between United States GDP per inhabitant and the average of its supplier countries (Graph 16).

Graph 16. Origin of US imports and level of development of supplier countries, 1973-2016



Sources: Federal Reserve, International Monetary Fund, Maddison Project and authors' calculation.

This opening up to a new type of competitive rivalry, i.e. that of emerging countries, had a dual effect: in the first place, it led to increased penetration by imported goods on the American market. At the end of the 2000s, imported apparel and footwear, for example, accounted for almost 70% of American consumers' purchases (McCully, 2011). This further intensified the erosion of the domestic manufacturing sector. Secondly, this new competition exerted downward pressure on the prices of goods produced in the United States: domestic producers, unable to improve the quality of their output sufficiently rapidly, were able to resist competition from producers in emerging regions only by cutting costs. The evolution of profits earned by firms in the two sectors – wholesale trade and

manufacturing – that played a central role in this increased penetration by manufactured products from the rest of the world clearly illustrates the interplay of forces acting during these years on the distribution of domestic income.

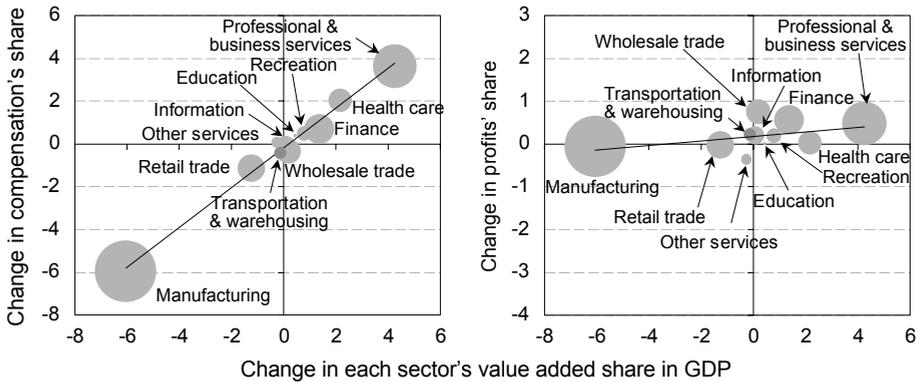
For the most part, these forces weighed heavily on one particular component of American value added, namely labour income. Domestic firms, or at least some of them, in fact took advantage of this opening up to low-wage countries to relocate in one way or another their production activities. Although the sector is relatively small in size, the evolution of profits accruing to the wholesale sector is in this case revealing. Firms in this sector in fact acted as bridgeheads for the increasing flows of imported goods. Remember that this is the part of their classification where national accountants locate not only firms of a purely commercial character but also others which, such as Apple, for example, have their products made abroad before importing them to the United States. From the early 2000s on, even though the share of their total wage bill in GDP was falling at the time, that of their profits was rising by almost one percentage point (from 1.3% of GDP in 2001 to more than 2% in 2015).

For the most part, however, it was in the manufacturing sector that the shift in the distribution of income was most massive, *with the share of wages in the sector's value added falling by more than 17 points*. The result in the case of industrial firms which had themselves also become major importers of goods was spectacular, with the industries most concerned by the penetration of imports being also those where the share of wages in value added fell the most (Elsby et al., 2013). This had one major consequence: whereas the share of GDP generated in the manufacturing sector fell substantially, the profits generated in the sector remained unchanged as a share of GDP. The interaction of productivity gains, domestic job losses and outsourcing, combined with pressure on workers' wage levels, meant that total wages in the sector bore the full brunt of the decline in the importance of manufacturing GDP: in just 20 years, between 1987 and 2007, the corresponding wage bill's share of GDP fell by no less than six percentage points.

The fact that the decline in the share of total wages in GDP fell by only 2 points over the same period is mainly due, as will be seen in the following chapter, to the rise in employment in a small number of service sectors. Despite the considerable evolution in the respective importance of value added in different sectors, the share of GDP taken by corporate profits in fact remained relatively stable. For the most part, the shift between relative value

added in the various sectors, in response to the reshaping of domestic spending and to the evolution in international trade, took place through shifts in total wages (Graph 17). Sectors whose share of GDP rose most – such as healthcare and services to firms – also saw a rise in the share of wages in their own value added. The consequences for American employment and household incomes of this new distribution of the total wage bill were massive.

Graph 17. Evolution in the relative size of sectors and of the shares of their total wages and profits in GDP, 1987-2015 (% of GDP)



Note: The diameters of the circles are proportional to each sector's share of GDP in 2000.

Sources: US Bureau of Economic Analysis and authors' calculations.

3. EMPLOYMENT TENDENCIES AND WIDENING INEQUALITIES

The sectoral tendencies outlined above explain in large measure the stagnation over several decades of real remuneration for many of the jobs available in the American economy. However, these factors did not prevent real wages from rising by 50% *on average* since the beginning of the 1980s. If one is looking for an explanation for why *half of full-time workers' wage incomes have since that date shown practically no further rise*, one must take into account the changes taking place in the sectoral composition of activity as well as the differing rates of technical progress experienced in the various sectors. These changes and this progress have not only shifted the distribution of the wage bill in favour of the service sectors, they have also led to a modification in the nature of the jobs available. The shrinking of the manufacturing sector has been accompanied by a sharp reduction in the share of middle-income and medium-skilled jobs while at the same time the jobs generated by the expansion of service activities have tended to be either relatively low-paid and low-skilled or, on the contrary, be situated at the higher end of the scale, even though, as will be seen, these differences are not as clear-cut as is often thought. These tendencies have tended to widen wage inequalities, with the weak bargaining power of the less skilled workers – or workers not possessing the desired skills – curbing growth at the lower end of the wage scale. The consequences of these inequalities for household incomes have furthermore been intensified by the even greater inequalities in non-wage incomes.

3.1 The polarisation of job creation

Examination of the sectoral structure of employment since the end of World War II gives a first notion of the scale of the changes that have taken place. The data used here are admittedly less than perfect, taking into account as they do both part-time and full-time jobs and being adjusted to deal with the many changes in the activity nomenclature. They nevertheless show how the modification in the structure of production has been reflected in the structure

of employment. Since the beginning of the 1950s, the proportion of employment accounted for by the goods-producing sectors has fallen from 40% to less than 15% in 2016 (Graph 18). Among these sectors, construction is the only one whose share has remained stable (5%); the already small shares of agriculture and extractive industries declined even further; as for manufacturing industry, its share of employment has fallen from almost 30% to as little as 8%. This evolution is obviously directly related to the decline in the goods-producing sectors' share of GDP, that of manufacturing in particular. However, it is also explained by productivity gains in these sectors that were greater than those seen in the rest of the economy. The increasing automation of production lines has made possible a spectacular reduction in employment at a time when the spectrum of industrial activities was also changing: activities related to repairs and maintenance, organisation, design and research, in particular, gradually took over from those directly concerned with production.²

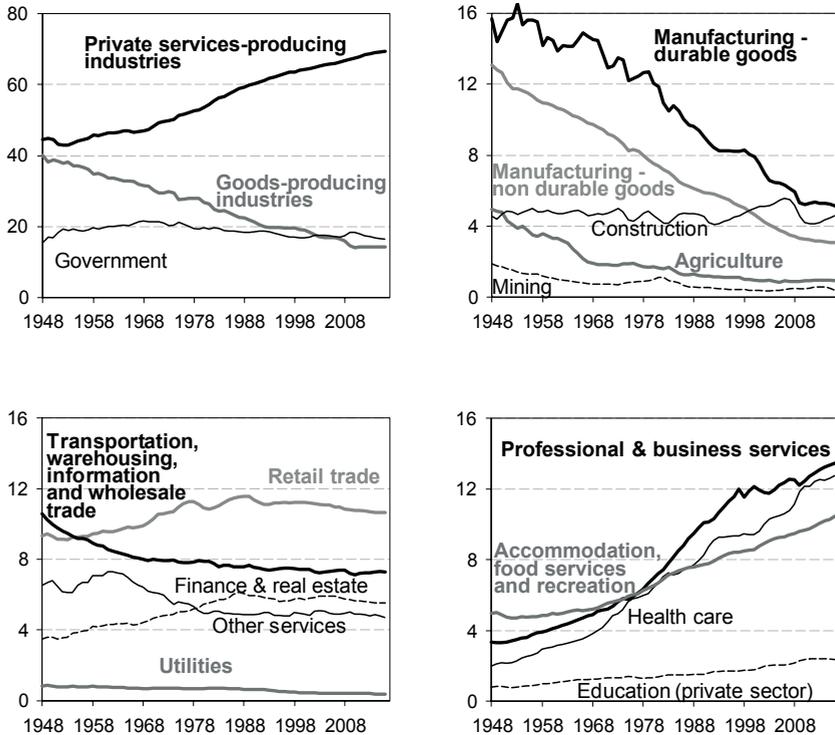
Growth in employment due to the services sector alone

As a consequence of automation and relocation, jobs in manufacturing have in total *shown no growth between 1970 and 2000*, while their erosion since then has been spectacular. With employment in the public sector accounting for less than one-fifth of all jobs, as it did immediately after the war, the American economy has for several decades owed the relative dynamism of its job creation to the private tertiary sector, whose share has risen from less than one-half to almost 70% of the total (Graph 18). However, not all these activities have contributed to the rise in the same manner. Since the beginning of the 1970s, the share of the trade, transport and information sectors has remained relatively stable at close to 20%, while that of finance, after rising until the mid-1980s, has stabilised at around 5% and that of "other services" fallen slightly, by contrast. The small share taken by education services, which rose from 1% to 2%, requires comment. These

² While job losses in manufacturing have been spectacular, the impact of robotisation, taken on its own, seems – so far, at least – to have been relatively modest: between 1990 and 2007, it is thought to have eliminated around 500,000 jobs (Acemoglu & Restrepo, 2017). The manufacturing sector is where most robots are to be found: almost 40% are used in the automobile industry, 20% in electronics and 10% in both metalworking and chemicals. Less advanced in the United States than in Europe, robotisation could nevertheless expand in the coming years without necessarily having dramatic effects: Acemoglu & Restrepo expect that it will reduce the number of available jobs by 1-2% between 2015 and 2025.

figures refer only to posts in the private sector, whereas most of the posts in education are found in the public sector, where their share appreciably increased up to the beginning of the 1970s.

Graph 18. Shares of employment, 1948-2016 (%)



Sources: US Bureau of Economic Analysis and authors' calculations.

Finally, just three groups of private service activities saw their share of employment rise sharply: that of healthcare rose from less than 2% to over 12%, with that of professional and business services rising in equally spectacular fashion, while that of leisure activities and accommodation and food services, which was the largest immediately after the war, rose slightly more modestly (merely doubling) to reach 10% in the mid-2010s. As in the case of the manufacturing sector, these contrasting evolutions are the reflection of the reshaping of domestic expenditure but also of widely differing productivity gains. With the diffusion of IT technologies, these gains were substantial in trade, finance and the information sectors but virtually non-existent in other service sectors. Since the war, measured in volume, value added per post in the “wholesale trade, transport and

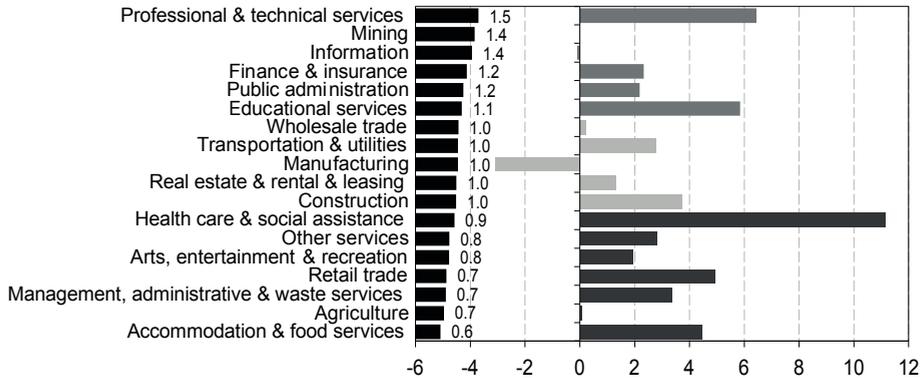
information” group grew at practically the same rate as in industry, but it stagnated in education and even fell in the health sector (which also includes social assistance). These evolutions naturally have to be interpreted with caution: calculating value added in “volume” is always a delicate matter, notably for certain service activities, healthcare in particular.

Job creation in low-remuneration sectors but for high-remuneration activities

A different set of data, available only since the beginning of the 1980s, contained in the Current Population Survey (in this case posts in private and public education are grouped together³) shows how these evolutions are reflected in remuneration. If sectors are classified according to their 2016 median wage (full-time equivalent) the conclusion is unequivocal. There were numerous job losses in the manufacturing industry, where the median wage is close to that in the economy as a whole, whereas on the other hand jobs were being created in those service sectors where remunerations are situated at the two extremes of the wage scale: in accommodation and food services, retail trade, business support services and healthcare, activities with relatively low remuneration, but also in sectors with median wages slightly above that of the economy (education) or substantially higher, such as public administration, finance or professional services (Graph 19). All in all, more than half of the 50 million net job creations between 1983 and 2016 were to be found in sectors with relatively low remuneration, while relatively few jobs were created, on a net basis, in sectors with wages close to the median for the economy, and barely one-third were to be found in sectors with high remuneration. A substantial proportion of low remuneration job creation took place in the healthcare sector, however, where the median remuneration is gradually approaching that of the economy as a whole, the discrepancy being 12% in 1991 but only 6% in 2016.

³ The CPS uses the NAICS: given that the public sector is confined to public administration in the narrow sense, teachers’ jobs are classified in the “education” sector.

Graph 19. Job creation by sector and wage level, 1983-2016
(change in employment, millions)

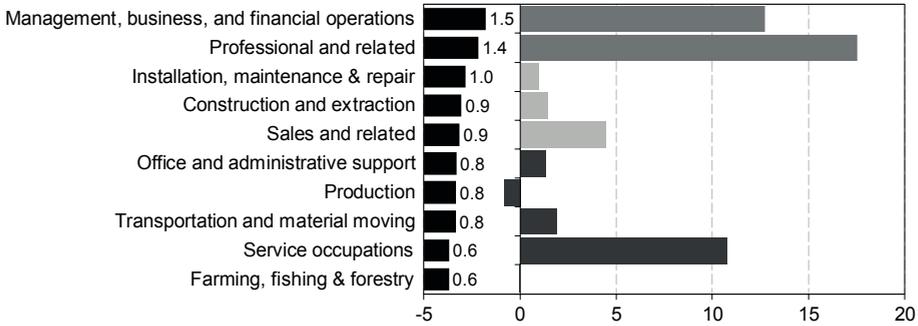


Note: Figures and black bars represent median usual weekly earnings of full-time workers for the sector as a ratio to the median of the economy in 2016.

Sources: US Bureau of Labor Statistics (Current Population Survey) and authors' calculations.

Examination of the evolution of employment, using the same set of data over the same period, but this time not by sector but by activity, sheds a somewhat different light on the changes that have taken place. Once again, the activities have been classified as a function of their 2016 median wage. Taking first the activities for which the remuneration is well below the median for the economy, it can be seen that the scale of net job creation in relatively unskilled service activities (guards, waiters, warehousemen, and so on) with very low remuneration is manifest. The absence of any increase, over a period of more than three decades, in the numbers of production-line and office workers, stands out equally clearly, with the steady erosion in the share of these jobs, carrying remuneration much closer to the median, reflecting the combined effects of import penetration and technical progress. However, the most spectacular evolution is to be found at the other end of the remuneration scale. During these same years, three-fifths of net job creations took place in the highest-paid activities, i.e. managers and specialists: in 2016 the median weekly wage in these two categories was between 40% and 50% above the median wage for the economy as a whole (Graph 20).

Graph 20. Job creation by occupations and wage level, 1983 and 2016
(change in employment, millions)



Note: Figures and black bars represent median usual weekly earnings of full-time workers for the sector as a ratio to the median of the economy in 2016.

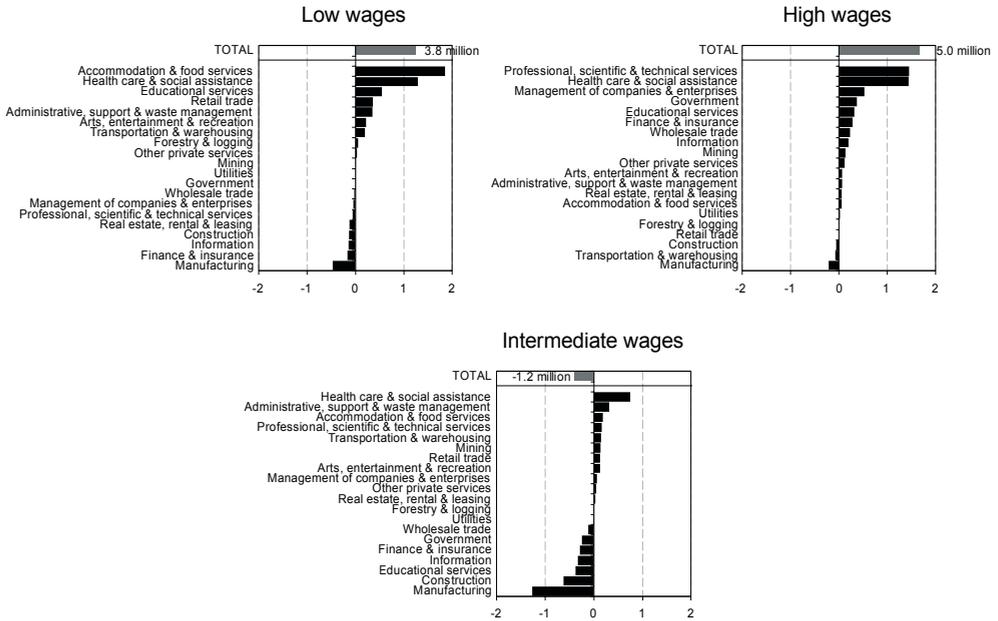
Sources: US Bureau of Labor Statistics (Current Population Survey) and authors' calculations.

The laborious emergence of a 'new middle'

More complete data from the Occupational Employment Statistics (available over a shorter period but making it possible to cross-tabulate roughly 800 activities and numerous sectors) permit reconciliation of the preceding apparently contradictory observations. They show that *a substantial proportion of the job creation in low-wage sectors in fact involved high-wage activities.*

The health sector provides a good illustration, containing as it does a wide variety of activities: in 2015, the median annual wage for jobs in the sector (full-time or part-time) ranged from \$22,000 for unskilled home helpers (i.e. distinctly less than the \$36,200 median wage for the economy as a whole) to almost \$190,000 for doctors or surgeons. Over the past ten years, the health sector has created jobs throughout the wage scale, but, here again, with a tendency towards concentration at the two ends of the scale. The combined analysis by sector and activity confirms this polarisation: between 2005 and 2015, 5 million posts were created at the top of the wage scale and almost 4 million at the bottom, whereas in the middle there were more than 1 million job destructions (Graph 21). This nevertheless highlights a new phenomenon, namely, the coexistence of what Harry Holzer (2015) has called the “two middles”.

Graph 21. Variations in employment by wage level and by sector, 2005-15 (millions)



Notes: The classification for the public sector differs between the CPS and the OES. In addition, the OES collects its data from firms whereas the CPS collects its data from households. The respective coverages are therefore not identical (for example, independent workers and non-remunerated family workers are included in the CPS but not in the OES). Conversely, workers performing several jobs are counted only once in the CPS but multiple times in the OES.

Sources: US Bureau of Labor Statistics (Occupational Employment Statistics) and authors' calculations.

For a long time, the middle of the remuneration scale consisted of production-line and clerical jobs requiring a low level of education and for which skills were often obtained 'on the job' and, as has just been shown, it is precisely these posts that have been eliminated by globalisation on the one hand and automation and computerisation on the other. However, in the middle of the scale new activities are emerging: this 'new middle' comprises, for example, repairs and maintenance technicians but also a number of healthcare activities (medical assistants, medical imaging technicians, for example) as well as the most dynamic elements of the business services sector or jobs in hotels and restaurants. The skills required for these new middle posts are difficult to obtain simply through experience. Failing adequate vocational training facilities for the transmission of skills to those liable to occupy these posts in the future, there is every likelihood that the

polarisation will persist. With the disappearance of jobs in the ‘old middle’, part of the under-trained manpower will have no choice but to move towards jobs at the bottom of the wage scale, thus helping to curb wage growth at this end.

