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Do Increased Private Saving Rates Spur Economic Growth?

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Do Increased Private Saving Rates Spur Economic Growth?

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Summary

Growth of aggregate demand at any given private saving rate depends on growth of private investment, export surplus and budget deficit. Slower growth of private investment in the mid-1970s has triggered stagnation trends in Europe's developed economies, caused mainly by inadequate aggregate demand. The relation between aggregate demand and the propensity to save is analysed in the present paper using the model of 'stunted growth' of Josef Steindl. The decreased utilization of capacity characteristic of stagnation can be counteracted by a reduction of the propensity to save. The most important factors determining the saving rate are distribution of incomes and the progressivity of the tax system. In many countries and periods, an inverse relation between the growth of GDP and of the private saving rate has been found and presented in the study.

Keywords: *aggregate demand, aggregate supply, 'stunted growth' model, private saving rate, GDP growth*

JEL classification: *E12, E21, H31, H32*

Kazimierz Laski

Do increased private saving rates spur economic growth?[1]

Introduction

The relationship between savings and economic growth has puzzled economists ever since economics became a scientific discipline. J. B. Say used to say that 'In reality we do not buy articles of consumption with money, the circulation medium with which we pay for them. We must in the first instance have bought this money itself by the sale of our produce' (quoted after Robinson and Eatwell, 1973, p. 24). With this argument, Say eventually came up with his famous conclusion that 'supply creates its own demand'. Marshall dotted the 'i' by observing that 'The whole of man's income is expended in the purchase of services and of commodities. It is indeed commonly said that a man spends some portion of his income and saves another ... But it is a familiar economic axiom that a man purchases labour and commodities with that portion of his income which he saves just as much as he does with that he is said to spend' (quoted after Keynes, 1936, p. 19). This thinking boils down to the statement that savings are simply (indirect) expenditure on investments. This otherwise obvious equivalence – if we define both savings and investments as the difference between gross domestic product (GDP) and consumption – tends to be interpreted in terms of a cause-and-effect relationship: one invests only as much as one can save. Because no one questions the fact that investments are the basis of economic growth, savings, by extension – via investments – are commonly viewed as the driving force behind growth.

But if this were indeed the case, the question asked in the title of this paper would be pointless, because the answer would have to be in the affirmative. However, economists since Kalecki and Keynes' time have come to understand that this causal relationship runs not from savings to investments but the other way around: from investments to savings. Excluding other factors, the economy as a whole can save only as much as it invests in a given period of time. Does this mean that individual households have no influence on their decisions to either spend or refrain from spending their incomes? Of course not; they can reduce their consumption expenditure in relation to a given level of income – and consequently increase their propensity to save. But these decisions have no influence on either current investments or overall savings, so their only effect will be a decrease in day-to-day consumption, leading to a drop of current GDP with a given level of investment.

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[1] The first version of this paper was prepared for the conference on 'The Contribution of Michał Kalecki to the Development of 20th-Century Economics', organized by the Faculty of Economics, Karol Adamiecki Academy of Economics, Katowice, in Wisła, Poland, 27 to 28 September 2005. – The author wishes to thank Grzegorz Siwicki for translating the text and Jerzy Osiatyński for editing the final version.