Box 4. Increased importance of alternatives to conventional wage-earning jobs

In the United States, as elsewhere, employment is taking on an increasing diversity of forms: consultancy, subcontracting, interim work, ‘on demand’ work, even ‘payment by the job’, among others. Some are remunerated by wages, others are performed by independent workers. Some are well paid, some distinctly less so. The latter is particularly true in the case for jobs created by the platform economy, also called the gig economy (the term “gig” had previously described the participation of a musician at a concert in return for a fee).

More and more firms are therefore offering, for a commission, to put individuals in touch with one another for the purpose of establishing business relationships. Along the same lines as Uber, which brings drivers and passengers directly into contact, TaskRabbit is an example of a peer-to-peer employment marketplace enabling each new ‘provider’ to choose the category of task that he is prepared to carry out (furniture assembly, housework, etc.). Other sites propose the performance of repetitive tasks for a small fee – the observed average hourly payment is less than \$2 – along the lines of the microwork launched by Amazon at the end of 2005 (Amazon Mechanical Turk). Presented as introducing a new form of flexibility into the labour market, these jobs are often synonymous with hyper-flexibility as well as low pay.

How important are these new forms of employment and, among them, how many are ‘petty jobs’ and how many are very well paid (consultancies, for example)? The Bureau of Labor Statistics (BLS) has in the past carried out several surveys concerning these “contingent and alternative employment arrangements”. The only workers whose jobs are recorded in this enquiry are those whose principal employment relates to these non-conventional regimes. The latest available enquiry dates back to 2005*: at that time there were 10.3 million independent contractors, 2.5 on-call workers, 1.2 million temporary help agency workers and 0.8 million workers made available by contract firms. In total, these alternative forms of work accounted at the time for roughly 10% of total employment. While these new forms did not expand much between the mid-1990s and 2005 – rising from 9.3% of employment in 1995 to 10.1% in 2005 – there is every reason to believe that their share of employment has risen considerably since then. According to Katz & Krueger

(2016), they are estimated to have accounted for almost 16% of employment in 2015. The authors note that between 2005 and 2015, the totality of the observed growth in employment – some 7 million posts – was in these alternative forms, with standard contracts showing no net increase over the period.

However, this growth is by no means explained mainly by that of ‘petty jobs’ performed by the youngest workers. The authors estimate that only 0.5% of the labour force had its principal activity in the gig economy. In particular, they show that workers aged between 55 and 75 and having a high level of education are more likely than others to occupy an alternative job and that their share of employment rose more rapidly between 2005 and 2015 than that of younger and less educated workers. By inciting those who have lost their jobs – older workers in particular – to look for an alternative to traditional wage-earning employment, the depth of the 2007 recession is naturally a possible explanation of this phenomenon, at least to some extent. A later study nevertheless shows that the influence of the economic situation was marginal at best: “The increase in alternative work arrangements is much more the reflection of secular factors associated with rising inequality and technological changes leading to a breakup of the working place and a ‘segregation’ of the workers with the weakest bargaining power” (Katz & Krueger, 2017).

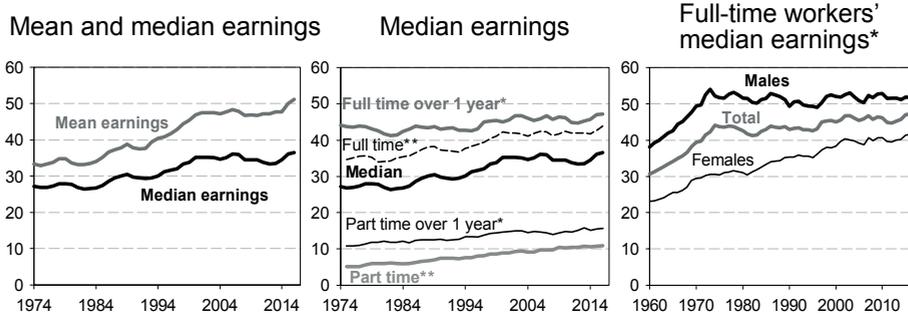
*The results of the BLS survey conducted in May 2017 will be published in 2018.

3.2 Factors underlying an increased divergence of wage levels

The stagnation – even decline – in real remuneration for a substantial portion of jobs began as far back as the early 1980s. The evolution between 1960 and 2016 in the median wage for full-time workers provides an initial indication: over some 50 years, its rise, adjusted for inflation, was only 50%, i.e. less than 1% per annum on average, with much of this (three-fifths) taking place before 1973, which marks the end of the period that Levy & Temin (2007) have named the “Golden Age”. The slow progress seen thereafter is explained by a reduction in the wage gap between men and women: *since the beginning of the 1970s, the median real wage of full-time jobs performed by men has shown no progress* (Graph 22). The change in the composition of jobs has reinforced the impact of the traditional factors underlying the differentiation of remuneration: in recent decades, with the notable exception of the male-female wage gap, most of these factors – age, experience, level of education,

and so on – have tended to accentuate the differences, often by weighing down the lowest remunerations.

Graph 22. Various measures of the median real wage, 1960-2016
(workers over 15, thousands of 2016 dollars)



* Persons who had a full-time (or part-time) job throughout the year, i.e. between 50 and 52 weeks. This means, for example, that workers who experienced more than two weeks' unemployment during the year are excluded.

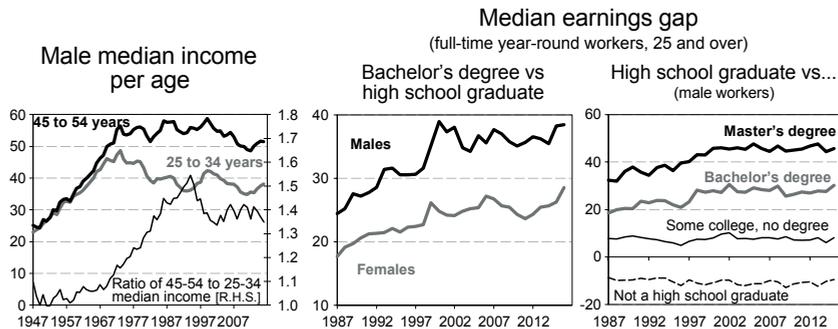
** Persons who had a full-time (or part-time) job for only part of the year.

Source: US Census Bureau.

Technical progress and the 'education 'premium'

Age and especially level of education seem to have become the determining factors. The remuneration gap between younger workers and their elders accordingly widened substantially during the 1970s and 1980s, above all through a decline in the median wage of younger workers: the remuneration gap between men aged 45-54 and those aged 25-34, after being close to 10% until the end of the 1960s, is now 40% (Graph 23). The effect of the 'education premium' has been even greater, with the widening of wage differences between higher-education graduates and high school graduates explaining almost two-thirds of the widening in income differences seen between 1980 and 2005 (Goldin & Katz, 2007). In 1987, males with a bachelor's degree had annual earnings that were on average \$18,000 (2016 dollars) more than those of high school graduates; in 2016 their counterpart earned \$30,000 more, a rise of more than 60% over the period (the rise was identical in the case of women). This 'premium', already significant, increased still further as a function of the diploma earned, with men obtaining a master's degree or a doctorate earning \$45,000 and almost \$80,000, respectively, more than those with a bachelor's degree. While the size of this education premium has ceased to climb since the beginning of the 2000s, its level still remains the highest among developed countries (Hanushek et al., 2013).

Graph 23. Inter-group wage inequalities (billions of 2016 dollars, median wages)



Sources: US Bureau of Labor Statistics and US Census Bureau.

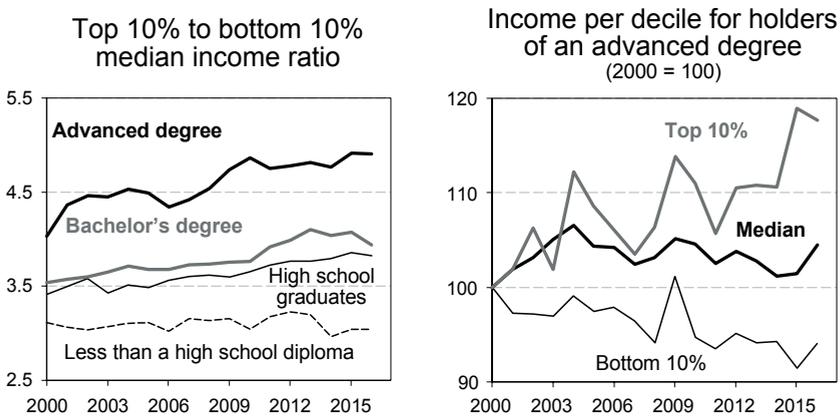
The spectacular rise in the education premium during the 1980s and 1990s is explained, in part at least, by a slowdown in the growth in the number of higher education graduates at a time when the demand for skilled manpower was rising strongly (Autor, 2014). Computerisation and automation have shifted the demand for labour in favour of tasks that are more complex, more productive and better paid: the new technologies have further improved the productivity of workers with the highest qualifications, contributing to a rise in their remuneration by comparison with those without any qualifications. The intermediate, more routine activities were tending at the same time to disappear, creating a tendency for jobs to become polarised, with highly skilled jobs at one extreme and, at the other, service jobs, admittedly of a routine nature but still difficult to replace by machines (a situation Autor named the “Polanyi paradox”, after the Hungarian epistemologist who observed that certain repetitive tasks were not easy to carry out using machines but could be easily executed even by unskilled workers).

‘Firm premiums’

These inequalities, between younger and older workers, with or without diplomas, are not the only ones to have widened. Within each of these groups, the already substantial gaps have widened further still, with workers having the most advanced degrees particularly affected. Between 2000 and 2016, the ratio between the average wage of the top decile and that of the bottom decile rose from four to almost five for male with post-graduate degree (Graph 24). Over this period, those in the bottom decile saw their remunerations fall by more than 5% in real terms, compared with a rise of almost 20% for the top decile. Compounding the traditional differentiating

factors, others have been identified by recent studies, including some stemming from inter-company differentials. These are thought to explain a significant proportion of the widening of wage inequalities seen since the end of the 1970s (Song et al., 2016). In the case of small and medium-sized enterprises, the differences reflect a phenomenon of ‘sorting and segregation’ of jobs which the outsourcing referred to in the previous chapter has intensified. This phenomenon leads to a concentration in certain firms of high-value-added activities and of employees who are better trained, more experienced, and hence better paid. At the same time, in other firms with low value-added, workers are less well-educated, less experienced and not only receive lower wages but are often deprived of social benefits and of career prospects.

Graph 24. *Inter-group wage inequalities by degree level, 2000-16*
(men over 25, working full-time)



Source: US Bureau of Labor Statistics.

For the very largest firms (those employing more than 10,000 workers) inequalities within the corporate structure also play a major role. In these firms, salaries towards the top of the scale rose by almost 140% between the beginning of the 1980s and the 2010s, mainly driven by the salaries – and the exercise of stock options – received by the top centile, or even by the highest-remunerated 0.25%. At the same time, wages at the bottom of the scale declined in real terms: far from increasing by 30% over the period, as in the small- and medium-sized enterprises, the median wage declined by 7%. This fall is explained by the reduction in the ‘scale premium’ received by the least-skilled workers in large firms, whose remuneration has been increasingly converging with that of workers in SMEs. A recent survey covering six main

sectors (manufacturing, wholesale trade, retail trade, finance, transport and utilities and “other services”) sheds additional light on the factors tending to compress this scale premium: Autor et al. (2017) report an increasingly marked concentration of activity (‘winner takes most’) in superstar firms like Facebook or Google, where the relative size of the wage bill is low and tending to decline still further.

Confronting market forces that tend to generate increased divergences in the evolution of remunerations, the erosion of the institutional arrangements intended to protect workers with the weakest bargaining power has permitted, as will now be shown, a sagging at the bottom of the wage scale.

Weakened trade unions

The decline in the rate of unionisation began as early as the end of the 1950s, but accelerated sharply during the 1970s, with the rate falling to barely more than 10% in the mid-2010s (Graph 25). This tendency helped to weaken the position of workers at the lower end of the scale, where the trade union presence seems to procure a more substantial ‘gain’. At the beginning of the 2010s, according to certain studies, this gain was more than 15% for a high school graduate compared with less than 5% for someone with a college degree. The decline in the rate of unionisation is estimated to explain one-fifth of the increase in the gap between the former and the latter (Mishel, 2012). These conclusions naturally have to be interpreted with caution, as structural effects can come into play. For example, given that men are more frequently in managerial positions and that salaries at this level are little affected by the presence of trade unions, one might be led to think – wrongly – that, on average, a trade union presence is of more benefit to women!

The role played by unionisation is all the more important in that many social benefits (health insurance, paid holidays) are decided through negotiation with the employer. This means that the weakening of the trade union presence has effects well beyond wage levels alone. Data taken from the ECEC (Employer Cost for Employee Compensation) show that not only are wages of trade union members higher than those of non-members (\$27.50 an hour compared to \$21.80 in 2016), their social benefits are also substantially greater (\$18 compared to \$8.90). Above all, unlike the situation concerning the wage gap, the difference in social benefits has increased since the beginning of the 2000s.

Because the procedure for the establishment of trade unions is often long-drawn-out and difficult to accomplish (requiring the positive vote of a

majority of workers) and sometimes even impossible (trade unions are banned in several states), alternative forms of association have emerged, such as worker centres. Originally set up to assist the least well-paid immigrant workers in the hotel and restaurant or construction sectors, their number has risen from a handful at the beginning of the 1990s to almost 250 in 2015. Many of them in fact maintain close links with trade unions. For example, the Organization United for Respect at Walmart (OUR Walmart) is backed by the United Food and Commercial Workers (UFCW) while the Laundry Workers Center United is backed by Workers United, itself affiliated with the SEIU (Service Employee International Union); Fight for 15 was set up by 200 fast-food workers in New York, who went on strike to obtain a wage of \$15 an hour, and is also close to the SEIU. By supporting these movements, trade unions hoped to see an increase in membership. The SEIU is thought to have spent more than \$19 million between 2012 and 2016 on the Fight for 15 campaign. Despite this, the rate of unionisation in hotels and restaurants has remained very low (1.7% in 2016) and the number of SEIU members, after doubling between 2000 and 2012, has since stagnated at around 2 million.

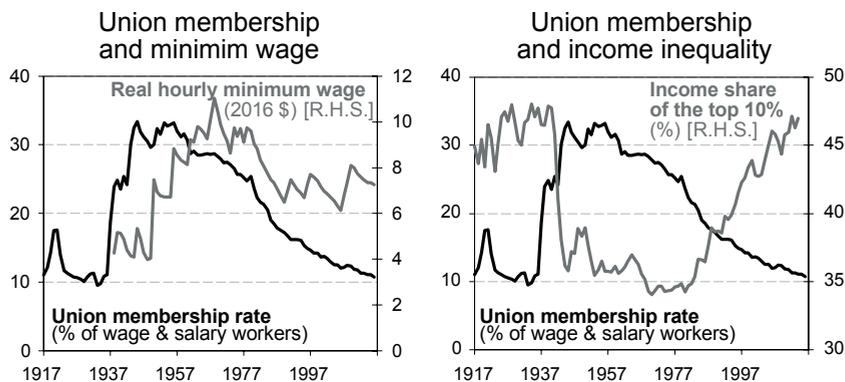
Erosion of the minimum wage

In addition to the reduced trade union presence, another factor contributing to the decline at the bottom of the wage scale has been the absence of a regular adjustment for inflation in the minimum wage. This minimum wage had been instituted to set a floor, in nominal terms at least, under the lowest wages, *regardless of the situation prevailing on the labour market*. For such a floor to be effective, however, there has to be regular revaluation in order to take account of the rise in the general level of prices. Failing this, there is the possibility of a decline in real wages at the bottom end of the distribution.

In the United States, the federal minimum wage – \$7.25 an hour in 2015 – applies in all the states. However, there are numerous derogations: farmworkers, seasonal workers, or workers aged less than 20 years can be paid below the minimum. The same is true of workers receiving regular gratuities, in which case the wage can be less than the minimum, on condition that the worker receives at least the equivalent amount. In 2015, 870,000 workers were paid the federal minimum wage and roughly 1.7 million were paid less than this amount. Taken together, these 2.6 million workers represented 3.3% of the hourly-paid and only 2% of the total wage-earning employment. The erosion of the purchasing power of the federal minimum, which was particularly marked between the end of the 1970s and

the end of the 1980s (Graph 25), nevertheless had important consequences throughout the lower part of the wage scale. The fall in real terms of the minimum wage has helped to widen the gap between the workers at the bottom of the scale and those in the middle, this being particularly true for women. One (not very recent) study even concluded that, during the 1980s, the totality of the increase in the gap between the median wage and that of the 10% at the bottom of the scale had been due to the erosion of the federal minimum (Lee, 1999). The more recent study by Autor et al. (2016) finds, for the same period, a more modest, but significant, effect: the absence of regular revaluation of the minimum wage is thought to explain 30% to 40% of the widening of the gap. Since the beginning of the 1990s, however, the contribution of the minimum wage to the intensification of inequalities seems to have been more modest.

Graph 25. Unionisation rate, inequalities and the minimum wage, 1917-2016



Sources: US Department of Labor; US Bureau of Labor Statistics; and Piketty et al. (2016).

3.3 Ever-increasing - and more enduring - inequalities

At the same time as market forces, which had been increasingly left to themselves, were curbing improvement in the lower half of the income scale, other factors, by contrast, were leading to a spectacular rise in remuneration for a minority of workers. The composition by profession of the 1% at the top of the scale is illuminating from this point of view: in the first place, in this percentile are to be found health professionals (doctors (14%) and dentists (2%)) but also lawyers (7%) and finance sector workers (6%) (Rothwell, 2016). Only 5% are to be found in the IT sector (software, system design, etc.). To a certain extent, of course, this observation supports the hypothesis of 'biased technical progress', according to which the new technologies mainly

improve the productivity of the most qualified workers, whose remunerations then increase by comparison with those of the unqualified. However, a 'super star' effect can be put forward as another possible explanation. At the beginning of the 1980s, Rosen (1981) pointed out that technical progress would encourage increasingly broad diffusion of certain products and services, providing situation rents for the makers or the providers, a good example being the market for recorded music: creation of specialised music channels, downloading of music files from internet, possibility of purchasing individual songs rather than complete albums. These novelties enabled musicians to reach a wider audience and to increase their sales and at the same time enhance their reputation and increase their concert revenue. This process is manifestly not confined to musicians and sports personalities (who account for only a small fraction of the top of the income scale), but applies also to doctors, lawyers and finance professionals who manage to achieve a 'celebrity premium'.

Inequalities heightened by the concentration of income from capital

The inter-household distribution of income from capital has helped to increase still further the inequalities stemming from the labour market. At the beginning of the 2010s, according to Congressional Budget Office (CBO) data, this income accounted for less than 4% of the income of households in the four lower quintiles but 13% of those in the upper quintile and as much as 30% in the case of the top centile. The Federal Reserve's "Survey of Consumer Finances", which has been available since 1989, shows that the distribution of the financial assets generating this income has become increasingly unequal: between 1989 and 2016, the average value of the financial assets of families in the two or even three lowest quintiles of income distribution has risen much less rapidly than that of households in the upper fourth and especially fifth quintiles (Table 1). The ratio between the financial assets of the top and bottom deciles accordingly rose from 30 to almost 90 in barely 25 years. In 2016, the *average* financial wealth of households in the lower quintile amounted to only \$26,000, compared with \$2.2 million for those in the top decile. The distribution of financial wealth is in fact even more unequal than these averages would suggest: the ratio between the *median* values of the financial assets of the top decile and the lowest quintile increased from 150 in 1989 to as much as 870 in 2016. Adjusted for inflation, the median value of assets held by the two lowest quintiles declined by almost 50% between 1987 and 2016 and that of the central quintile stagnated, whereas that of the two upper quintiles doubled or even trebled. Turning now to the distribution of net wealth – the value of financial and real estate

assets after deduction of debt – the share owned by the least well-off 90% of families has steadily been eroded, falling from 33% in 1989 to less than 23% in 2016. Over the same period the share of net wealth held by the richest 1%, for its part, rose from 30% to almost 40%.

*Table 1. Financial assets as a function of income distribution
(thousands of 2016 dollars)*

	Mean value of holdings			Median value of holdings		
	1989	2016	Change over 1989-2016	1989	2016	Change over 1989-2016
1 st quintile	22.4	26.1	16%	1.9	0.9	-50%
2 nd quintile	44.1	46.6	6%	8.2	4.9	-40%
3 rd quintile	59.6	93.3	56%	15.7	18.7	19%
4 th quintile	98.5	183.7	86%	28.2	63.2	124%
9 th decile	137.3	417.1	204%	55.2	178.6	223%
10 th decile	702.3	2,230.9	218%	276.2	818.5	196%
10 th decile / 1 st quintile	31.3	85.6		148.0	870.8	

Source: Survey of Consumer Finances.

Inequalities only slightly diminished by mobility

The observations made so far relate to the evolution in the distribution of remunerations and not the incomes received by a given wage-earner. By changing jobs or obtaining a raise, a worker can move along the wage scale and this mobility can reduce the inequality in the distribution of remuneration, seen this time not for a given year but for a longer period or even for the totality of working life. Regardless of the definition or of the particular time-horizon chosen, this mobility is far from being particularly great in the United States and, in particular, seems to have increased very little over time.

In the short term, wage mobility is fairly limited. This is shown by data from the Social Security Administration concerning the wage income of individuals aged from 25 to 60. Kopczuk et al. (2010) report a strong correlation between the wage received by an individual in a given year and that received a year earlier. The results for a longer period (five years) are similar. Over a longer period still, mobility appears to be slightly higher but still quite low. The probability of moving out of the lower two quintiles to

the next higher quintile in the space of 20 years is around 5%. While this probability has risen slightly since 1950, this is solely because of greater mobility for women: mobility for men has remained relatively stable over the period, with even a slight downward tendency in the past two decades. Using different data, Auten et al. (2013) show that long-term mobility, like shorter-term mobility, is lower for the two extreme quintiles than for the central quintiles: between 1987 and 2007 roughly half of the households in the lowest and highest quintiles remained in the same one, compared with just over a quarter in the case of the households in the three intermediate quintiles. On the other hand, mobility seems greater at the extremes of income distribution: only a quarter of the 1% with the highest incomes were in the same position 20 years later (although 70% remained in the top decile!).

Not only has there been no tendency for mobility defined in this manner (movement during working life from one quintile to another) to increase, but income received over a complete career has tended to decline for successive generations, at least in the case of men: the median real income over a complete working life for men entering the labour market at the beginning of the 1980s, as stressed in Chapter I, was at least 10% lower than for those entering the labour market in 1967. More worrying still, this lifetime income has declined in the case of more than three-quarters of men, the difference being greater the lower the income. Only those positioned in the top 10% of the distribution saw their incomes increase over the period. During these same years, women, on the other hand, saw their lifetime income increase. However, here again, it is those situated towards the top of the scale who saw their incomes increase most.

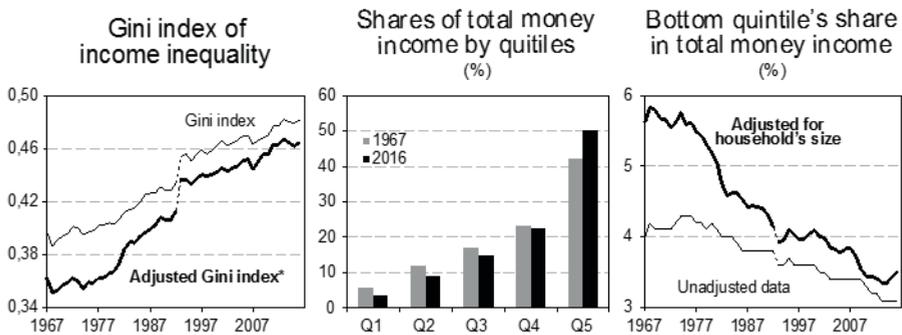
The determining role played by full employment in the evolution of the lowest incomes

The polarisation of job creation, the stagnation of wages at the bottom of the scale and the rapid growth in earnings for the upper echelons, combined with the concentration of income from capital, have led to an increase in income inequality that has marked American society all the more because mobility has barely increased as decades have passed. Only the more rapid growth in women's incomes and the increase in their wage mobility have produced any attenuation of this tendency, at least for certain households.

Examination of the breakdown, by quintiles, of total 'money income' received by households (Census Bureau data) makes it possible to measure the scale of the evolution in inequalities. These incomes, measured before tax, comprise labour income (including retirement pensions), income from

capital (excluding capital gains) and monetary transfers received (unemployment benefits, for example) but exclude all benefits or advantages in kind (food stamps, health insurance, etc.). The widening of inequalities has gone on continuously since the end of the 1970s. The Gini coefficient provides an initial indication of this: its rapid increase during the 1980s and 1990s reflects an ever-greater concentration of incomes. In 2015, the upper quintile received half the total income (as compared with slightly more than 40% at the end of the 1960s) while the bottom quintile received barely 3% (Graph 26). With each passing decade, *the share of monetary income received by the bottom three, or even four, quintiles has been steadily eroded.*

Graph 26. Measures of income dispersion, 1967-2016



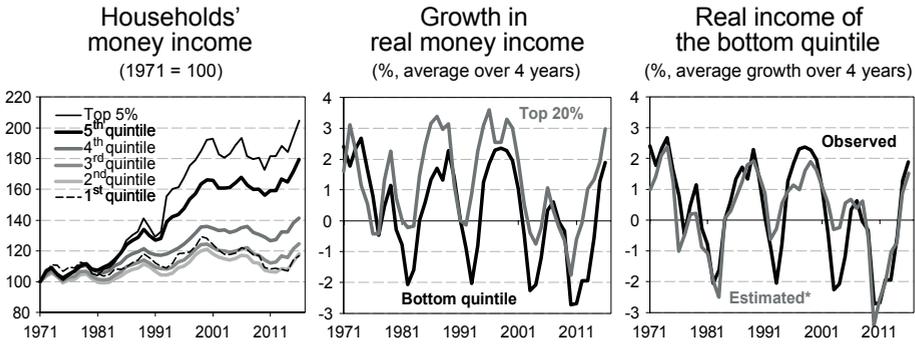
(*) Data adjusted to take account of differences in household size. For example, the equivalence-adjusted income would be the same for a single-person household with an income of \$30,000 and a family household with two adults and two children and an income of nearly \$65,000.

Source: US Census Bureau.

The consequences of widening inequalities are less worrying, however, if this is accompanied by growth in real incomes in general, in which case certain incomes simply grow more rapidly than others. But this was not the case in the United States in recent decades. With the exception of two particular periods during which incomes of the totality of households rose regardless of their position on the income scale – Lyndon Johnson's Great Society and the greater part of the 1990s – the widening of inequalities has most often gone hand-in-hand with stagnation or even decline in the standard of living of many Americans. Since 1973, the real income of households in the bottom quintile has stagnated and that of the next two quintiles has hardly fared better. At the same time, the quintile containing the better-off Americans saw income growth of almost 60% (and almost 80% in the top 5%).

The result is even more impressive if one considers the Census Bureau data, adjusted to take into account household size. After this adjustment, the share of monetary income accruing to the bottom quintile in 2016 was slightly higher, but its evolution since 1967 turns out to have been even more dramatic, having almost halved! In fact, since the end of the 1960s the average income of families in the bottom quintile has often stayed close to the poverty threshold (Donavan et al., 2016): as a ratio of this threshold, it has fluctuated between 1.13 in 1974 and 0.88 in 1993, to stand at 1 in 2016.

Graph 27. Household income by quintile*, 1971-2016 (2016 dollars, mean income)



(*) In the right-hand graph, the estimated variable is the result of the following regression:

$$dY.Q1_{t/t-4} = -0.9 (U_t - U^*_t)_{\text{expansion}} - 1.6 (U_{t-1} - U^*_{t-1})_{\text{recession}} - 0.04dOil + 1$$

where $dY.Q1$ is the average growth rate over four years of real income in the bottom quintile; U is the unemployment rate and U^* is the NAIRU (non-accelerating inflation rate of unemployment); and $dOil$ is the average growth rate over five years in the price of oil.

If instead of incomes in the bottom quintile, one takes those in the second or third quintiles, one obtains very similar results, with one notable exception: the higher elasticity of income in phases of recession than in phases of expansion disappears.

Source: US Census Bureau and authors' calculations.

One final feature of this evolution needs to be stressed. The continued widening of inequality since the beginning of the 2000s is not related to the growth in incomes for the top quintile but to the exceptionally marked erosion of lower incomes. For the first time since World War II, the Great Recession of 2007 was in fact accompanied by a substantial decline (by a cumulative total of 6% over four years) in the level of the highest incomes. However, the decline in the lowest incomes was more marked still. This draws attention to an essential characteristic of the American economy, namely that the evolution of household incomes, taking the entirety of the income scale, is highly cyclical. Even so, there is a notable difference between

the top and the bottom of this scale in that households at the top have rarely experienced a decline in their incomes. By contrast, for households in the lowest quintile, falls have been almost consistently the rule in cyclical troughs. The reason for this is simple: jobs for those at the bottom end of the wage scale are particularly sensitive to the situation on the labour market. Their remuneration rises only when this market is particularly tight, but will tend to fall once the unemployment rate picks up (Graph 27). The challenge which the US authorities have had to face since the beginning of the 1970s is therefore clear: given the quantity of labour, especially unskilled labour, 'liberated' by technical progress and international trade, *only by keeping the economy lastingly at full employment was it possible to prevent a collapse at the bottom end of the income distribution*. This aim, attributed to fiscal policy as a priority immediately after the war, has in the past three decades been taken over by monetary policy.

4. FISCAL POLICY UNDER CONSTRAINT

While fiscal policy can help in maintaining full employment, it is by no means the primary role of the budget to regulate the business cycle. In the United States, as elsewhere, its primary purpose is to enable the state to perform activities of general interest financed by taxation. In the United States, these activities are to a great extent shared between the individual states and local authorities on the one hand and the federal government on the other. With the exception of defence, specifically sovereign functions are taken in hand at local level and it is at this same level that most expenditure on public investment, in the broad sense, is carried out: this includes the installation of the physical infrastructure needed for the functioning of economic and social life as well as expenditure on education at primary, secondary and, in large part, university level. The federal government, for its part, is responsible for virtually all defence spending and for a large part of the cost of the major social programmes introduced as part of the New Deal and later with the War on Poverty.

Inasmuch as the benefits derived by individuals from these programmes and from other federal spending are not automatically linked to their contributions to their financing, the federal budget naturally becomes an instrument for redistribution among members of the population. By this means, some of the inequalities described in the previous chapter can be corrected. Similarly, the budgets of the individual states and local authorities make it possible, at their respective levels, to perform a further essential redistribution. Spending on infrastructure and education also makes a contribution – less direct, admittedly, but more lasting – to a reduction in inequalities and an increase in the lowest incomes. Thanks to this spending, residents of a particular state can receive a better education, a city can attract more dynamic enterprises, and so on. As a result, their residents will be able to obtain better remunerated jobs and to improve their positioning in the distribution of the national income. Moreover, given that, taken as a whole, residents in each state do not receive as much from the federal budget as they pay into it, the latter is also an instrument for the redistribution of the national income among the states.

The budgets of developed economies can also play a role in the stabilisation of the economic situation and the maintenance of full employment. In the case of the United States, this role is performed almost entirely by the federal budget: by adjusting the evolutions of its revenue or expenditure, the federal government can support activity in the event of a weakening of private demand. In the immediate aftermath of the Second World War, Congress gave the federal government the task of using the budget balance to ensure the maintenance of full employment. However, its capacity to meet this function has been trimmed back in recent decades. The aversion to public intervention and the desire to reduce the public tax burden, especially the burden of federal taxation, have helped to curb the rise in tax revenue without checking the upward tendency in expenditure, especially on the major social programmes in place. The result has been a virtually permanent deficit in the federal budget despite the substantial reduction in the burden of defence expenditure. The desire to cut back the resulting increase in public debt has become a permanent constraint on fiscal policy and has tended to overshadow the aim of contributing to the maintenance of full employment.

4.1 State and local authority budgets and the federal budget

At the beginning of the 20th century, the bulk of United States public expenditure was carried out at the level of individual states and local authorities. The federal constitution in fact left each state responsible for defining and regulating local living conditions and economic life and for ensuring the investment needed for its development. For the most part, therefore, spending by local government – states, counties, cities, etc. – is devoted to sovereign functions (police, the court system, public administration and so on) but also to education and to spending on infrastructure (roads, urban infrastructure, public buildings, water supply systems, etc.). After rising steadily just after the Second World War, notably under the impact of the rise in spending on education linked to the ‘baby boom’, operating expenditure by the states and local authorities remained close to 10% of GDP and their physical investment also remained stable, at close to 2% of GDP. This stability was due in part to the relatively strict budgetary rules applied at local level. Most states are in fact prohibited, often by their constitutions, from borrowing in order to finance current expenditure. To finance investment, states or local authorities are however entitled to issue bonds carrying a special tax advantage in that interest payments are exempted from federal taxes if received by residents.

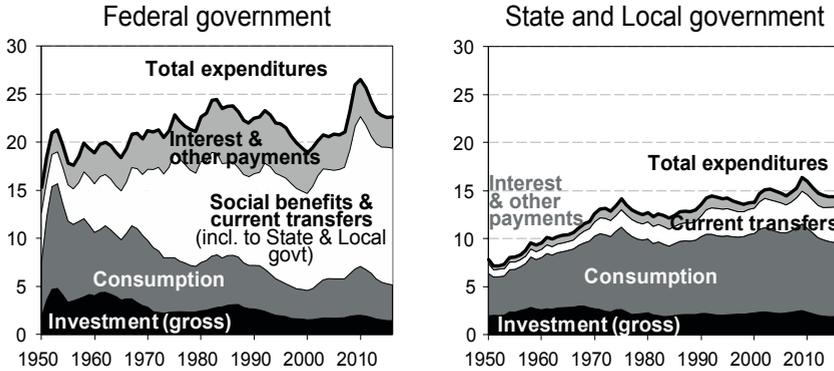
Furthermore, state governors are authorised to cut back committed expenditure, even in the course of the year if necessary, should budget revenue be lower than expected. However, in order to avoid having to take such drastic steps, states are permitted to build up reserves ('rainy day funds') enabling them to absorb a temporary decline in revenue: in normal times these reserves are sufficient to cover, on average, more than one month's expenditure.

The build-up of social programmes

Wars and the Great Depression produced far-reaching modifications in the relative size of the budgets of states and local authorities and that of the federal government. The two world wars, especially the second, led to an explosion in military spending (which accounted for almost 40% of GDP during the first half of the 1940s). This expenditure, almost entirely out of the federal budget, remained close to 10% of GDP until the end of the 1960s before declining steadily to only around 4% in the mid-2010s. After accounting for practically three-quarters of the discretionary spending in the federal budget – the part subjected to a vote in Congress for each fiscal year – defence spending now represents only one-half, whereas the other discretionary spending – civil expenditure for the functioning of the federal government – has accounted for a relatively stable share of GDP for more than half a century, between 3% and 4%. Excluding transfers, total federal government spending – current expenditure, investment and interest payments – is now once again less than that of the states and local authorities.

The reduction in defence spending and the stability of civil discretionary spending nevertheless failed to prevent the federal budget from posting a continuous expansion under the impact of the rise in the social transfers for which it is almost exclusively responsible. Retirement and invalidity pensions paid by Social Security have steadily increased since the Second World War, reaching 5% of GDP in the mid-2010s; the Medicare and Medicaid programmes expanded substantially, reaching more than 6% of GDP at the same date. The income-related insurance programmes (unemployment insurance, in particular), which are also paid out of the federal budget, impose, on the other hand, a burden which, while it fluctuates with the business cycle, has remained stable on average at close to 1.5% of GDP. All in all, more than half the federal budget is now spent on transfers to households (Graph 28).

Graph 28. Public spending as a share of GDP, 1950-2016 (%)



Source: US Bureau of Economic Analysis.

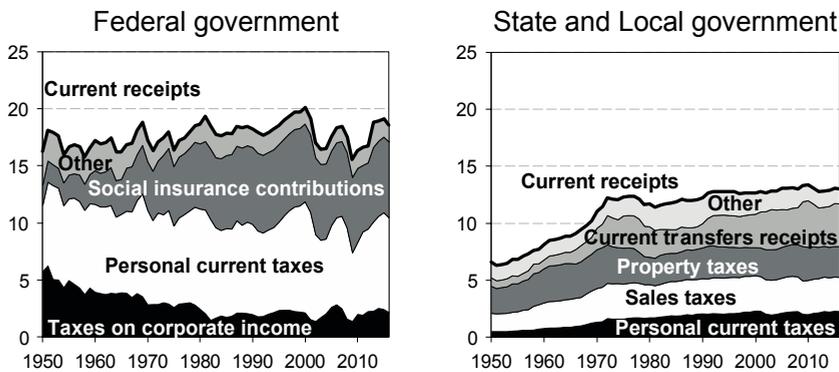
Income tax and social contributions, the principal resources of the federal government

Turning now to the revenue side of this budget, the most striking tendency has been the rise in payroll taxes. Their rate (just over 15% in the mid-2010s) is applied to all salaried income up to a certain ceiling. These contributions, specifically intended to finance Medicare and retirement insurance, are placed in dedicated trust funds, and amounted to the equivalent of almost 7% of GDP in 2016. In parallel with the rise in the amount of social contributions, there has been a distinct decline in the role of corporation tax, the burden of which fell from 4% of GDP at the end of the 1960s to 2% in the mid-2010s. Personal income tax, averaging close to 8% of GDP, remains (ignoring short-term cyclical fluctuations) the most important and most stable of the sources of federal revenue.

The sources of income in the case of the states and local authorities are more diverse than for the federal government (Graph 29). Certain states also impose taxes on personal income, or even on company profits (although at rates much lower than in the case of the federal government). States also levy social contributions (particularly to fund the normal unemployment insurance regimes that are specific to each particular state), but they also levy sales taxes at rates set by themselves. In addition, the local authorities derive a substantial portion of their revenue from taxes on real estate ownership. All in all, since the beginning of the 1970s the tax receipts of states and local authorities have amounted to barely more than 8% of GDP, in other words, a much smaller amount than the tax revenue in the federal budget. However, these resources are supplemented by increasingly large federal transfers, partly to finance some of the expenditure by each state related to the

Medicaid programme (this portion, amounting to at least one-half, is greater the smaller the state's income per head). In addition, the federal government covers the administrative costs of the normal unemployment insurance of each state, while the latter pays the cost of unemployment benefit (lasting a maximum of 26 weeks). A so-called 'extended' programme for 20 additional weeks can nevertheless be applied in states encountering special difficulties, in which case the cost is shared between the state and federal governments. Lastly, at times of severe recession, emergency programmes can be implemented, entirely financed by the federal budget. This was particularly the case between June 2008 and December 2013 at the time of the Great Recession.

Graph 29. Public revenue as a share of GDP, 1950-2016 (%)



Source: US Bureau of Economic Analysis.

4.2 Public budgets and the redistribution of national income

The development of an economy and its adaptation to international trade and to technical mutations are often achieved through budget spending. This is particularly true when the rapid disappearance of traditional industries calls for public investment intended to facilitate the emergence of new activities. It may then be necessary to install new infrastructure to attract forward-looking enterprises or to set up new training institutions to permit the reskilling of those put out of work. Sometimes, income transfers may be the only means of indemnifying the 'losers' in the globalisation or automation processes. In the United States, however, the relationship between local and federal budgets, as well as the nature of the existing transfer mechanisms, considerably limit the role of central government in

adapting the economy and society in general to far-reaching and rapid mutations of the kind seen in recent decades.