In the world of technology, major inventions (such as the wheel, for example) are rarely forgotten. In economics, innovative ideas are sometimes destined for obscurity. A few decades ago, a heated debate was held on the theory of total factor productivity, in particular capital productivity. Even though the discussion involved some of the brightest minds at the time, a consistent definition of the term is still unavailable. Most of today's university textbooks on microeconomics (as well as on other subjects) mention the notion of marginal capital productivity but completely ignore that historical debate, developing serious theoretical considerations in disregard of the earlier conclusions. To a large extent, the same is true of the theory of effective demand developed by Kalecki and Keynes. Today, savings are referred to in roughly the same way as they were described by Marshall. What is worse, this applies to both economic theory and practice. One characteristic example is the ongoing debate on the pension system, with its repeated calls for reform by replacing the current pay-as-you-go arrangement with a capital-funded system. While the problems of the pension system largely stem from demographic factors (including plummeting birth rates and longer average life expectancy), they are also traceable to rising unemployment and have nothing to do with the way in which the pension system is financed. It can hardly be expected that a transition from the pay-as-you-go system to a capital-funded system would boost population growth or shorten average life expectancy. Similarly, there is no reason to believe that such a move would help reduce unemployment. Despite this, proposals are being made to introduce a capital-funded system (which, in part, is already available in Poland), justifying this with the need to increase private household savings in a bid to guarantee funds for future pensions. However, overall savings cannot be increased in this way because they depend on investments. Even if the propensity to save were to increase (which is not at all certain in Poland) with a given level of investment, it would only produce a drop in consumption and decelerate GDP growth. The slowdown would negatively influence further investments and prospective GDP development, which would be the true cause for paying out pensions in the future regardless of the current financing of the pension system. All this shows that the relationship between savings and economic growth is a major theoretical as well as practical issue.

The present paper is made up of six parts. Part 1 briefly characterizes two stages of economic growth after World War II, in particular the stage of 'stunted growth' in the European Union over the past few decades. Part 2 is dedicated to the economic growth model in the tradition of Kalecki and Steindl. The steady-state growth model is also discussed, with a special focus on factors that impede growth in a capitalist economy. Part 3 examines the private savings rate from three perspectives: the share of wages in GDP; tax on profits; and the system of progressive taxation of household incomes. In Parts 4, 5 and 6, these arguments are analysed with the use of empirical data from a number of countries. The analysis highlights situations in which *increased saving rates slowed economic growth* and cases in which *decreased saving rates spurred growth*. As a

result, the analysis proves that an increased saving rate does not necessarily accelerate economic growth.

2 Two stages of growth after World War II

After World War II, developed capitalist countries, except for the United States, showed two basic stages of growth, with the oil crisis of the 1970s serving as a dividing line. In the first stage, GDP grew at an unprecedented rate. In the second stage, which continues to this day, economic growth slowed so dramatically that Steindl rightly called it 'stunted growth'. Table 1 presents several characteristic figures illustrating economic growth in the EU compared with the United States.

Table 1

Average annual rate of GDP growth in 1961-2006 (%)

Years	1961-1970	1971-1980	1981-1990	1991-2000	2001-2006
EU-15	4.8	3.0	2.4	2.1	1.7
USA	4.2	3.2	3.2	3.3	2.8

Source: AMECO Database (with projections for 2005-2006).

It turns out that GDP growth in the EU-15 has decreased consistently. In the period 2001-2006, it was only 1.7% annually, and even less in per capita terms. That trend has not occurred in the United States. Of course, these consistent differences in the rate of growth are not accidental.

A number of specific historic conditions contributed to the rapid GDP growth in the first stage. They were all linked to the post-war reconstruction of Europe and the Cold War. Investment in Europe was stimulated by innovations transferred from the United States under the Marshall Plan. The 'full employment ideology' and the responsibility of the state for the condition of the economy were universally acknowledged. After all, the memories of the Great Depression of the 1930s were too fresh and compelling to be forgotten. Moreover, the rivalry with the communist system made it impossible to accept massive unemployment: capitalism was supposed to prove its economic prevalence even in a state of full employment – which it managed to accomplish. Western Europe even became an importer of labour from non-European countries, chiefly Turkey. A welfare state with a considerable role of the public sector turned out to be a better alternative than the inflexible central planning system. It is no wonder then that the first stage of post-WW II growth was called the 'Golden Age' of the capitalist economy.[2]

[2] See Maddison (2001).

The oil crisis of the 1970s marked the start of a new era (the first signs of which, however, had begun to emerge earlier). The possibilities of importing US innovations petered out as imitation progressed. As the Cold War tension subsided, the internal cohesion of the capitalist countries began to weaken, which was reflected by a move away from the Bretton Woods system. At the same time, the increased strength of the working class and trade unions led to a situation in which capitalists began to oppose the full employment policy. Kalecki (1943) wrote, prophetically:

> Indeed, under a regime of permanent full employment, the 'sack' would cease to play its role as a disciplinary measure. It is true that profits would be higher under a regime of full employment than they are on the average under *laissez-faire* … But 'discipline in the factories' and 'political stability' are more appreciated than profits by business leaders. Their class instinct tells them lasting full employment is unsound from their point of view, and that unemployment is an integral part of the 'normal' capitalist system. (p. 351)

However, Kalecki failed to predict that with time university economics, using the Non-Accelerating Inflation Rate of Unemployment (NAIRU), would actually justify the need for unemployment, even though this was nothing else but reviving an old thesis by Marx – a figure otherwise despised by university economics – about a reserve army of labour.

Economic policymakers in Brussels are responsible for the EU's 'stunted growth'. EU economic policy is based on three pillars. The first pillar is the assumption that a market economy free from the harmful influence of the state would be basically stable and consistently increase the prosperity of the people. To this end, far-reaching public sector privatization and deregulation are needed to foster fully free markets for goods, services, capital and labour. Unrestrained market operations spontaneously promote the growth of production and employment. Second, EU macroeconomic policy is limited to creating conditions for growth through combining stable prices with 'healthy public finances'. The fight against inflation – or the very possibility of inflation – is the main and only goal of the European Central Bank. According to this objective, monetary policy can only influence nominal values, in particular prices, but has no influence on the growth of real production or employment. As far as 'healthy public finances' are concerned, they are overseen by the Stabilization and Growth Pact, which calls for a balanced budget or even a budgetary surplus in the medium term to advance public debt repayment. Third, unemployment is primarily the result of labour market imperfections rather than insufficient aggregate demand. Therefore joblessness should be combated by increasing the flexibility of the labour market, especially wages, in order to reduce NAIRU.

Referring to this strategy, Guger et al. (2004), well-known economists from the Austrian Institute of Economic Research (WIFO), stress the restrictive nature of the EU's macroeconomic policy. They describe this policy as one that is deliberately aimed at economic stagnation, even though it was supposed to promote stabilization and economic growth. Indeed, while institutions designed to supervise price stability and financial policy

are widely developed in the EU, there are no institutions responsible for aggregate demand and full employment. As a result, European policy focuses on counteracting inflation and fighting the budget deficit. The changes announced in Lisbon with an aim to revive growth have produced no result so far.

3 A growth model based on aggregate supply and aggregate demand

Some components of this model are known in Poland from Kalecki's work on the theory of growth in the socialist economy. This theory overlooks the problem of aggregate demand, which is insignificant in a centrally planned economy, but vital in a capitalist economy. Understandably, one could hardly speak of insufficient aggregate demand in a seller's market, i.e., in an economy dominated by ubiquitous shortages of goods and services. It is no wonder then that Kalecki chose to ignore this issue. Not everyone in Poland is aware of this fundamental difference, as a result of which this model is often applied directly in teaching and research without bothering to adjust it to capitalist economy standards (which does require some fundamental changes).

3.1 Steady-state growth model

Let us denote the actual volume of GDP as Y and assume, following Steindl (1990 [1979], pp. 108-114), that it represents only a part of production capacity Y^*:

$$Y = uY^*,\ Y \leq Y^*, \tag{1}$$

where u denotes the degree of utilization of production capacity. Hence:

$$\Delta Y = u\,\Delta Y^* + Y^*\,\Delta u. \tag{2}$$

(Gross) private investments necessary to expand production capacity by ΔY^* are:

$$IP = v\Delta Y^* + dvY^*, \tag{3}$$

where v means the marginal (and average) capital-to-production capacity ratio, while d is an amortization rate calculated in such a way in relation to production capital vY^* that it guarantees the replacement of the oldest generation of investment falling out of use in a given year.[3] On the other hand, gross private savings SP can be expressed as a part of GDP:

$$SP = spY, \tag{4}$$

where sp means the private saving rate. *Ex post* we always have $SP = IP$ (in a closed economy without government incomes and expenditures), as a result of which, from (3) and (4), we get:

[3] Bhaduri (1972).

$$v\Delta Y^{*}+dvY^{*} = spY \qquad \Delta Y^{*} = (spY-dvY^{*})/v. \tag{5}$$

From (2), after considering (5), we have:

$$\Delta Y = u[(sp/v)Y-(dY^{*})] + Y^{*}\Delta u,$$

and dividing both sides of the above equation by Y we get:

$$(\Delta Y/Y) = u(sp/v) - d + (\Delta u/u) \tag{6}$$

because $(Y^{*}/Y) = (1/u)$.