Redistribution among the federated states ...

This point can be illustrated by an initial observation, relating to the mechanisms for interstate redistribution via the federal budget. Differences in GDP per head among American states are in fact comparable to those existing within the eurozone. Excluding outliers, the ratios concerned range from one to two (only partially compensated by differences in price levels). Although obviously smaller than differences between individual households, these income differences are nevertheless substantial. If nothing occurs to correct them, the tax revenue of individual states, related to the number of inhabitants, will also differ by factors of one to two. It is important to note, therefore, that the capacity of each state to attract new activities and to improve the skill levels of its inhabitants depends directly on the budgetary resources at its disposal. And it is at the level of individual states and local authorities, as we have just seen, that the bulk of public investment, in the broad sense, is financed. For example, practically all education expenditure is financed by the local authorities, with the contribution from central government limited essentially (apart from the financing of certain types of R&D) to means-tested university grants and to guaranteeing the loans on which many students rely to finance their higher education.

The contribution of the federal government to the financing of infrastructure is somewhat more substantial (NASBO, 2016). Even so, more than two-thirds of this financing relies on local resources, half of which come from bond issues. The American Society of Civil Engineers has for many years been drawing attention to a worrying ageing of infrastructure, taking the United States as a whole. At the beginning of the 2010s, it estimated the unfunded cost of the locally-financed investment needed for road transport, school buildings and water systems in the period 2013-20 at almost \$2 trillion. While the existence of such a deficit is common to practically all states, it is particularly onerous for poorer regions. While almost half of school buildings suffer from a lack of necessary repairs, this proportion increases in proportion to the poverty of children (McNichol, 2016). And yet it is often in these same regions that additional public investment could do most to facilitate the adjustment to the structural mutations that the United States is now facing. However, these far-reaching mutations are sufficiently slow as not to provoke the extreme measures on the part of central government that would help to cope with them. It took an exceptional crisis

- the Great Depression - to persuade the federal government to free individual states from the constraint imposed by their individual investment capacities. During these dark years, the creation of the Tennessee Valley Authority was one of the rare episodes in which substantial federal resources were placed at the service of the transformation of states that were among the poorest in the country.

...essentially through differing contributions to the federal budget

Recent decades have seen no such mobilisation. This can be shown by comparing the GDP per head of each state with the payments of all kinds its residents receive from the federal budget. Whether one takes these payments in the broad sense (for example, including federal expenditure related to the servicemen stationed in the state or the contracts concluded by the federal government with local enterprises) or limiting the definition to explicit transfers from federal government to resident households or institutions (retirement pensions paid by Social Security, federal subsidies paid to the state itself, to local authorities or to enterprises), the conclusion is the same: related to the number of a state's inhabitants, *the amount of transfers received is independent of its relative level of development* (Malkin & Wilson, 2013).

This does not mean that the federal budget does not redistribute a significant portion of national income among the federated states: in relation to the number of inhabitants, the contribution of each state to the federal budget is indeed higher the more economically developed the state. However, the redistribution among the states takes place almost entirely through the modulation of the taxes paid by their inhabitants to the federal government and very little by means of the transfers and payments they receive from it: because federal taxation is progressive, residents in states with the lowest incomes are also those for whom the average tax rate is lowest. It is as if residents in the richest states are prepared to accept that the federal government should take a larger proportion of their income even though the services they receive from the centre are the same as for the poorer states. While this redistribution is a reality, it is not of a kind that would facilitate greater investment on the part of states with the least resources. *The fact that their residents pay less tax to the federal government does not in itself provide them with any additional finance.*

Inter-household redistribution more through taxes than through transfers

Turning now to observation, for the United States as a whole, of redistribution among households, either through the federal budget or those of states and local authorities, the conclusion remains the same: taking all these budgets together, this redistribution takes place much more through the taxes paid than through the transfers received. The first, most narrowly defined, measure uses the difference between the total taxes paid and the various transfers received, in cash or in kind, from a public institution. A second, broader, measure attributes to each individual a share of the benefits derived by each one, without distinction, as a result of the totality of the state's activities, not only of a sovereign nature but also in the form of education, infrastructure investment, etc. Regardless of the approach adopted, the conclusions are the same: broadly speaking, the redistribution of United States national income among households via public budgets is *much more a matter of the sums that each individual pays to the state than what he or she receives*.

Calculations by the Tax Foundation show this clearly by comparing, for 2012, what each family pays on average to the government (at federal and local level) with the amount it receives, according to its income before taxes and transfers. The benefit derived from the services provided by public authorities is in this calculation distributed uniformly among families (taking the view that the public deficit is not the source of a transfer from future generations⁴). One feature stands out: the transfers received and the services provided, in all their forms, are fairly similar per family (in the range of \$30,000-\$35,000) regardless of the quintile of income distribution concerned (Table 2). By contrast, the duties and taxes paid are no less than 20 times higher for families in the top quintile than for those in the bottom. This observation requires a certain qualification, however: given that the size of families in the top quintile is only about half that of families in the bottom one, the transfers received per head show greater differentiation than the

⁴ The existence of a budget deficit means that public spending is not entirely covered by the state's current revenue. Two approaches are then possible. One can either reduce all public spending proportionally and increase uniformly all levies and taxes paid by each individual by a total amount equal, in both cases to, half the deficit or make no changes in the results obtained, in which latter case the current generation benefits from a transfer from future generations and redistribution between households in the present generation is correspondingly reduced.

transfers per family. Even so, the table confirms the decisive role played by taxation, especially at federal level, in the redistribution of income in the United States. This preponderant role of federal taxation should come as no surprise. The resources of many states consist of non-progressive taxes (sales taxes in particular), whereas federal taxes are markedly progressive.

Table 2. Distributional effects of government fiscal policies on average families, 2012 (by income level, in dollars)

	All families	Bottom 20%	2 nd quintile	3 rd quintile	4 th quintile	Top 20%
Average market income	81,602	9,561	31,053	56,884	100,242	311,405
Average taxes paid (1)	31,824	6,331	11,913	20,429	35,325	122,217
- Federal	21,293	2,966	6,854	12,848	23,668	86,975
- State & local	10,530	3,365	5,059	7,581	11,657	35,242
Average spending received (2)	31,824	33,402	30,052	30,144	31,122	35,141
- Federal	21,293	24,125	20,266	20,225	19,579	21,402
- State & local	10,530	9,278	9,786	9,920	11,542	13,739
Average redistribution = (2) - (1)	0	27,071	18,139	9,715	-4,203	-87,076
- Federal	0	21,158	13,412	7,377	-4,089	-65,573
- State & local	0	5,913	4,727	2,339	-115	-21,503
Average income after redistribution	81,602	36,632	49,192	66,599	96,039	224,329

Source: Prante & Hodge (2013).

Major social programmes with fairly evenly distributed benefits

Using these figures to derive conclusions regarding the intensity of redistribution in the United States is no easy matter. Granted, Table 2 shows post-redistribution differences that are much smaller than before distribution: whereas initially the average income of families in the top quintile was 30 times that of families in the bottom quintile, redistribution via the budget brings this ratio down to 6! However, part of this spectacular reduction is explained by the benefits received by all households in the form of services provided by the government. As these benefits are in this case assumed to be the same for all, the income of the poorest households rises, as the result of this redistribution, relatively more than that of the richest. The bulk of the services provided by states and local authorities are of this type. Leaving aside sovereign expenditure, it is at this local level, as we have seen, that a large part of public spending on education and infrastructure is carried out. While the federal government also takes in hand certain activities of general interest – notably defence – whose benefits are assumed

here to be uniformly distributed, it is above all the principal source of the transfers, in cash or in kind, received by households. These transfers form part of programmes which in many cases are of a redistributive nature. Even so, the most substantial of them lead to the receipt of sums whose distribution is relatively even over much of the income scale.

This is the case, in particular, for the two principal programmes, Medicare and Social Security, whose benefits are reserved for elderly people, regardless of income. In order to benefit from Medicaid, it is necessary to be over 65 and to have paid the appropriate contributions for a period of at least five years. While these benefits are a function of each individual's income over the whole of his/her working life, the benefits received in a given year will, in principle, not differ much across the income scale. Things are somewhat different for the public pillar of the retirement pension system. Admittedly, each individual contributes in this case a fixed portion of income (up to an annual ceiling of roughly \$110,000 in the mid-2010s), but the retirement pension received will be a function of the past annual payments adjusted using coefficients that sharply increase the replacement rate for the lowest-paid and reduce it for the highest incomes⁵ (CBO, 2006). This progressivity (diminished, in reality, by the shorter life expectancy of the lower-paid) tends to compress differences in the amounts of individual pensions received from the federal government. The fact that the two major programmes both lead to transfers that tend to be distributed in relatively even fashion over a large part of the income scale obviously in no way diminishes their redistributive nature, if this is measured by the relative contribution to each individual's income. For those with no other source of income, the pension paid out by Social Security clearly means more than it does for someone receiving a supplementary income from a pension fund.

Social assistance reduced to basic needs

The federal programmes providing assistance to the lowest-income households or those with no income at all are the expression of a form of social solidarity limited in practice to meeting basic needs. Two programmes of aid in kind, aimed at the most disadvantaged – Medicaid for healthcare and SNAP (Supplemental Nutrition Assistance Program) for food stamps – are responsible for the bulk of this assistance. To these should be added the

⁵ The invalidity pensions paid by Social Security are the most redistributive, since they mainly benefit those who have received the lowest incomes whereas contributions are identical over much of the income distribution scale.

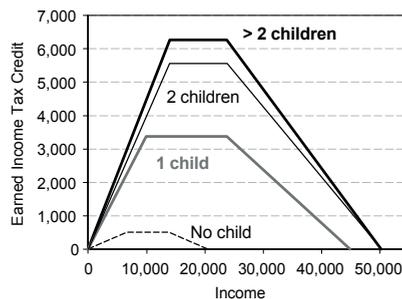
SSI (Supplemental Security Income), which provides monetary assistance to the least well-off citizens suffering from a disability, regardless of whether they have a job. The three taken together amount to almost two-thirds of federal spending on social assistance.

Moreover, alongside the unemployment insurance arrangements that, as we have seen, cover relatively short periods of unemployment, except in the event of exceptionally severe crises, only the EITC (Earned Income Tax Credit) programme provides supplementary income for those with resources below a certain threshold, on the condition that they are working. The amount of this tax credit corresponds to a proportion of the income derived from work that initially increases and later decreases with the level of this income. This evolution is such that there is always a financial incentive for the recipient to work more (Box 5). In 2015, 26 million households earning less than \$55,000 a year benefited from this programme, whose total budgetary cost (over \$55 billion) was nevertheless only a very small proportion of GDP.

*Box 5. The Earned Income Tax Credit**

The EITC is a tax credit granted by the federal government to low-income households (26 states and the District of Columbia add their own tax credit to that of the federal government). The amount of the tax credit depends on the beneficiary's marital status, number of children and income. It increases from the first dollar of income up to a certain threshold and then declines, reaching zero when the income exceeds a given amount (Graph 30). When the amount of the tax credit exceeds that of the tax payable, the difference is paid to the household. In 2016, the average tax credit for a family with children was slightly more than \$3,000 (but only \$304 for a family without children).

Graph 30. Tax credit in 2016 for a married couple submitting a joint declaration (\$)



Source: Center on Budget and Policy Priorities.

The EITC is a mechanism intended to encourage work as close to full-time as possible on the part of wage-earners receiving the lowest remunerations. In 2015, it prevented 6.5 million people from having an income situated below the poverty threshold. A family with two children, including a single full-time worker, and receiving the minimum wage (\$12,500 a year) will not be above this threshold if it does not in fact benefit from the EITC and from food aid (SNAP)!

* For more information on this tax credit, see “The earned income tax credit”, Policy Basics, Center on Budget and Policy Priorities, October 2016.

The small scale of the programmes intended to correct by means of monetary transfers the distribution of incomes that stems from the labour market is a fairly natural reflection of the aversion to public intervention discussed in Chapter 1. One of the reasons put forward by Alesina et al. (2001) to explain the difference of roughly 10% of GDP between social programmes in the United States and in Europe sums up the situation quite neatly: “in Europe a needy person is regarded as having had no luck, in the United States as being lazy”.

All things considered, the federal redistribution between households has features that resemble the distribution between the federated states, significantly reducing the differences between the top and bottom of the income scale but more as the result of the progressivity of taxes paid at the top than by transfers paid to those at the bottom. Because of this, it is incapable of correcting the consequences for household income of an increased polarisation of the remuneration of employment, or even total disappearance of part of it. In particular, redistribution through the budget is not designed to indemnify those who have lost their jobs as a result of globalisation or automation and who are having difficulty in finding other employment. The fact that the recipients of the highest incomes are the predominant source of federal income does nothing to enable those who have finally accepted a less well-paid job – or have given up looking for one – to regain their previous standard of living – or the standard of living to which they felt they were entitled.

4.3 The budget as instrument for maintaining full employment

With budgetary redistribution not sufficiently powerful to compensate for the polarisation of remuneration resulting from the operation of the labour market, only the maintenance of full employment is capable of avoiding a deterioration in the standard of living of those with jobs at the bottom of the scale – let alone, *a fortiori*, enabling it to improve. From this point of view, the United States has learned the lessons of the Great Depression and the accompanying social disaster: the ‘aversion to public intervention’ now goes hand-in-hand with priority for full employment. While the federal budget has often played an important role in this respect, United States fiscal policy has for many decades now only rarely been conducted with this objective in mind.

From the Keynesianism of the 1960s ...

By drafting the 1945 Full Employment Bill, the House of Representatives, with a Democratic majority, had nevertheless set out to make this objective explicit. Noting that it was only the war effort that had made it possible to bring unemployment down to its 1920s level, this text aimed to give every American the right to a job that was “useful, steady, correctly remunerated and full-time” (Santoni, 1986). To see to it that this right was effectively exercised, the Full Employment Bill went so far as to explicitly require the federal government to set each year’s spending at the level needed to ensure full employment. The Employment Act that was finally passed by Congress turned out to be slightly less ambitious, requiring the federal government to use its budget, not to maintain full employment at any price, but at least to ensure “a maximum level of employment, production and purchasing power”. A Council of Economic Advisers was set up to make suggestions to the President concerning the measures to be taken to reach this goal.

In the years immediately following World War II, unemployment remained relatively low without much need for fiscal policy to intervene. Defence spending raised the federal budget to such a size that the operation of the automatic stabilisers was on its own almost sufficient to keep the economy at its potential. The steep progressivity of direct taxes (rates of up to 90% for household income tax and 52% for taxation of company profits) considerably cushioned the impact of an economic slowdown on the disposable income of both enterprises and households (in the latter case further aided by the unemployment benefits paid to those finding themselves temporarily out of work). It was not until the arrival of a

Democratic president in the early 1960s that, even in the absence of any threat of recession, a fiscal policy aimed expressly at pushing the economy to “maximum-employment level” was implemented. In response to a proposal by Walter Heller, whom President Kennedy had appointed to head the Council of Economic Advisers, the Tax Reform Act of February 1964 sharply reduced the rates of direct taxation in order to stimulate overall demand, even though the federal budget was already in deficit. Lekachman (1969) has drawn particular attention to the importance of this move, which went against the “time-worn identifications between public and private finance and individual and governmental virtue”. After an initial much-remarked success – with the unemployment rate falling to around 3% in 1966, its lowest level since the war – this Keynesian experience soon came to a halt, when President Johnson and the Pentagon deliberately understated the increase in defence spending related to the Vietnam War, with no compensatory measures being proposed by the CEA. Inflation, which until then had been efficiently kept under control, began a rapid rise. Worse still, because of the first oil shock, the 1970s saw steady increases in both inflation and unemployment. This combination would turn out to be particularly corrosive for the remuneration of a large proportion of American jobs and it was during these years that the erosion of the purchasing power of the lowest wages began.

... to the Reaganism of the 1980s

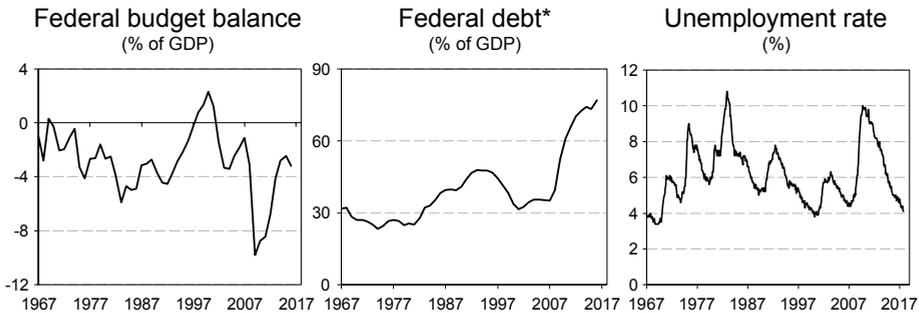
The monetary turmoil seen at the end of the 1970s marked a turning point in the conduct of fiscal policy. Contrary to the continuing hopes of the promoters of the 1978 Full Employment and Balanced Growth Act – the Humphrey-Hawkins Act – the federal budget soon ceased to have full employment as a priority objective. With the arrival of Ronald Reagan, formerly Governor of California (the ‘tax revolt’ state), in the White House, stimulation of the supply-side via an easing of tax pressure took over from stimulation of demand. The tax cuts in the 1981 Economic Recovery Tax Act (ERTA), under which, for example, the maximum rate of household income tax was cut from 70 to 50%, were not aimed at keeping the economy at its potential but at raising this potential by means of incentives to business investment. As the expected additional growth, by raising the tax base, was assumed to prevent the decline in tax rates from harming budgetary equilibrium, this should not have produced an increase in public debt. However, the outcome was not entirely in conformity with the promises made by the supply-side theoreticians: in the space of two years, budget revenue as a share of GDP fell by three points and the public deficit rose by

the same amount to reach 5% of GDP. With defence spending simultaneously rising sharply, the growth upturn subsequently did little to reduce this deficit: between 1980 and 1987, federal debt as a proportion of GDP, after declining steadily since the war, rose from 25 to 40%. Although not its objective, this supply-side policy in the end stimulated demand and contributed to the return to full employment: in just a few years the unemployment rate, after standing at 11% at the beginning of the Reagan presidency, was halved. Another effect of this policy was to arouse serious concern on the part of some observers regarding the financial prospects for the federal government. Despite the raising of the retirement age decided in 1983,⁶ the ageing of the baby-boomers would inevitably increase the cost of the major social programmes from the end of the 2010s on. Entering this period carrying an already substantial debt burden involved considerable danger.

Stemming the rise in public debt rapidly became the main preoccupation of a section of Congress. As early as the mid-1980s the Gramm-Rudman-Hollings Deficit Reduction Act introduced a system of automatic spending cuts aimed at balancing the federal budget within five years. This approach having failed, the 1990 Budget Enforcement Act abandoned any forced return to equilibrium but prohibited any lasting tax reform or new social programme unless the budgetary cost was entirely compensated by spending cuts elsewhere. This 'pay-as-you-go' principle continues even today, after several amendments, to restrict potential fiscal measures: the Congressional Budget Office (CBO) has the task of systematically evaluating the consequences for future receipts and spending (as well as those of the proposed compensatory measures). Complemented by a system of caps on discretionary spending, these rules have helped to contain the federal government deficit. Even so, the return during the 1990s, first to equilibrium and then to surplus, in the federal budget was due in large part to the firm growth in economic activity – and in stock market prices, the source of taxable capital gains. At the beginning of 2000, federal debt had fallen to 30% of GDP (Graph 31), while simultaneously, for the first time since the 1960s, the unemployment rate had fallen back to 4%. The return of sufficient tightness on the labour market then permitted significant progress, in real terms, in the lowest wage incomes.

⁶ The decision taken was to raise it progressively to 67 by 2027.

Graph 31. Federal government budget balance, federal debt and unemployment rate, 1967-2016



* Federal debt held by the public.

Source: Congressional Budget Office.

The federal budget, 'stabiliser of last resort' for activity

On top of past policy disappointments, the desire to limit public spending and indebtedness – whether out of principle, on the part of those who believe that the government's hold on the economy is excessive, or out of prudence, on the part of those who wish to face the financial challenges of ageing from a favourable position – has had the effect of preventing the federal budget from playing an active role in the regulation of overall demand. Since the beginning of the present century, however, the budget has on at least two occasions helped to stabilise activity in an economy faced with two dramatic shocks. The first of these occurred when a stock market bubble of a size comparable to that of 1929 burst. The tax reductions promised by George W. Bush in his election campaign (the 2001 Economic Growth and Tax Relief Reconciliation Act further reduced the rate of taxation of household incomes) and the defence spending related to the Iraq war warded off the risk of a deep recession – not that this was the objective. The return of strong growth, thanks to resolute monetary policy, permitted a sharp reduction in the deficit, the result being that federal debt rose in total by only four points to level off at slightly above 35% of GDP in 2004. The same could not be said following the outbreak of the financial crisis in 2008. Failing other options, the budgetary lever was then used on a massive scale and without hesitation. The fact was that it was no longer a question of fine-tuning economic activity but of avoiding its total collapse. At the cost of an impressive widening of the federal deficit – which in 2009 came close to 10% of GDP – it was possible to achieve this, with the decline in activity kept below 4%. The cost in terms of public borrowing was huge, however. The authorities wisely withdrew

this support only gradually as the spending behaviour of private agents, shocked by the financial crisis, returned to normal. At the end of 2012, once the impact of the shock had passed, federal debt as a proportion of GDP amounted to 70%, twice the pre-crisis figure and the highest ever known in the United States in peacetime. The unemployment rate, which was also twice its 2007 level, remained abnormally high: more than ever it was on monetary policy that the United States had to rely in order to bring the economy back to full employment.

5. OVERSTRETCHED MONETARY POLICY

In the aftermath of World War II, when it entrusted the government with the task of keeping the economy at full employment, Congress was expecting it to rely more on fiscal policy than on monetary policy, a preference that seemed fully justified in light of wartime experience. The defence effort had led the government to increase spending by much more than the growth in revenue; by widening the deficit through borrowing, the government had provided a sharp stimulus to activity, even bringing the economy rapidly beyond the full-employment limit. Measures to control prices and borrowing were adopted in order to curb inflationary pressures, with monetary policy continuing to play an auxiliary role: the Federal Reserve simply had the task of buying Treasury securities in the amounts needed to keep down the cost of public borrowing. During the following decades, the mere idea that monetary policy could play a central role in the management of overall demand seemed incongruous to many Keynesian economists. J.K. Galbraith (1975) wrote: “Only the enemies of capitalism will hope that, in the future, this small, perverse and unpredictable lever will be a major instrument in economic management”.

The limitations of fiscal policy, however, would soon become apparent: slow reaction time and lack of symmetry – raising tax rates or cutting public spending is often more difficult politically than the reverse – in fact make it unsuitable for fine-tuning the economy. Furthermore, as we have seen, the steady accumulation of budget deficits and off-balance-sheet commitments would soon reduce the government’s scope for borrowing. The fact that the American economy succeeded during almost a quarter of a century – from the mid-1980s to the eve of the great financial crisis – in remaining close to full employment while still keeping inflation under control could largely be put down to monetary policy. On closer inspection, this success should come as no surprise: the object of fine-tuning is to adjust growth in the demand for firms’ products to that of potential output. Government can admittedly make a direct contribution by increasing or reducing its expenditure, or a slightly less direct one by increasing or reducing taxation rates in the hope of seeing private agents’ spending track the evolution in their disposable income. On the other hand, monetary policy

can arrive at the same result in a much more fluid manner. By adjusting the level of interest rates, the central bank can prompt private agents – households, in this case, as we are about to see – to increase or reduce spending. By this means, monetary policy is often better armed than fiscal policy to curb or accelerate the evolution in overall demand. In itself, the budget balance has no particular virtue: all things remaining equal, a rise in overall demand financed by additional borrowing will have the same effect on the economic situation regardless of whether the borrowing is public or private.

While budgetary measures are in direct contact with overall demand, the same cannot be said of monetary policy, whose influence will depend on the financial system, through which impulses emanating from the central bank are transmitted, and the way in which private agents respond to them. In the course of recent decades, the United States has developed a mechanism for fine-tuning the economy by means of interest rates, in which household borrowing plays a central role. This ever more effective and powerful mechanism has enabled growth during some 20 years to remain at an astonishingly high level without any acceleration in inflation. This ‘golden age’ for monetary policy unfortunately came to an end with the financial crisis that erupted towards the end of the 2000s and the risk of a new Great Depression could not have been avoided in the absence of massive budget support. The limits of monetary policy were clearly apparent and the capacity of the central bank to maintain the economy at full employment is today itself called into question.

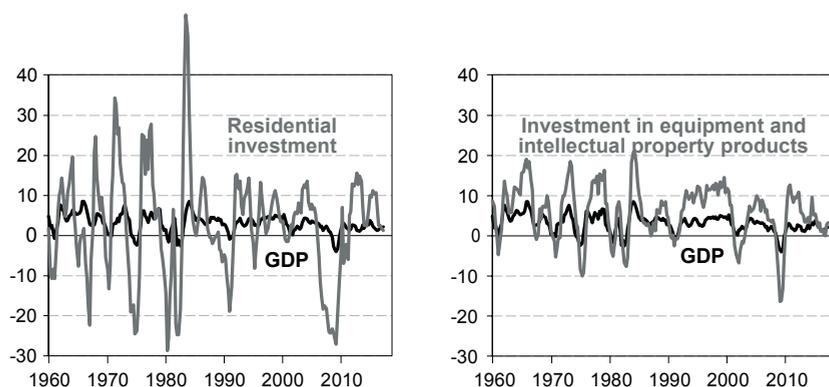
5.1 Household borrowing at the heart of economic regulation

The mechanisms governing the fluctuations in American economic activity since World War II are relatively easy to identify. “Past recessions generally began after the Federal Reserve had raised interest rates sharply to counter excess inflation. When the Fed felt that it had succeeded, it reversed policy and lowered the interest rate. That was enough to trigger a recovery, driven in large part by the responsiveness of housing starts to lower interest rates” (Feldstein, 2009). Graph 32 gives a more precise and comprehensive picture of the mechanism involved. Variations in residential investment expenditure, largely financed by loans to households, were indeed of strikingly large amplitude. In periods of no more than a few quarters, their level has often risen or fallen by more than 10%. On their own, such variations, in response to a fall or a rise in interest rates, automatically

exerted a significant influence on economic activity: although residential investment until 2007 accounted, on average, for only 4% of domestic demand, this still meant that a 10% rise or fall was sufficient to alter overall demand by 0.4%. Nor was this the only impact of a change in interest rates: purchases of durable goods, notably cars, financed to a large extent on credit, were also affected. In their case, the response was slightly smaller and less rapid than for residential investment, but they accounted for twice the proportion of final demand, meaning that a variation of 8% in sales of durable goods altered overall demand by roughly 0.6%.

It is worth noting that the response of corporate equipment investment, of the same order of magnitude as the consumption of durable goods, usually takes longer than in the case of residential investment. Far from responding immediately to variations in interest rates, *corporate investment reacts to fluctuations in demand that are themselves triggered by the response of household spending to changes in interest rates* (Brender et al., 2015). All in all, in the period up to the great financial crisis, by adjusting the level of interest rates and in so doing adjusting the spending of American households, the central bank enjoyed a capacity to curb or accelerate growth in overall demand that was considerably greater than that of fiscal policy. By way of comparison, in recent decades a rise (or fall) of at least 10% in the discretionary expenditure in the federal budget would be necessary to add (or subtract) 1% of overall demand. It would have been an illusion to count on Congress to vote in timely fashion measures on this scale with the sole aim of adjusting the evolution in demand to that of potential output!

Graph 32. *Fluctuations in GDP and components of final demand in the US, 1960-2017 (y-o-y % changes)*



Sources: US Bureau of Economic Analysis and Thomson Reuters Datastream.

With the passage of time, monetary policy has become de facto the principal instrument for regulating the American business cycle. By influencing the cost of household borrowing, it has provided incentives to bring forward (or put back, as the case may be) households' life-cycle spending – purchase of a house or a car – with the aim of keeping the economy permanently as close as possible to full employment. However, this influence is far from being exerted directly: the role of the financial system is in fact decisive. The only interest rate set by the Federal Open Market Committee (FOMC) is the rate at which commercial banks lend to each other on a daily basis the reserves they hold with the Federal Reserve (known as fed funds). The Reserve Bank of New York – one of the 12 component districts of the Federal Reserve – has the task of intervening daily on the fed funds market to ensure that the interest rate formed there remains as close as possible to the one decided on. If the observed rate shows a tendency to rise above this target rate, operators on its trading desk purchase Treasury securities and the reserves of the commercial banks increase; if, on the contrary, it tends to fall below the target rate, the trading desk sells Treasury securities, which then leads to a reduction in the available reserves and hence to a rise in market rates. However, for the purposes of home purchases, American households do not borrow at overnight rates, which are close to the fed funds rate. For several decades now, home purchases have been largely financed by fixed-interest mortgages with relatively long maturities. The manner in which interest rates on these loans are set on the bond market plays a central role in the transmission of monetary policy.

A mechanism for the transmission of monetary policy

The component parts of the mechanism began to take shape well before World War I. At the end of the 19th century, most household borrowing was by farmers for the purpose of acquiring or exploiting land, which was mortgaged as a guarantee. During the life of the loan – rarely exceeding five years – the borrower paid only the interest and the repayment of capital took place as a lump sum at maturity. These farm mortgages helped finance the development of the Great Plains of North America. The loans distributed in this way were for the most part financed by saving, which was itself generated in the East Coast urban areas. These loans in fact had the particularity of being negotiable: once granted, they could be sold either directly to individual savers looking for remunerative investments or to life insurance firms in need of relatively long-term assets. The problem posed by the imperfect nature of the purchaser's information regarding the borrower's creditworthiness was resolved – for better or worse – in a number of different

ways: for example, the mortgage banker selling the loan could undertake to buy it back in the event of a payment incident; in other cases, the purchasers might rely simply on the banker's reputation (and his desire to maintain it) (Snowden, 2014).

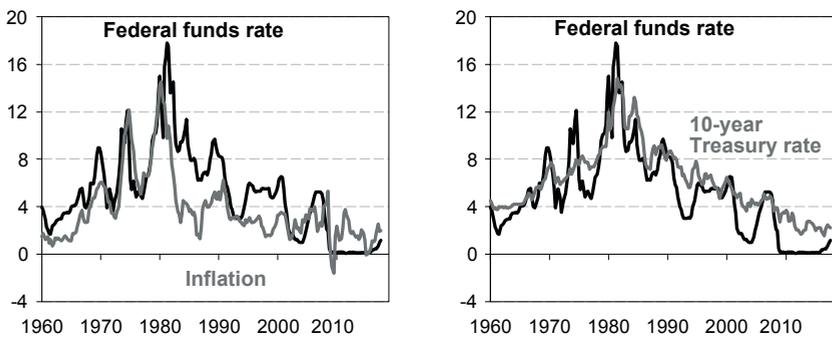
This model – negotiability, relatively short duration, repayment on maturity – began at the beginning of the 20th century to be applied also in the case of the first residential mortgage loans. Despite the requirement of a large personal down payment, the deductibility of the interest payments from taxable income (introduced in 1913 at the same time as income tax itself) acted as a major fillip to recourse to borrowing and hence to residential construction: housing starts came to exceed 900,000 in 1925, a figure not seen again until after World War II.

The Great Depression had catastrophic consequences for many borrowers. Unable to renew their loans at the time of maturity (as was usually the case), they found themselves threatened with foreclosure or forced to sell at a time of tumbling prices. Faced with this real estate crisis and the accompanying human tragedies, the government set up the Home Owner's Loan Corporation (HOLC) and gave it the task of buying up delinquent loans and transforming them into 20-year fixed-rate fully-amortising mortgages. In order to be able to sell these restructured loans (of which the HOLC had bought more than a million!), the government had no choice but to step in and itself underwrite them on payment of an insurance premium. This task was entrusted to the Federal Housing Administration (FHA), set up in 1936. At the same time, the Federal National Mortgage Association (FNMA), better known today as Fannie Mae, was given the task of supporting a secondary market for the underwritten loans. During several decades, these loans, paying higher interest than Treasury paper of the same maturity, would constitute a preferred asset for the banks, and above all for the savings banks whose function was to make loans to households. After the war, real estate loans would undergo a new phase of expansion, with further measures instituted to facilitate home ownership.

The channels created in the wake of the New Deal making deposits, especially those of the savings banks, the principal source of financing for real estate loans, were unable to withstand the rise of inflation. In the mid-1960s, the Fed was obliged, for the first time since the Great Depression, to raise its benchmark rate above 4% (Graph 33). To prevent a steep rise in mortgage rates, the authorities decided to place a cap on the remuneration of deposits with the savings banks as well. By itself, however, this measure had no chance of dissuading savers from preferring to invest in Treasury

paper, now distinctly more remunerative: the Savings and Loans, seeing their resources diminishing, then reduced their lending.⁷ In 1968, the government reacted by splitting Fannie Mae in two. Alongside a Government National Mortgage Association (better known as Ginnie Mae), which inherited its initial tasks and statute, a new Fannie Mae was created. Now a private organisation but sponsored by the government (in other words, a Government Sponsored Enterprise (GSE)), its task was to buy and then itself guarantee mortgage loans, financing these by means of bond issues; at the same time, it was asked to devote a reasonable proportion of its resources to the purchase of loans made to families living on modest incomes. This public sponsorship, combined with certain other privileges, would give the impression that this entity, listed on the stock market, benefited – implicitly, at least – from a US government guarantee. By creating this new Fannie Mae, the government’s aim was, on the one hand, to lighten the federal debt and, on the other, to unify the financing of residential real estate. Two years later, in order to introduce an element of competition, the government acted as ‘sponsor’ to another institution with an identical statute and vocation,⁸ namely, the Federal Home Loan Mortgage Corporation (named, for the sake of symmetry, Freddie Mac). At the beginning of the 1970s the embryo of a powerful mechanism for the transmission of monetary policy was in place. In the following decades, a wave of financial innovation was to accelerate its development while at the same time the central bank learned to master its use.

Graph 33. Inflation, fed funds rate and US Treasury bond rate, 1960-2017 (%)



Source: Thomson Reuters Datastream.

⁷ Twenty years later, an even more severe crisis hit the savings banks, when they again had to face an increase in short-term rates while they had lent long-term at a fixed rate.

⁸ For a complete history of this evolution, see Green & Wachter (2005).

5.2 A (short-lived) golden age of monetary policy

By issuing bonds for the purpose of purchasing and holding loans, Fannie Mae and Freddie Mac would contribute to a far-reaching transformation of the conditions for mortgage lending in the United States. Having long been financed by the resources invested short term with deposit institutions, housing loans could from now on be financed by the issuance of long-term debt. These issues would take two forms: first, the GSEs would issue bonds to finance loans that would then be kept in their portfolios; second, they would put together pools of loans for securitisation. These pools would then be sold on to *ad hoc* vehicles that would finance the purchases through the issue of debt securities. The payment of interest and capital on these securities would be ensured by payments received from the households whose loans the vehicle had acquired. The holders of the bonds issued in this way as the counterpart to a pool of mortgage loans – mortgage-backed securities (MBS) – would be guaranteed by the GSEs against the risk of borrower default but not against the risks linked to variations in interest rates (for the holders, these stocks carried, in particular, the risk of early repayment in the event of a fall in interest rates).

This securitisation, whose development would be facilitated by the financial deregulation launched during the 1970s, would not only modify the nature of the resources used to finance housing loans. It would also bring about the unification, throughout the whole of the United States, of the conditions for lending to households, especially in the form of mortgages, at interest rates that would become ever more closely linked to those of the bond market. Between the end of the 1970s and the beginning of the 1990s, in parallel with the progress of securitisation, the link between interest rates on US Treasury bonds and on American mortgages was tightened (Brender & Pisani, 2004). The consequences of this evolution for monetary policy would gradually emerge, with the influence of short-term rates on the conditions for mortgage lending waning and that of long-term rates increasing. These long-term rates are determined each day on the bond market and are much less sensitive to the Federal Reserve's key rates than are short-term rates. Long-term rates – for 10, 20 or 30 years – are in fact not a function only of today's key rates, but also reflect expectations of what these rates will be, on average, during the coming 10, 20 or 30 years.⁹ This

⁹ Ignoring transaction costs, an operator must regard as equivalent, for example, making a loan for two years or making one for one year and reinvesting the proceeds

means that mortgage rates will be increasingly sensitive to the markets' perception of what monetary policy will be in the coming years.

The Fed learns how to communicate with the bond markets

It took a few years for the Federal Reserve to learn how it could benefit from this evolution. Convincing operators on the bond market that it would not allow inflation to accelerate, as it had done throughout the 1970s, would become a priority: by limiting the volume of reserves placed at the disposal of the banks, Paul Volcker, appointed as Chairman of the Federal Reserve in 1979, literally brought about an explosion in the fed funds rate – to more than 20% in 1980 – and stopped in its tracks the tendency for prices to drift up more rapidly – at the cost of a brutal recession. But he was unsuccessful in persuading the markets that the Fed would snuff out any future rise: the almost constant fall of inflation during the 1980s would not rule out episodic 'inflation scares' (Goodfriend, 1993). On several occasions, the markets, fearing a return of inflation, would force interest rates, and hence mortgage rates, sharply upwards. Alan Greenspan, who succeeded Paul Volcker in 1987, managed to eliminate these uncontrolled movements in long-term rates by launching, in 1994, a pre-emptive strike: in order not to repeat the errors of the 1970s, the Fed, noting that the economy had emerged from recession, took the decision, despite the fact that inflation was not accelerating, to raise its key rates step by step. This action was not understood by the markets. Far from reassuring them, the rise made them fear the worst and long-term rates rose sharply.

This bond market crash placed an undesirably brutal curb on the distribution of mortgage loans and hence on residential investment. The Fed learned an essential lesson from this experience: given that it is long-term rates that influence the business cycle, the manner in which it communicates with the markets where these rates are formed becomes crucial. It therefore rapidly improved its practices in this respect. The previously laconic communiqués issued after each FOMC meeting were replaced by more precise and detailed reports. Not only, from 1995 on, would the target set for the fed funds figure specifically in the communiqué, but there would also be

(capital and interest) at a rate that is already known. For this to be the case, the two-year rate must be the 'mean' of the current one-year rate and the currently expected one-year rate a year into the future. This reasoning can easily be generalised to longer periods. It explains the link between a long-term rate and the schedule of short-term rates expected between the present and the maturity concerned.

a succinct analysis of the state of the economy and an indication regarding the future evolution of key rates. The regular presentations of the Chairman to Congress, or statements in the press by himself and other board members, would rapidly permit the introduction of a genuine language of communication between the central bank and the bond market operators, enabling them to be increasingly adept at divining forthcoming movements in key rates.

The bond market becomes a powerful stabiliser of activity

During the second part of the 1990s, the markets would function as a real built-in stabiliser of the economy. If activity seemed set to grow slightly faster than the Fed would like, market operators made upward revisions in their expectations of future key rates, long-term rates would rise accordingly and lending to households would be curbed, without the central bank's having to lift a finger. And the same would apply in reverse if there were a threat of too great a slowdown. The Asian economic crisis that began in 1997 provided proof of the efficacy of the cyclical stabiliser that had come into existence. The collapse of US exports to the emerging regions was on such a scale that recession seemed unavoidable. The markets accordingly expected key rates to fall sharply and, even before they were reduced by the Fed, an appreciable fall in long rates took place. This in turn provided a sufficient boost to residential investment (and to purchases of durables) for growth to withstand the shock. In 1998, the sharp fall in external demand for products of US firms was entirely compensated by a vigorous acceleration in domestic demand, due in particular to a sharp rise in residential investment. The final upshot was that growth was at the same rate, 4%, as in the previous year.