Equation (6) differs from Kalecki's equation in that, instead of the capital output ratio, it represents the ratio of production capacity per unit of (Y^{*}) corrected for its utilization (u). Referring to Harrod, Steindl pointed out that these two coefficients require separate treatment because v is technologically determined, while u depends on aggregate demand.

Equation (6) implies a level of investments at which their income effect and production effect are equal. This is precisely what happens in steady-state growth. However, when investments do not reach the required steady-state level, the right side of (6) reflects only the potential aggregate supply side, while we need a separate equation to determine the effective aggregate demand side.

Private savings SP are *ex post* (in a closed economy without the state) always equal to private investments IP:

$$SP = IP, \tag{7}$$

where SP comprises both gross enterprise savings and those of households. Dividing both sides of (7) by Y, we obtain the *ex post* private saving rate:

$$sp = (IP/Y)$$

and

$$Y = (IP/sp). \tag{8}$$

From (8), taking logarithmic derivatives with respect to time, we have:

$$(\Delta Y/Y) = [\Delta(IP)](IP]) - [\Delta(sp)/(sp]. \tag{9}$$

In steady-state growth, sp = constant, therefore from (9) we get:

$$(\Delta Y/Y) = [\Delta(IP)/IP]. \tag{9'}$$

From (9') and (6), we then have:

$$[\Delta(IP)/IP] = [u\ (sp/v) - d], \tag{10}$$

i.e., a formula that directly shows the investment growth rate necessary to maintain steady-state growth; in this state, u = constant as well, so the expression $(\Delta u/u)$ disappears in (6).

The growth of investments at a rate of $[u(sp/v) - d]$ is a necessary condition to match the income effect of investments with their capacity effect. The income effect of investments occurs when capital goods are produced; it disappears when investments are completed. To ensure the continued use of investments after their completion, new investment projects must be launched with an income effect sufficient to attain this goal.

Let us denote investments generated in the previous period as IP. When they are completed in a given period, production capacity increases by $\Delta Y^* = [(IP/v) - dY^*]$, while at a given u the supplied GDP grows by $\Delta Y_S = u\Delta Y^* = u[(IP/v) - dY^*]$. On the other hand, on the demand side the growth of GDP depends on the growth of investments generated in the same period ΔIP; therefore $\Delta Y_D = (\Delta IP/sp)$. The growth of GDP on the supply and demand sides will be equal (as a result of which u can remain constant) if and only if:

$$u[(IP/v) - dY^*] = (\Delta IP/sp),$$

which means if:

$$(\Delta IP/IP) = u(sp/v) - [(dYsp)/IP]$$

$$(\Delta IP/IP) = u[sp/v] - d,$$

because $$spY = SP = IP,$$

which strictly corresponds to formula (10).[4]

3.2 Factors impeding steady-state growth

Private investments in a capitalist economy are subject to constant fluctuations. This explains why they cannot grow at a steady rate, as determined by formula (10). Still, this formula is a convenient starting point to analyse the real economic process. First of all, it is necessary to note that, in an open economy, which is not necessarily characterized by a balanced government budget, private savings SP *ex post* are always equal to:

$$SP = IP + E + D, \qquad (11)$$

which is the sum of private investments IP, net exports E (the difference between exports and imports of goods and non-factor services) and budget deficit D (the difference between