When in 2001 the stock market bubble that had been swelling throughout the previous decade finally burst, the US economy was confronted with an even more dramatic menace. In size, this bubble was comparable to the one that triggered the depression of the 1930s and, as on that previous occasion, its formation had been accompanied by overinvestment on the part of firms, euphoric about the prospect opened up by new technologies. There was therefore every chance that the correction of the accumulated excesses would provoke a deep recession: the fall in prices of equities inevitably put a brake on spending by the households owning them and there was a likelihood that firms that had over-expanded their production capacity would make drastic cuts in their investment spending. Faced with the risk of collapse of domestic demand, the mechanisms for the transmission of monetary policy would then reveal their full potential:

despite the falls on the stock market and in corporate investment, spending by households, contrary to what might have been feared, remained buoyant. Admittedly, the income tax cuts referred to in the previous chapter (promised in 2000 during George W. Bush's election campaign) were partly responsible for this, but it was mainly due to the steep and lasting fall in bond rates: the Fed's guiding of market expectations played a decisive role in this respect.

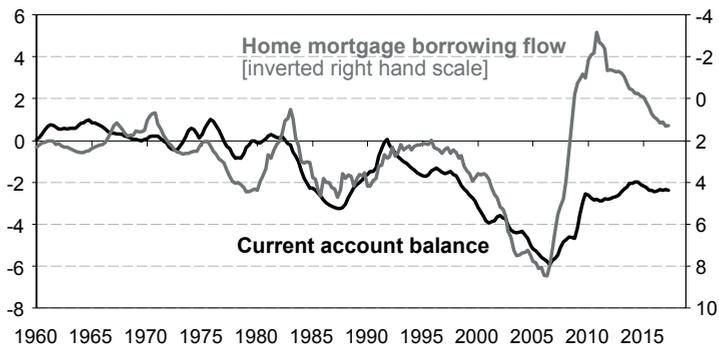
As early as 1999, Alan Greenspan had explained that central banks could not prevent the formation of stock market bubbles, but they could at least mitigate the damages when they burst. This being so, the decline in long-term rates would track that of the equity market: in conformity with the indications received, bond markets expected a decline in key rates proportional to the damage that the collapse in prices was expected to cause. The stabilising effects were immediate: as in 1998, households took advantage of the fall in rates to borrow and their spending was boosted as a result. At the same time, those who had borrowed prior to the crisis exploited their early repayment options to borrow at a lower rate; the purchasing power released by the decline in their interest burden also helped to underpin domestic spending. Later, when the stock market ceased to fall and an upturn in activity started to take shape, the Fed was anxious to prevent an excessively rapid rise in bond rates from aborting the upturn. This it did by again giving explicit indications regarding its policy: over a period of more than six months, the communiqués published following each FOMC meeting stated that key rates would remain low "for a considerable period". The Fed in fact waited until it regarded the upturn as firmly established and job creation as robust before launching, in the summer of 2004, a gradual rise in its key rate¹⁰: despite the extreme violence of the shock, the Fed was successful in preventing the economy from deviating too far from full employment. The unemployment rate, which had fallen to 4% in 2000, had almost returned to this level in 2007, after rising to 6% for only a few months – and 6% was a level that had long been regarded as corresponding to full employment! Alan Greenspan had reinforced his reputation as a magician.

¹⁰ The mention of "a considerable period" disappeared from the communiqué in January 2004, but the actual rise in policy rates began only at the end of June of that year. Surprisingly – there was talk of a "conundrum" – for several months long-term rates failed to react to the monetary tightening. For once, the bond market would have been of no help to the Federal Reserve.

A continuous rise in household borrowing, in response to deflationary pressures

Looked at more closely, the performance is even more remarkable than at first sight. These years were a period when the American economy had to cope with more than just the shocks mentioned above. From the end of the 1990s on, as was described in Chapter II, an increasing share of its domestic demand was progressively captured by the rest of the world, China in particular. Everything else remaining unchanged, this evolution was the source of deflationary pressure for the US economy and ought to have led to a rise in unemployment (Brender & Pisani, 2010). With imports steadily increasing, an ever-greater share of domestic demand, instead of underpinning domestic activity, in fact sustained that of the rest of the world. The fact that, even so, the economy did not move further from full employment can be ascribed to the monetary policy then being implemented, which generated sufficient additional demand to compensate also for this flight of part of US spending to the rest of the world. Faced with the emerging Asian countries' development strategy, the opening up of trade accepted by the United States left the central bank with no choice: if it was to try to maintain full employment at home, it also had to agree to sustain activity in China. Household borrowing increased correspondingly. There can be no better illustration of this than the link observed until 2007 between the increase in the flow of mortgage lending and the widening of the US current account deficit (Graph 34).

Graph 34. US household borrowing and current account balance, 1960-2017
(% of GDP)



Source: Thomson Reuters Datastream.

This deficit, which has continually widened since the end of the 1990s (Box 6), was in fact a reflection not only of the increased penetration by

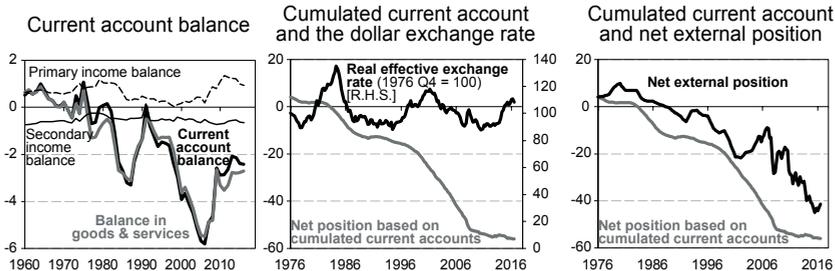
manufactured goods from low-wage countries but also of the steady rise of the oil price during this period. Here again, this rise, by siphoning off an ever increasing fraction of US domestic demand for the benefit of the rest of the world, might have been expected to depress domestic activity (as at the time of the previous oil shocks). But this did not happen. Until 2007, the US economy was able to pay for the increase in its oil bill without having to reduce other spending, thanks to a further increase in household borrowing.

Given that the Fed’s objective was to keep the economy running at full employment, the policy it implemented was the only one possible. While justified at the macroeconomic level, it led to a catastrophe, not because key rates remained too low for too long, but because liberal ideology brought about a systematic refusal to recognise the accompanying accumulation of risks.

Box 6. The dollar and the US net external position

In large measure, borrowing by US agents, which gathered pace from the end of the 1990s on, was in fact financed by the rest of the world. In 2006 the US current account deficit reached almost 6% of GDP. In that year, the country absorbed foreign saving amounting to almost \$800 billion. The phenomenon was not new in itself: ever since the abandonment of the Bretton Woods system, the United States had been accumulating deficit after deficit and its net external position – the difference between its holdings of assets from the rest of the world and the latter’s holdings of its own assets – had steadily deteriorated. After being practically in equilibrium in 1970, this position turned negative in 2017, to the tune of the equivalent of more than 40% of GDP. Despite this spectacular deterioration, the dollar’s exchange rate *vis-à-vis* the country’s trading partners, when allowance is made for inflation, was almost unchanged from what it had been 40 years earlier (Graph 35).

Graph 35. Current account balance, dollar exchange rate and US net external position, 1960-2016 (% of GDP)

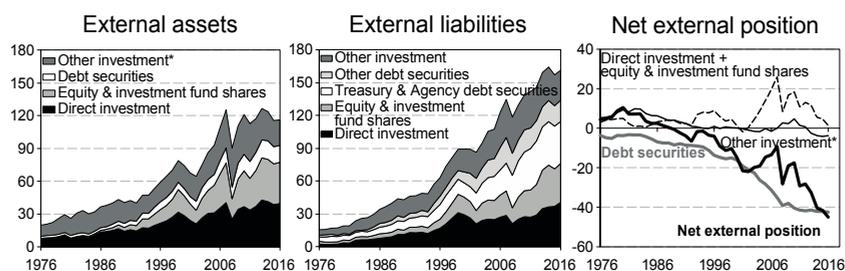


Sources: Bureau of Economic Analysis and authors’ calculations.

The United States' capacity for accumulating 'deficits without tears' is not a new phenomenon. Initially, it was linked to the preferential situation of the dollar within the monetary system set in place at Bretton Woods. With the development of international trade, central banks throughout the world purchased dollars to build up their exchange reserves and later to peg their exchange rates. The abandonment of fixed parities then changed things. The fact that the United States continued to enjoy 'deficits without tears' was in large part due to the behaviour of other countries which, despite running substantial current account surpluses, decided to maintain a fixed exchange rate for their currencies versus the dollar.* But it was also due to the fact that from the 1980s onwards, the deregulation of capital movements enabled developed country residents to diversify their portfolios of financial assets. As a result, the impact of current account imbalances on exchange rates was weakened, both for the dollar and other major currencies (Brender & Pisani, 2010).

The rise in the assets *held by the United States* with the rest of the world gives an idea of the size of this increase in financial openness: on the eve of the great financial crisis, the amount of these assets, as a ratio of US GDP, was more than five times what it had been in the mid-1970s. US liabilities *vis-à-vis* the rest of the world naturally increased still more rapidly: in 2017 these were equivalent to more than 1½ times US GDP (Graph 36). The evolution in the prices – expressed in dollars – of the various components of these liabilities, and also of US assets, nevertheless meant that the deterioration in the net external position was not quite as great as the build-up of US current account deficits would have implied on its own.

Graph 36. Composition of the US net external position, 1976-2016 (% of GDP)



* US foreign exchange reserves are included in the "other investments" item.

Sources: Federal Reserve; Bureau of Economic Analysis and authors' calculations.

The compositions of US external assets and liabilities call for one further remark. Until the financial crisis, at least, the United States played the role of a banker supplying the rest of the world with investments that were relatively risk-free and which in turn financed US investments that were riskier. During

the 1960s, reserves held by other central banks with the United States therefore enabled the latter to finance foreign direct investment by US firms. In recent decades, purchases by the rest of the world of relatively safe debt securities – those issued by the US Treasury or by GSEs regarded as carrying its guarantee – financed riskier investments by the United States in the rest of the world, both direct investment and equity purchases. Another similarity with the function of banker was that the United States continuously held assets that were better remunerated than their liabilities. This margin, i.e. an interest rate differential of almost two points, explains why, despite the substantial net negative position, the balance on primary income was always in surplus. The difference between the remuneration on US investments in the rest of the world and the one paid to the rest of the world on the capital it supplied them with still amounted in 2017 to 1% of GDP.

However, financial globalisation tended to blur this image of the United States as the world's banker. For one thing, the rest of the world began to make an increasing amount of risky investment in the United States (equity purchases, direct investment) without any reduction in the net margin achieved by the country. This can also be seen for each major asset class. For example, the yield on United States foreign direct investment was systematically higher than on foreign investment in the United States. For another, the US position as risk-taker diminished substantially, to the point that its position as net investor in risky assets is now virtually nil. All that remains is its ever more important position as net issuer of relatively risk-free assets (bonds). The world's banker now borrows mainly to finance its own deficit.

* This has long been true of the Middle East oil producers and, more recently, of China (the yuan's exchange rate only began to float – just a little – against the dollar in 2005).

5.3 An accumulation of excess and imprudence

During ten or so years, US monetary policy enabled activity, permanently hampered by headwinds, to grow at more or less its potential rate. The inevitable side-effect of this policy was to bring about a rise in household borrowing. When a rise of this kind results from a temporary fall in interest rates aimed at palliating a short-lived weakness in demand, this need not be cause for concern. The low interest rates then simply induce those who were preparing to borrow in order to purchase a car or a house, drawing on future income, to do so sooner rather than later. When domestic demand picks up

again, interest rates will recover and those who have recently borrowed will not do so a second time! If their incomes and down payments are adequate and if they have habitually met their financial commitments (a situation measured by their credit score), there is a reasonable likelihood that the contracted loans will be repaid. This was true for many years in the case of the loans guaranteed and later securitised by the GSEs, which fulfilled certain relatively exacting quality criteria – those used to define prime loans – and the observed delinquency rates were low (Frame et al., 2015).

Increasingly relaxed lending norms

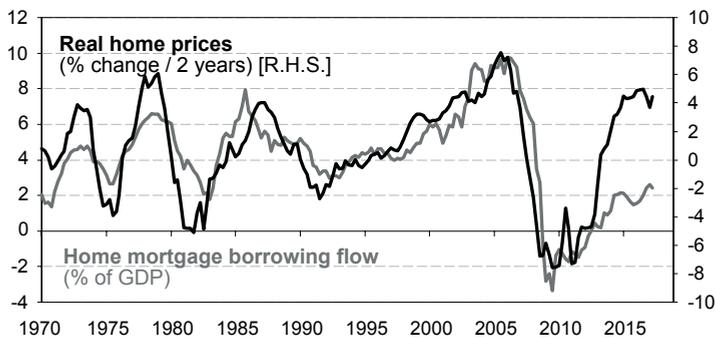
On the other hand, if interest rates remain relatively low for a long period, as was the case in the early 2000s, households meeting these quality criteria and wanting to finance by borrowing an item of life-cycle expenditure will already have done so. In order for household borrowing to continue to underpin activity, it is necessary for other borrowers, in their turn, to have recourse to credit in order to finance new expenditure, and so on. But for these new loans to be made, borrowing criteria have to be less exacting. The increased distribution of lower quality loans – sub-primes – was the hallmark of the early 2000s. Once the needs of creditworthy borrowers had been met, the financial system turned its attention to the demands of borrowers who were less so. The GSEs were participants in this, attracted by the potential profits but also at the instigation of the government, which, from the mid-1990s on, wanted to develop home ownership by poorer families, especially those belonging to minority groups. The development of ‘private label’ securitisation also played a major role, however. Until then, the securitisation channels that did not have the benefit of a guarantee from Fannie Mae or Freddie Mac were fed mainly by loans for amounts exceeding the limits set for GSE purchases. These large loans (jumbo mortgages) could nevertheless still be of prime quality. The early 2000s saw the rapid development of private securitisation of sub-prime loans (England, 2006). These loans were highly diverse in nature but had one thing in common: they enabled households failing to meet the usual creditworthiness criteria (for prime loans) to borrow money. Activity was therefore enabled to continue to grow at a firm rate, at the cost of a constant rise in the volume of household debt, which in the space of ten years rose by the equivalent of more than 40 percentage points of disposable income!

A steady climb in real estate prices

Given that, in the period up to the financial crisis, the transmission of monetary policy to the real economy had to a large extent operated through mortgage borrowing by households, this policy necessarily had as a secondary effect to force up prices of residential real estate. In fact, far from financing only purchases of new housing and, in so doing, increasing the demand for construction sector products, roughly three-quarters of household borrowing was to finance the acquisition of an existing property. Certainly, such acquisitions were normally followed by a refurbishment or renovation, but in this case the impact on activity would be much smaller.

That this still enables a fall in interest rates to make a powerful contribution to sustaining activity is because it is not generally the end of the process: the purchase of an existing dwelling often in turn leads the seller to become a buyer and also in many cases a borrower. A chain of transactions will be created, each link of which will in one way or another generate additional spending that will underpin activity. Inasmuch as this chain of transactions will mainly involve existing dwellings, each element in the chain will also tend to force prices up (Graph 37), given that the stock of residential real estate can only grow through new construction.

Graph 37. Household mortgage borrowing and real estate prices in the US, 1970-2016



Source: Thomson Reuters Datastream.

Here again, if interest rates remain low for only a brief period, the resultant pressure on prices will be temporary and disappear once monetary policy becomes more restrictive. The same will not be true if rates remain low for a longer period, in which case there is every chance that the price rise will accelerate: the realisation that prices are rising will prompt households to bring forward their purchases or even tempt them to speculate on a

continuation of the rise. This they will do all the more easily in that lending conditions are relatively unexacting. The upshot was that, between 1998 and 2006, housing prices rose continuously – doubling during this period – and the gap between the rise in these prices and the rise in average household disposable income – the latter being less than half the former in nominal terms – was unprecedentedly high for so long a period!

Blind faith in market discipline

The continuous rise in household borrowing over a full decade had one final consequence that needs to be mentioned, namely the build-up in highly precarious conditions of a huge quantity of risks within the financial system. This borrowing in fact had as a counterpart, as has been shown, an accumulation of securitised mortgage debt, the holding of which, as for any credit, carried risk. Admittedly, these securities were backed by real estate assets, but these assets were themselves valued at prices that were rising rapidly and, in the event of a downturn, the small size of the down payments made by a large number of borrowers meant that creditors had little effective protection. Nor was the credit risk the only one needing to be borne. A mortgage security in fact carries the same risks as a bond: a liquidity risk (there is no possibility of asking for repayment before maturity) and an interest rate risk (given that bond rates vary daily in response to the market). The outstanding amount of household debt could not have risen as it did had the US financial system not contained operators willing to carry the huge amount of risks implied by this accumulation of debt.

Financial inventiveness made a major contribution in this respect, by concocting, on the basis of this securitised paper, other products whose credit risk was difficult to assess. At the same time, the quest for profit led numerous operators – hedge funds, investment banks, off-balance-sheet vehicles set up by the commercial banks, etc. – to take the additional risk of borrowing short-term to purchase these securities, using them as collateral. In this way they were able to benefit from the margin between their remuneration and the cost of the borrowing with which they had been purchased. These risk-takers therefore clearly bore part of the risks generated by the mass of accumulated debt. This activity on their part has often been described as shadow banking (Brender & Pisani, 2010). In certain respects, it could be regarded as having a certain resemblance to that of a deposit bank bearing the risks of the loans it makes as the counterpart of the deposits it takes in. However, the analogy is deceptive: if at some stage these risk-takers were refused the loans needed to continue to hold the purchased

stocks, they would have no alternative but to sell them; a deposit bank, on the other hand, can always borrow from the central bank if it finds itself short of liquidity. Above all, a deposit bank is subjected to prudential rules and oversight, which was far from being the case for the shadow banking risk-takers. Quite on the contrary, the very idea that their activity might be the subject of oversight by the authorities was strongly opposed, by Alan Greenspan (2007) in particular: surveillance of these shadow bankers by their counterparties should be quite sufficient!

A catastrophic outturn

This blind confidence in market discipline, just when debts and risk were constantly accumulating, ended in catastrophe. The increasing number of defaults on sub-prime loans, which from the beginning of 2007 onwards could no longer be ignored, led first to a reduction and then to a complete drying up of lending to the risk-takers, who were obliged, for want of being able to renew their loans, to sell at least part of their security holdings, those of poor quality as long as they could, but later the better ones as well. This triggered a chain reaction. Faced with what was soon to become a general collapse in the prices of the securities used as collateral, the risk-takers, holding high-quality stocks, were now obliged to sell these as well. Rapidly, a number of large institutions with well-established names found themselves unable to cope with their funding needs. This was the case for the Bear Stearns investment bank, saved from bankruptcy in extremis by the Fed in April 2008, and a few months later for Lehman Brothers, which was not so lucky! By the fall of 2008, the reality had to be faced: imprudent private operators and complaisant authorities had enabled the financial system to accumulate much more risk than it was capable of bearing. In a knee-jerk panic reaction, the system tried to rid itself of the excess risk by a wave of selling – at a time when no one was willing or able to buy: left to itself, the US financial system was threatened with implosion.

The Fed took decisive action: it agreed to take over from private operators part of the risk they were no longer able to bear by purchasing between December 2008 and March 2010 almost \$2 trillion worth of securities (long-term US Treasury bonds and especially stocks issued or guaranteed by the GSEs). The injection of liquidity that was the counterpart of these purchases automatically led to a rise in the reserves of the commercial banks. In this way, the Fed purely and simply replaced the failing private risk-takers, taking over from them part of the risks they were no longer able to bear, while at the same time borrowing from the banks the

sums that the financial system was no longer lending to the private risk-takers. By taking over from the system part of its burden of liquidity and interest rate risks, the central bank was able to prevent its collapse.

On the other hand, it was unable to prevent the real economy from being violently affected by the seizing-up of the financial system that accompanied the crisis. The flow of household borrowing dried up overnight and this threatened to bring about a violent contraction in total demand and a very real risk of deflation on as dramatic a scale as that seen between the wars. It took another public intervention to prevent this. The federal government used its budget to try to stabilise activity. In other words, growth in government borrowing replaced growth in household borrowing. Since monetary policy as implemented during more than two decades had become inoperative, the central bank would be obliged to continue to have recourse to unconventional measures to help lift the economy out of the Great Recession that followed the financial crisis.