[4] Let us assume that $sp = 0.2$, $v = 4$ and $u = 0.8$, therefore the rate of steady-state growth is $u(sp/v) = 0.8(0.2/4) = 0.04$, i.e. 4%. Let production assets, production capacity, GDP and $IP(net)$ in the starting period be 1000, 250, 200 and 40 respectively; consequently, production assets in the next period – excluding amortization – grow by 40, while production capacity increases by $\Delta Y^* = 10$. Let further investments rise by $\Delta IP = 1.6$ (which means by 4%), making GDP grow by $\Delta Y = (1.6/0.2) = 8$. In this situation, the utilization of the increased production capacity will amount to 80%, guaranteeing the constancy of u.

budgetary expenditure on goods and services *G* and net budgetary incomes *T*, where *T* means all budgetary incomes, including social insurance contributions in the pay-as-you-go system, after deducting all monetary transfers, including payments from the social insurance system). Dividing both sides of (11) by *Y* we obtain the *ex post* private saving rate:

$$sp = (IP + E + D)/Y$$

and

$$Y = (IP + E + D)/ sp. \quad (12)$$

In keeping with (12), the three factors *IP, E* and *D*, along with *sp* determine the volume of *ex post* GDP from the aggregate demand side.[5] We will denote the sum of *IP* + *E* + *D* in short as *IPED*. From (8), taking logarithmic derivatives with respect to time, we get:

$$(\Delta Y/Y) = [\Delta(IPED)](IPED) - [\Delta(sp)/sp]. \quad (13)$$

There are significant similarities and dissimilarities between *IP*, on the one hand, and *D* and *E*, on the other. Private investments *IP* are a non-negative value, while *D* and *E* can be either positive or negative. In particular, in the case of a budget deficit ($D > 0$) or net exports ($E > 0$), they always lead to an income effect identical to that generated by investments. Unless it is public investments that are deficit financed, neither *D* nor *E* generate a capacity effect. A budget deficit or net exports are followed by an increase in aggregate demand at a given level of private investments. On the other hand, at a given level of private investments a budget surplus ($D < 0$) and (or) net imports ($E < 0$) decrease aggregate demand.

As noted above, the fluctuations of private investments are a characteristic feature of the capitalist economy. Spontaneous changes of *D* and *E* accompanying the fluctuations of private investments offset the fluctuations of aggregate demand and GDP. When *IP* drops, GDP and budget incomes fall as well (accompanied by an increase in expenditure on items such as unemployment benefits and social spending). As a result, the budget deficit expands (or the surplus shrinks), mitigating the decline in aggregate demand at any given drop of *IP*. In the reverse case, when private investments increase, GDP and budget revenues grow (accompanied by decreased expenditure on, e.g., unemployment benefits and social spending). As a result, the budget surplus grows (or the deficit shrinks), diminishing the increase in aggregate demand at any given rise of *IP*. Changes in the balance of trade work in a similar way. When private investment and GDP grow, the demand for imports increases as well and the trade balance worsens. This factor reins in the increase in aggregate demand and GDP. The reverse happens when private

[5] Laski (2002), pp. 15-19.

investments decrease, because a decrease of GDP reduces demand for imports and improves the balance of trade, thus reining in the drop of aggregate demand and GDP. Of special importance are changes in the budget deficit that accompany changes in private investments. These changes are important in as much as economists treat them as an 'automatic stabilizer' of business cycles. However, this requires the consent of the ministry of finance. In particular, the finance minister should not seek to balance the budget in the depression phase of the business cycle, because by doing so he would be restraining the impact of the automatic stabilizer and adding to the business depression generated by changes in private investments. That is why proposals to the effect that the finance minister should behave like a solid private businessman testify to the lack of understanding of the basic difference between the micro- and macroeconomic approaches to public finance problems.

The question may arise whether steady-state growth is at all possible under a permanent budget deficit. It turns out that such a scenario is possible if, under a constant rate of GDP growth, the government incurs new loans representing a constant part of GDP. In this situation, the state debt grows all the time, but its ratio to GDP tends towards a certain limit, as a result of which the government does not have to repay the debt, though it must service it. In this context, the notion of primary budget deficit, or budget deficit corrected for public debt service, is used. It is rightly assumed that the primary deficit co-defines the volume of effective demand more precisely than the overall budget deficit, because revenue from public debt service is usually reinvested on the capital market. The question whether the primary budget deficit (with a constant debt-to-GDP ratio) increases or decreases aggregate demand under a given growth of private investments depends on the interest rate in relation to the GDP growth rate: the lower (higher) the interest rate in relation to the GDP growth rate, the more (less) efficient is the policy of maintaining aggregate demand with the use of deficit spending (see Laski and Podkaminer, 1995).