6. LOST DYNAMISM?

The recession that began at the end of 2008 was the most severe of the post-war period. By 2010, the unemployment rate had reached 10% and it was not until 2017 that it regained its 2007 level. The upturn that followed the financial crisis was itself also the slowest of recent decades and the weak growth of the 2010s is in sharp contrast to the firmer recoveries of the three preceding decades. This weakness rapidly led to questions regarding the evolution of the US economy's growth potential: was it now condemned to sluggish growth simply because it had already fully exploited the principal sources of technical progress? This may seem a strange question at a moment when every day seems to bring a fresh crop of innovations. Be that as it may. If unemployment was able to fall in the United States during the 2010s, despite mediocre growth, it was because productivity growth was exceptionally weak. In part at least, this weakness of productivity gains reflected firms' response to the weakness of demand for their products: in an economy where the pressure of demand is low, firms have little reason to invest. And this leads to a final key question: how can one bring about a lasting revival in activity in an economy where the instruments habitually used to achieve this – monetary policy and fiscal policy – have demonstrated their limitations?

6.1 Weakened growth potential

Since the start of the present century, US growth has slowed substantially. After ranging between 3 and 4% during the second half of the 20th century, it fell to 2.4% during the years preceding the financial crisis and to 1.5% in the decade that followed it. Inasmuch as the low unemployment rate (close to 4% in both 2000 and 2017) suggests that the economy in these years was practically at full employment, it is tempting to see in this distinct slowdown the reflection of an ever-slower growth in potential output. In an economy already at an advanced stage of development, there is nothing particularly surprising, of course, about such a slowdown. What is surprising is its abruptness in the US case, as well as its revelation of worrying developments in both the supply of manpower and in labour productivity.

A distinct slowdown in the growth of manpower supply

In part, the slowdown in the growth of manpower supply is due to demographic factors. In the first place, the birth rate was almost halved in the space of around 50 years (from more than 23 per 1,000 in 1960 to 12.4 per 1,000 in 2015), with the result that natural population growth is today barely 0.4% per annum. It is only the maintenance of a continuing strong immigration flow that has enabled the US population to continue to grow at a rate not much below 1%. In the absence of a radical change in migration policy, even this rate is bound to slow in the coming decades. Next, growth in the population of working age is currently being held back by the arrival of the baby boomers at retirement age and this effect will not entirely fade before 2030. By weighing down the participation rate (the proportion of the population of working age consisting of people who are either working or seeking employment), this ageing process also acts as a curb on growth in the population liable to be employed. Participation rates in fact differ widely depending on the age group: in 2017, the rate for the over-55s was only 40%, while that of the 25-54 group was twice as great. The BLS has calculated the impact on the participation rate to be expected as a result of a continuation of ageing: from close to 63% in 2017, it is expected to fall to 59% in 2030. On its own, this fall will reduce growth in the labour force by almost 0.4% a year during the 2020s. The overall result would then be growth in labour supply in the next decade that would remain, at best, close to 0.5% a year, as in the 2010s (Toossi, 2016).

The impact of these demographic tendencies is compounded by that of other, more worrying, factors. During the upturn of the 2010s, the participation rate of the prime working-age population – workers aged between 25 and 54 – is far from having moved in a normal manner. While this rate, after falling sharply, did indeed finally climb back somewhat, as is normally the case when activity picks up again, most of this movement was accounted for by the female participation rate, with the male rate in 2017 still two points lower than in 2006. Since the mid-1950s, this participation rate has in fact steadily declined, falling from 98% to 88% in 2017. It is currently among the lowest of all the developed countries and its decline has been the sharpest. Unsurprisingly, it has been distinctly more marked in the case of the least educated male workers: in the mid-1960s, the participation rate for workers with a high school degree or less was similar to that of workers with a university qualification; in 2017, it was 10 points lower! This tendency seems to have above all affected men born in the United States: the participation rate for foreign-born prime-age men with less than high school

education was still close to 90% in 2016, compared to less than 70% for those born in the United States. A point less frequently stressed is that the decline in the participation rate occurred earlier and more rapidly in the case of black men aged between 25 and 54: having been twice as steep during the first half of the 1990s, it then continued at the same rate as for white men.

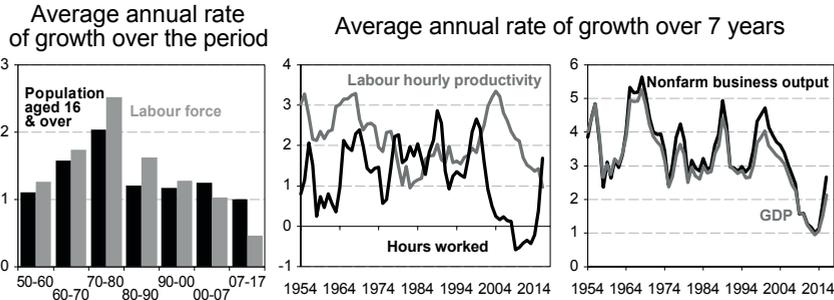
The decline in the participation rate for prime-age males is likely to be difficult to reverse. It is partly the consequence of the developments described above. Automation and competition from low-wage countries have destroyed thousands of jobs in manufacturing, most of them occupied by male workers. The decline in their participation rate in turn reflects the disruption of parts of US society that has accompanied these changes. Krueger (2017) highlights the fact that 20% of males in the prime-age cohort who leave the active population have difficulty in walking or climbing stairs and almost as many have difficulty in concentrating. Half take painkillers daily. According to a 2016 BLS survey, illness and disability are the reasons most frequently given by these males to explain their inactivity (55%, compared to 25% for females) (Krause & Sawhill, 2017).

The phenomenon is all the more worrying in that a growing fraction of the population now lies outside the scope of these statistics. The working-age population used to calculate the participation rate excludes individuals in prison, for example. And yet the incarceration rate, having risen very rapidly during the 1980s and 1990s, was in 2016 five times as high for the United States as for the average of the OECD countries (almost 700 per 100,000 inhabitants). Here again those most affected are black men and workers with the least qualifications. Their chances of finding a job on release from prison are often very few – except when the labour market is exceptionally tight, as it was, very briefly, at the beginning of the 2000s.

Not only demographics but also the reaction of part of the working-age population to the contraction in employment that followed the financial crisis have facilitated the adjustment of the labour market to the weakness of the upturn that began in 2010: by reducing by half a point the growth rate of the supply of labour, the fall in the participation rate, for whatever reason, hastened the return of the unemployment rate to a level corresponding to relatively full employment. The same could not be said of the years preceding the financial crisis: between 2000 and 2007, it was mainly through a decline in the average number of hours worked that growth managed to generate jobs at a time when hourly labour productivity was continuing to grow at a firm rate and when the participation rate was showing practically no signs of weakening. The post-crisis period saw a radical change in this

respect as well: apart from the fall in the participation rate, the return to full employment was this time due not to an adjustment in the hours worked but to a sharp decline in the rate of productivity gains.

Graph 38. Growth, employment and labour productivity*, 1950-2017 (%)



* Productivity and hours worked are for the non-farm business sector. Business sector output is a chain-type, current-weighted index constructed after excluding from gross domestic product (GDP) the following outputs: general government, non-profit institutions, and private households (including owner-occupied housing).

Source: US Bureau of Labor Statistics.

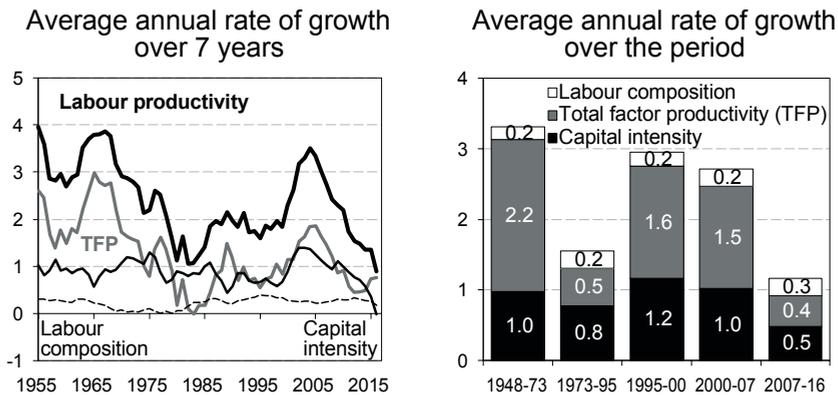
Weaker productivity gains...

Since the end of World War II, even ignoring purely cyclical influences, the rate of productivity gains has been far from stable. After growing rapidly until 1973, by more than 3% a year, productivity rose much less rapidly between 1973 and 1995, a period affected by two oil shocks and one oil counter-shock. It then picked up substantially, exceeding 3% a year for almost 10 years – corresponding to a New Age for the US economy, driven by the new information technologies – before slowing down again starting in the mid-2000s (Graph 39).

In order to have a more precise idea of the reasons for this evolution in labour productivity, it is possible, to isolate the respective contributions of, first, the improvement in the quality of labour and in firms' investment efforts, and, second, growth in total factor productivity (TFP), due notably to technical changes. It then turns out that firms' investment efforts, in the broad sense, have never made as small a contribution as since the crisis. Whereas on average, since the beginning of the 1950s, the contribution to growth in labour productivity of the rise in capital intensity – measured as the capital applied per hour worked – was around one percentage point per year since 2000, this contribution has been steadily falling to practically zero (Graph 39)! This slowdown in the investment effort – affecting both

traditional equipment and computer hardware and software – on its own explains more than one-third of the decline in productivity gains since the financial crisis. Even so, inasmuch as the contribution from the improvement in the quality of manpower has remained relatively stable, the bulk of this slowdown in labour productivity growth can be seen to be due to an ever slower rise in total factor productivity – which is astonishing given the innovations available in many sectors.

Graph 39. Contributions to the growth in labour productivity, 1948-2016 (%)



Source: US Bureau of Labor Statistics.

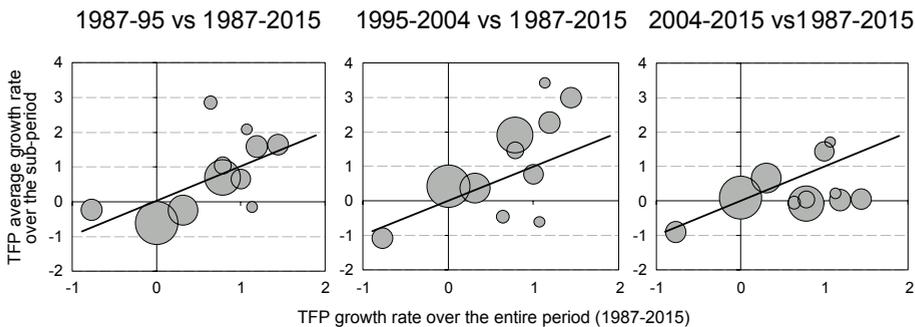
... due in particular to weaker total factor productivity

The contribution of total factor productivity is measured by the portion of labour productivity gains that is attributable to neither the improvement of the quality of labour nor to that of capital intensity. After growing rapidly during the period 1995-2007, this contribution has since returned to the more modest rate seen in the 1970s and 1980s (+0.5% per year). Because it is defined as a residual, it is particularly sensitive to measurement errors, whether these relate to the quality of labour, the quantity of capital applied or the volume of production itself. Numerous studies have been made of the possible consequences of these errors. The conclusions are often the same, namely that it is difficult to consider that these problems have become more important than in the past (Byrne et al., 2016; Syverson, 2016). And it is only in the event of their worsening that the recent slowdown in TFP could have been significantly overestimated.

The less easily measurable nature of the output of certain service sectors whose importance in the economy has been tending to increase is also often invoked. This is the case, in particular, for education and healthcare,

but also for finance. Disappointing evolutions in TFP are by no means confined to output in these sectors, however: of the 72 sub-sectors for which a tendency in TFP can be calculated, two-thirds showed a slowdown after the crisis whereas three-quarters had accelerated during the previous decade (Baily & Montalbano, 2016). In fact, only a handful of sectors are currently experiencing TFP growth – finance, information and communication and the mining sector – and their contributions are modest, to say the least (Graph 40). In the sectors where output is more easily measurable – distribution or manufacturing – there has been no progress in TFP since the crisis. This means that the evolution in the sectoral composition of the economy cannot affect the conclusion, either. Calculating TFP with unchanged sector weightings compared with 1987 modifies neither the acceleration observed between 1995 and 2004 nor the slowdown that has occurred since then (for this calculation the periods chosen have been those in the study by Fernald (2014), which serves as a reference in this case).

Graph 40. Annual growth in total factor productivity by sector and sub-period (%)



Note on reading the graphs: The horizontal axis shows for each of the 11 sectors of the first level NAICS breakdown the average annual growth rate of TFP for the period 1987-2015. The vertical axis shows for the same sector the growth of its TFP during three sub-periods: 1987-1995 in the left-hand graph; 1995-2004 in the middle graph; 2004-15 in the right-hand graph. When a sector's location is above the diagonal, this means that productivity growth was greater in the sub-period than in the years 1987-2015. The surface area of each circle is proportional to the weight of the sector in GDP.

Source: US Bureau of Labor Statistics.

Obviously, it is by no means certain that this stagnation in productivity gains is set to last: for one thing, the benefits from major innovations can be slow in coming. Syverson (2013) highlights the fact that the fluctuations in the rate of productivity gains seen since 1970 in the United States are by no means exceptional. They are even astonishingly similar to those beginning at the end of the 19th century, during the whole period of progress with

electrification. In the early stages, productivity gains remained slow, only accelerating sharply at the time of World War I, before slowing down in the second half of the 1920s and then picking up again at the end of the Great Depression. Graph 39 calls for one final remark: since the beginning of the 1990s, unlike what had happened previously, the contribution of TFP and that of capital intensity fluctuated in parallel. The increased investment effort and the greater contribution of technical progress to productivity gains seem to have gone hand-in-hand. While it is true that the American economy has not yet derived all the benefits from the current wave of technical innovation, more rapid growth in activity and the impulse this would give to corporate investment could perhaps enable this to take place.

6.2 A low-pressure economy

In order to explain the low level of productivity gains since the beginning of the 2010s, Janet Yellen (2016) – who succeeded Ben Bernanke as Chair of the Fed at the beginning of 2014 – put forward the hypothesis that the efforts in favour of innovation and investment on the part of companies may have been held back by the sluggishness of the upturn that followed the Great Recession, in which case further growth in total demand and a tighter labour market should, by contrast, act as a stimulus to these efforts. By subjecting – temporarily, at least – the economy to a ‘high-pressure’ regime, it might be possible to accelerate the rate of productivity gains and even provide an incentive to those who had given up looking for jobs to return to the labour market. Larry Summers suggested in a lecture to the Center on Budget and Policy Priorities, paraphrasing Say’s Law, according to which supply creates its own demand, that “lack of demand creates its own lack of supply down the road in terms of productivity growth”. The problem that has faced the US authorities since the beginning of the 2010s is, however, not only knowing whether higher ‘pressure’ on the demand side could make it possible to raise growth in potential output, but also knowing to what extent the levers applied until now – fiscal policy and monetary policy – are still capable of regulating this pressure!

Limited budgetary support

The recovery that began at the end of 2009 was, as mentioned earlier, the weakest of any during the post-war period. This is hardly a surprise. Until then all the upturns had been driven by strong growth in residential investment and it was difficult to see this being repeated. It was precisely in

order to prevent the fall in household borrowing and the collapse of residential investment from triggering a deflationary spiral that the federal government allowed its deficit to widen during the crisis.

As early as 2008, the Economic Stimulus Act, signed by George W. Bush, provided initial support for spending by households, notably by means of a tax credit. However, this support was modest (equivalent to barely 1% of GDP) compared with the decline in the flow of their borrowing (which between mid-2006 and the beginning of 2009 amounted to no less than 13% of GDP) and to the resulting contraction in their spending. The bulk of the budget support would take effect in 2009 through the American Recovery and Reinvestment Act signed by President Obama. The sums involved, for a total of \$800 billion, or almost 5% of GDP, were this time more substantial and the types of expenditure financed were more diverse. Some of them were still aimed at bolstering household consumption, through new tax credits and an extension of the period of unemployment benefit; others were aimed at stimulating corporate investment and financing public investment in training and infrastructure; lastly, almost \$150 billion was applied to meeting deficits in the budgets of states and local authorities whose revenues were being particularly badly affected by the collapse in the prices and volumes of real estate transactions. Without this latter transfer from the federal government, the cuts exerted in these authorities' spending – the largest ever seen in any post-war recession – would have been higher still.

In parallel, through the Emergency Economic Stabilization Act, an unprecedented fiscal effort had been launched at the end of 2008 in order to consolidate the US financial system. Together, these measures helped to stabilise the economy, but there was still the need to re-stimulate activity. Despite the rapid fall in benchmark rates (which have been practically zero since the winter of 2008), the excesses accumulated before the crisis ruled out any hopes of seeing household borrowing pick up at all rapidly. With the usual upturn mechanism no longer operative, borrowing by the government could have acted as a substitute, but it would have been necessary for the budget to become the source, for a few years at least, of an impulse that would contribute to the revival of activity, at the cost of a further deterioration in the public deficit. The disquiet raised by the already high level of government borrowing and the reluctance with regard to the rise in public spending explain why fiscal support went no further. Yet again, monetary policy became the only lever that could be used to attempt to accelerate growth in activity. Its effectiveness had been considerably blunted, however.

Problems with the transmission of monetary policy

The 2007 crisis, by profoundly modifying the behaviour of the financial system, seriously disrupted the habitual mechanisms for the transmission of monetary policy stimuli. In the first place, large numbers of market operators were twice shy following the shock they had suffered – for a time, at least. Furthermore, in order to prevent the repetition of the excesses that had led to the crisis, the authorities obliged operators to adopt more-lasting prudence. In 2010, Congress approved the Dodd-Frank Wall Street Reform and Consumer Protection Act, designed to remedy the numerous regulatory shortcomings that the crisis had exposed. At the same time, it entrusted the Fed with the surveillance of certain shadow banking activities that had played an important role in the accumulation of the excess of risk. The start of implementation of Basel III further restricted risk-taking behaviour on the part of banks. Finally, Fannie Mae and Freddie Mac, institutions saved from bankruptcy at the height of the crisis, were placed under the conservatorship of the government and forced to adopt greater caution. All in all, the propensity of the US financial system to take risks was reduced and the transmission of monetary policy stimuli weakened as a result.

The behaviour of the agents most sensitive to these impulses, namely, households, was affected even more severely by the crisis. The decline in real estate prices and the rise in unemployment plunged many recent borrowers into a financial situation not easily alleviated by cuts in interest rates. The possibility of refinancing fixed-rate mortgages at lower interest rates had significantly bolstered activity at the beginning of the 2000s. This time things were not so easy. If the price of the mortgaged asset had fallen, a borrower wanting to reimburse a relatively recent loan by borrowing at a lower interest rate often found it impossible to do so, for lack of being able to put up as collateral an asset of sufficient value. At the same time, securitisation meant that it was more difficult to restructure loans to borrowers threatened with repossession in the way that had operated during the 1930s. Ownership of these loans was by now dispersed among all the owners of the securities of which these loans were the counterpart. Despite timid government efforts to improve them, the financial situations of many US households were set to remain precarious for several years and this helped to depress both house prices and residential investment.

An emergency monetary policy

Faced with this new reality, the Fed had little choice: unable to use conventional routes to encourage a rapid upturn in activity, it launched a

long-haul policy aimed at underpinning growth, as best it could, until such time as the depressive effects of the crisis and of the excesses that preceded it were absorbed. For this purpose, it attempted to keep as low as possible, not only its policy rates but the entire interest-rate curve, using for this purpose unconventional instruments, notably 'quantitative easing' (QE). This involved, over a period of several years, gradually reducing the quantity of long-term bonds that private agents had to hold. On this occasion the Fed did not, as it had done in the depth of the crisis, purchase stocks whose prices were in free-fall. Instead, it acted at a time when prices had recovered somewhat to push them up and hence bring about a deeper fall in long-term rates. All in all, as part of two successive programmes, it bought between end-2010 and end-2014 more than \$2.5 trillion in bonds (equivalent to just over one-tenth of the outstanding bonds issued by the Treasury and GSEs). This brought mortgage rates down to their lowest ever level. Despite this perseverance, the expansion that had begun at the beginning of the decade continued as it had begun: at an astonishingly slow rate.

Desperately weak growth

Ten years after the start of the major financial crisis, 'pressure' in the US economy could still not be said to have risen appreciably. Admittedly, given the weakness of productivity gains and the fall in the participation rate, growth of 2% per year finally brought unemployment practically down to its lowest levels. However, inflation continued low. Finally, some faint signs of pressure on the labour market began to emerge, in the form of a slight rise in the participation rate for the working-age population (largely due, as we have seen, to the tendency in the female rate) and the beginnings of a rise, in real terms, in the median weekly wage. However, for three-quarters of the workers having no higher-education qualification, this rise did no more than bring their wages back to where they had been in 2000 – at best! And to reach even this result, monetary policy had resorted to extraordinary measures and its limitations had been exposed.

Clearly, the Fed's efforts had not been entirely in vain. By doing everything it could to keep interest rates low, it had enabled American households to reduce their debt burden to its lowest proportion of disposable income since the beginning of the 1980s. The low interest rates had also encouraged household borrowing to pick up again, but in conditions that were very different from those prevailing before the crisis. With borrowing conditions now more rigorous, mortgages no longer accounted for the bulk of the increase in their borrowing, this role being

taken over by other types of credit, especially car loans and student loans. In both these categories, disquieting signs were starting to emerge. For example, the proportion of sub-prime car loans has risen sharply in recent years, while student loans, most of which are guaranteed by the government, rose precipitously in the aftermath of the crisis, at a time when the cost of attending university was also rising. The result was that many newcomers to the labour market were carrying relatively high levels of debt.

Alongside these indicators of saturation of households' borrowing capacity, the side-effects of the monetary policy being implemented were also manifesting themselves in other sectors of the economy. Between 2012 and 2016, investment in commercial real estate grew at an annual rate of more than 10% and the prices, adjusted for those of GDP as a whole, returned to their high levels of 2007. At the same time, stock market prices were being pushed up by the low level of interest rates: in relation to profit expectations, the prices of S&P 500 stocks at the end of 2017 were close to those of 20 years earlier when Alan Greenspan was making reference to "irrational exuberance".

6.3 The American model called into question

The election of Donald Trump revealed the despair felt by a large number of Americans as a result of the stagnation of income that accompanied the slow return to relative full employment, as well as of the path followed by the US economy in recent decades. In his election campaign, Trump proposed a U-turn regarding immigration and the opening up to international trade. He also promised to give the economy back its past dynamism by overturning regulations hobbling economic growth, which he promised to stimulate by means of tax reform. Unfortunately, it can be doubted whether this programme is an effective response to the problems facing the United States at the present time.

Going back on trade liberalisation: no easy task

The role played by trade liberalisation – a movement that had long been advocated by the United States – in the disappearance of millions of jobs has already been highlighted. To reverse this liberalisation would nevertheless not only be costly but extremely difficult politically. In many sectors, commercial flows are now well-established and production chains closely integrated – often under the aegis of American firms, who would therefore be the first to oppose protectionist measures. Other firms would take a

similar attitude for fear of retaliation affecting their market outlets in the countries from which the United States seeks protection. Too many firms have too much at stake for the new administration to be able to go at all far in this direction. It took no more than a few weeks to see the scrapping of the Border Tax Adjustment aimed at providing incentives to produce goods on US territory rather than importing them. Actively defended during the presidential campaign by Wilbur Ross, the new US Secretary of Commerce, the proposal was unable to withstand pressures from the mass distribution sector, a huge importer of consumer goods!

The renegotiation of the North American Free Trade Agreement (NAFTA) that began in the summer of 2017 also rapidly exposed the difficulties and risks of a U-turn. In order to obviate the threat of a lasting erosion of US industrial positions similar to that of recent decades, Robert Lighthizer, the US trade representative, proposed that the entirety of the provisions of the new treaty should be submitted for re-approval every five years. Immediately, US firms were up on their hind legs opposing a provision that would mean chronic uncertainty regarding the organisation of their production chains. The Treaty signed in 1994 had in fact produced close interlocking of these chains, both with Canada (for cars, chemical products and metalworking) and with Mexico (for cars, apparel, electronic goods and machinery). Hampering, let alone unravelling, their functioning by imposing customs duties would by no means affect only the firms directly concerned. A study of the impact of the disappearance of preferential tariffs on the competitiveness and attractiveness of the three countries shows no net job creation in any of the cases and, in fact, job losses generally (Walmsley & Minor, 2017). The fact that these losses would be relatively smaller in the United States than in Mexico and Canada is unlikely to make Congress favourable to such a radical change!

It is in its trade with the People's Republic of China, however, that the US records its largest trade deficit (in the case of Canada and Mexico, the integration of production chains has led to relatively intense exchanges but relatively modest deficits). Long accused of exchange rate manipulation in order to boost exports to the United States, China could normally be expected to be the main target of a return to protectionism on the part of the United States. But any retaliatory measures would then immediately deprive US firms of their access to one of the world's most promising markets. Here again, they would be unlikely to take this lying down.

The possibility that the United States might be prepared to take the risks involved in a trade war still remains, however, given the still high

degree of visibility of the social damage caused by trade liberalisation. And yet this damage is not due to free trade itself but to a failure to grasp the scale and nature of the adjustment it implies on the part of the consenting countries. If nothing is done to redistribute the advantages and to ensure that labour released in one sector can be employed in another, international trade will always inspire rejection! And it is precisely this redistribution and re-skilling of labour that the United States has proved incapable of implementing on a sufficient scale and with sufficient rapidity.

The supply-side chimera walks again

The other main plank of the president's programme was large-scale tax reform. Combined with deregulation – mainly environmental and financial – this was intended to enable the economy to return to steady growth of above 3%. Here again, the principal obstacle was related to feasibility. Genuine tax reform is more than a matter of adjusting tax brackets; it also involves a redefinition of the tax base itself. The past several decades have seen an accumulation of tax loopholes and exemptions whose modification, or even abolition, was imperative if tax rates were to be reduced without over-jeopardising budget equilibrium. Given the power and high degree of organisation of the various pressure groups, the slightest reference to such changes was bound to arouse strong resistance, which always requires considerable political energy to overcome. They were steam-rolled through by a Republican Party anxious to reach a rapid conclusion. The process was completed in a matter of weeks, whereas 30 years previously discussions and negotiations had taken several long months.

The previous reform dated back to 1986. Instigated by President Reagan with the aim of lifting the economy out of stagflation, it put an end to several years of incessant and sometimes chaotic changes to the American tax system. The reform proposed by the Republican Party in 2017 had a similar objective but the reasoning was different. In 1986, the taxation of households had been eased by a reduction in tax rates (the highest marginal rate being cut from 50% to 38.5%), while, in order to safeguard budgetary equilibrium, taxes on firms had been tightened by the abolition of various loopholes (Stewart, 1991). In 2017, it was a reduction in corporation tax – from 35% to 21% in the case of the marginal rate – that seems to have been the principal concern of the Republican Party.

Admittedly, the 2017 reform would reduce the tax contribution of numerous households, but for most of them the size of the cut was very small: the relief resulting from the rearrangement of tax brackets was often

accompanied by the loss of various previously granted deductions. The most important of these, enabling duties and taxes paid to individual states to be deducted from the income taxable at federal level, tended to affect residents of richer states, which often had Democratic majorities. Only the best-off households seem likely to derive a clear benefit from this reform. It is difficult to imagine that activity would be stimulated as a result. These households' income had in fact been growing rapidly since the crisis without any acceleration in growth. Nor was there much greater chance, moreover, that the cut in corporate tax would provide a lasting stimulus to investment.

Since the beginning of the 2000s, the share of GDP represented by companies' profits, after tax, had risen continuously to an unprecedented level, but even so their productive investment remained practically unchanged. For the most part, the rise was spent on higher pay-outs to shareholders in the form of share buybacks or dividend distribution (Box 7). It is difficult to see how leaving a greater share of profits in their hands could have any other result. The companies that will benefit most are those that are already the most profitable, often because they have been able to create situations of economic rent for themselves. The most likely outcome is therefore that dividend payments and share buybacks will further add to the financial investments of the recipients.

At best, inasmuch as it gives firms for a period of five years the possibility of deducting the totality of their investment spending from taxable income, the reform may give a temporary boost to investment. Its impact on the public deficit will be lasting, however. In fact, as mentioned in Chapter IV, never since the war has the burden of federal debt been as high as at present, and CBO forecasts indicate that the impact of, among other things, the ageing of the population and the rising cost of healthcare will mean that it will rise even further, by more than 10% of GDP during the 2020s. And if it fails to trigger the additional growth – and hence the additional tax revenue – announced by its promoters, the reform will add a few more GDP percentage points to the federal debt by the end of this period.

No going back to greater social solidarity

It is difficult to see the 'pressure' in the American economy being raised again sufficiently to durably increase wages at the lower end of the scale and to incite companies, in all sectors, to achieve greater productivity gains. On the one hand, the fact that the distribution of income still favours a small number of households and firms with a high propensity to save is a factor tending to depress activity; on the other, the agents whose growing debt had

hitherto tended to counteract this factor – the federal government and the large majority of households – are now unable or unwilling to borrow on the scale needed to compensate. Of course, the process of regaining through protectionist measures the domestic spending ‘given away’ to the rest of the world in recent decades could mean an increase in demand for the products of American firms. However, to some extent this regaining has already taken place: the fall in the oil price (which almost halved between 2007 and 2017) and above all the spectacular post-crisis rise in US production of shale oil have already considerably reduced the share of domestic spending going to the oil-exporters, but still without being sufficient to trigger lasting acceleration in growth. It is more difficult to see the market shares lost to Mexico and China being recovered.

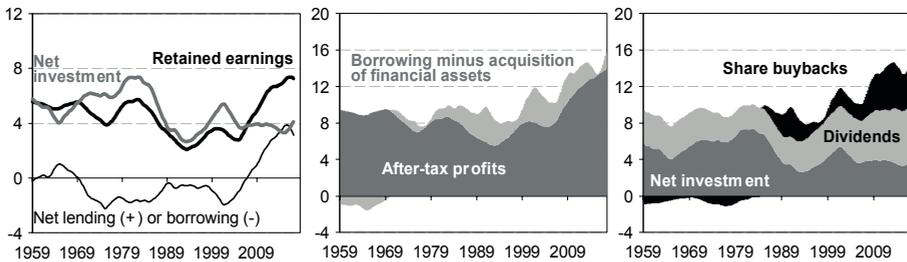
Seen in this light, there seem to be few choices open to the United States: only improved distribution of income, via public transfers or investment, is capable of giving growth sufficient impetus to trigger a lasting rise in private investment. The US government could on this occasion undertake the modernisation of the country’s infrastructure – social as well as physical. President Trump paid considerable attention during his election campaign to the need to invest in physical infrastructure of all kinds, with the financing left to public-private partnerships (which may or may not see the light of day). As for the need to invest in the education and training systems, recent years have shown just how glaring this is. The need for rationalisation of the healthcare system, whose costs weigh heavily on the budgets of both government and households, is also great.

Political inertia being what it is, there is little chance of seeing the United States abandon any time soon its aversion to public intervention. The new Administration has in fact taken off in the diametrically opposite direction to that described above. The US economy is obviously sufficiently powerful to continue for many long years to function at low pressure, as it has now done for more than a decade. However, in the short term it is more vulnerable to shocks than at any time since the Great Depression. In the absence of an ambitious public policy, there is every chance that the slow but worrying regression of part of its population will continue.

Box 7. Profits and investment by US non-financial firms

The Federal Reserve's flow-of-funds tables make it possible to compare the evolutions of non-financial firms' profits and investment spending. Their financing requirement, which had been constantly positive from the 1960s to the 1990s, was replaced in the mid-2000s by a financing capacity (the difference between their retained profits and their investment expenditure, net of depreciation). Since the 2007 crisis, this financing capacity, smoothed over seven years, has shown a steep rise, reaching 4% of their value added by mid-2017 (Graph 41).

Graph 41. Formation of non-financial firms' financing capacity or requirement, 1959-2017 (% of non-financial firms' value added, smoothed over seven years)



Sources: Federal Reserve and authors' calculations.

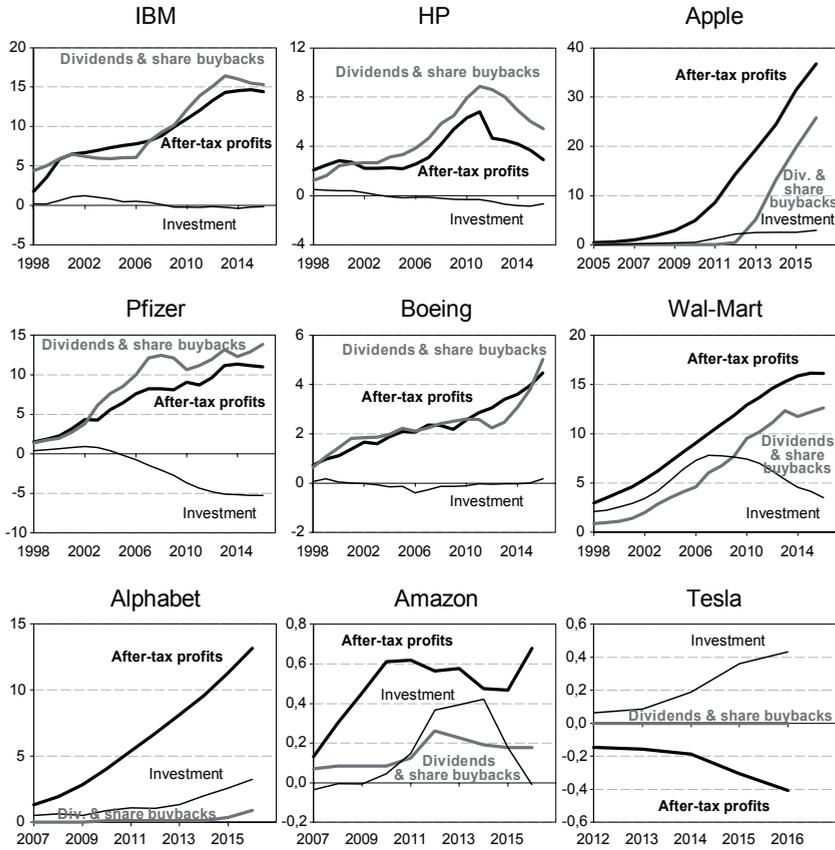
This change is due in part to the weakness of net investment expenditure, which fell appreciably in relation to their value added during the 1980s and rose only for a brief period during the 1990s – the United States economy's 'new age'. The fall in plant and equipment prices highlighted in Chapter II played a significant role in this respect: between the early 1980s and 2017, these prices fell by more than 40% by comparison with GDP prices (most of the movement taking place during the 1980s and 1990s). However, this factor only partially explains the decline in corporate investment expenditure: the growth in the *volume* of net investment also slowed down, further contributing to weaker growth in the total capital stock – and hence also in that of capital intensity. Above all, the reduction in investment as a share of GDP is insufficient to explain the continual rise in their financing capacity that began in the early 2000s, due in the first place to the rise in retained profits, a rise that is all the more spectacular in that dividend payments (already subtracted from these profits) rose sharply at the same time.

Moreover, dividends are by no means the only payments that were made to shareholders. In 1982, "rule 10b-18" modified a provision of the 1934 Securities Exchange Act and enabled companies to buy back their own shares

without being accused of share-price manipulation. Since then, the amount of these buybacks has steadily risen. Total payments by companies to their shareholders – in the form of dividend payments and share buybacks* – have accounted for a continuously rising share of their profits, from 25% at the beginning of the 1980s to more than 80% in 2017. Despite the unprecedentedly high proportion of their value added accounted for by after-tax profits, non-financial firms – taken as a group, at least – continued to borrow while at the same time building up their financial assets. As a result, in mid-2017 they held more than \$2 trillion in liquid assets or debt securities of various kinds. However, the bulk of the growth in their financial assets was due to an accumulation of ‘goodwill’ items paid at the time of M&A transactions.

Observation of the behaviour of certain listed non-financial companies provides an additional insight. On average, these companies – accounting for the bulk of non-financial companies – distributed most of their profits in the form of dividends or share buybacks, while their investment spending (excluding R&D) took an ever declining share.** There are nevertheless certain notable behavioural differences. That of some firms is very close to the average; this is true, for example, of Apple, but also of Pfizer and Boeing, which, taking the average of the period 2010-16, distributed the bulk of their after-tax profits – sometimes even more – whereas their net investment spending was practically zero. By contrast, others such as Walmart (at least until the 2007 crisis) invested a substantial portion of their profits. Even in these cases, however, the sums allocated to dividend payments and share buybacks were substantial. Only a handful of firms – mainly those in the ‘new economy’ (Amazon, Alphabet, Tesla) – posted a continual rise in their investment spending. Given that their profits were sometimes small or even non-existent, some of them, like Tesla, resorted to borrowing or to share issues to finance the investment (Graph 42).

Graph 42. Profits, dividend payments, share buybacks and net investment spending for selected quoted companies (billions of current dollars, smoothed over seven years)



Note: Companies' investment spending corresponds to their investment net of depreciation and does not take into account spending on R&D, which is substantial for many of them but treated, as in their own accounts, as current expenditure.

Sources: Thomson Reuters Datastream and Worldscope.

* In the Federal Reserve's flow-of-funds tables, share purchases linked to M&A operations are not distinguished from companies' buybacks of their own shares.

** Note that in companies' own accounts, spending on R&D, which in many cases is substantial, is treated as current expenditure and not, as in the national accounts, as investment. It has therefore (in contrast to the treatment in the national accounts) already been subtracted from companies' profits. This treatment for accounting purposes makes no difference to the gap observed between after-tax profits and investment, which is identical to the one that would be calculated using national accounting concepts.

CONCLUSION

The American economy seems to be in an impasse, for reasons that we have tried to explain in this book. The United States took the step of opening its economy to unprecedented competition – that of low-wage countries – certain that market forces would enable it to withstand the consequences. It was all the less able to do so in that technical progress was simultaneously giving firms the possibility of replacing men with machines in the performance of an increasingly large number of tasks. It takes more than the destruction of jobs to create new ones – let alone train the workers to fill them. To be effective, ‘creative destruction’ calls for interaction between government and markets. Public investment is needed to facilitate the reallocation of the ‘liberated’ workforce and the creation of new institutions and new forms of transfer are required to enable new development-generated needs to manifest themselves. Market forces are undoubtedly a formidable source of dynamism but they are also myopic: in the absence of public guidance, US experience shows that there is every chance that they will destroy jobs much more rapidly than they create them, the result being upward pressure on unemployment and a decline in the remuneration of a substantial number of jobs. In attempting to counter this pressure, the only reaction of the authorities has been to try to maintain full employment, the cornerstone of the American social pact. The method used has been steadfast – and for many years remarkably effective – recourse to the instruments of macro-economic policy. These instruments have now revealed their limitations. The coming years will show what lessons will have been learned by the United States. In the meantime, its experience could surely be of use to other advanced countries that are also confronted with intense international competition and unceasing technical progress.

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Each year, 25% of the world's output is produced by less than 5% of the planet's population. The juxtaposition of these two figures gives an idea of the power of the American economy. Not only is it the most productive among the major developed economies, but it is also a place where new products, services and production methods are constantly being invented. Even so, for all its efficiency and its capacity for innovation, the United States is progressively manifesting worrying signs of dysfunction. Since the 1970s, the American economy has experienced increasing difficulty in generating social progress. Worse still, over the past twenty years, signs of actual regression are becoming more and more numerous. How can this paradox be explained? Answering this question is the thread running throughout the chapters of this book.

Anton Brender and Florence Pisani, economists with Candriam Investors Group, offer the reader an overview of the history and structure of the American economy, guided by a concern to shed light on the problems it faces today.