Formula (13) shows that, with a given *sp*, the rate of GDP growth entirely depends on the growth of *IPED*, in particular *IP*.[6] However, when *sp* is not constant, then at a given growth of *IPED*, the rate of GDP growth will increase with a fall in the growth of *sp*, i..e., of the propensity to save of companies and households. However, it should be stressed that this

[6] A comparison of the periods 1978-1994 and 1995-2000 in Ireland offers a good example of strong acceleration of economic growth at constant propensity to save. Even though *sp* rose during this period, from 21.2% in 1978 to 25.1% in 1994 and to 31.3% in 2000, the definition *SP* = *IPED* shows that private savings defined in this way are exclusively concerned with the balance of trade *(E)*. If the balance of trade differs substantially from the current account *(CA)* – as in Ireland, as a result of high net transfers abroad of incomes from factors of production – this difference must be taken into account when analysing the propensity to save of domestic companies and domestic households. Let us denote national savings as *SP' = IP + CA + D*, gross national product as *Y'* and the national private saving rate as *sp' = (SP'/Y')*. In Ireland in 1978, 1994 and 2000, *sp'* was 24.7%, 19.9% and 23.9% respectively. While *sp* rose markedly, *sp'* tended to hover around 24%. Substituting *sp'* for *sp*, Ireland is seen to show an acceleration of economic growth, especially due to *IP*, with a roughly constant propensity to save of the domestic enterprise and household sectors (see Laski and Römisch, 2003, pp. 7-8).

method of increasing the rate of GDP growth at a given growth of *IPED*, especially *IP*, can only be applied if there is unutilized production capacity. In the long term, one cannot expect that a decreased saving rate will compensate for an insufficient growth of private investments because reserve capacity will run out sooner or later. However, when investment expansion is insufficient and production capacity is underutilized, a drop of *sp* is important because it provokes GDP growth that leads to better utilization of production capacity and creates conditions for stimulating investment activity.

What happens when the growth of *IP* decelerates for some reason (for example, due to a weaker stream of inventions and innovation, or a worsening of business expectations), and the slowdown is insufficiently compensated by an increase of $E + D$ or by a decrease of *sp*? Then the increase in aggregate demand, measured by (9), is smaller than the increase of production capacity measured by (6), and the rate of GDP growth is determined by the 'shorter side' of the market, i.e., by aggregate demand. Indeed, in a capitalist economy, producers, regardless of their production capacity, manufacture only as much as the market can absorb at a given level of prices and wages. In this situation, in (6) $(\Delta u/u) < 0$ and u decreases. In this way, the use of production capacity is adapted to the slowing down of GDP growth. If the rate of private investment growth remained at a new lower level for some time, then a new state of steady-state growth could be expected to develop, in which production capacity would be adapted to aggregate demand with a lower but steady u. However, this is unlikely to occur because u is one of the most important arguments in every function of investment decisions. Reduced production capacity utilization tends to discourage companies from making new investment decisions. As a result, once investment activity begins to decline beyond its normal cyclical fluctuations, it may tend to plummet deeper and deeper. This is the main idea of the stagnation theory formulated by Steindl (1952): an economy slowing its growth path displays a snowballing tendency towards a decreased rate of GDP growth leading to stagnation, unless specific historic circumstances or a deliberate economic policy counteract this process.

Some factors can counteract this snowballing decrease of the GDP growth rate, but at least one factor can make this slide even more dramatic. The decrease of aggregate demand is lessened by an automatic increase of the budget deficit (which, however, requires some measure of tolerance on the part of fiscal policy-makers) and by the fact that the GDP decrease improves the trade balance. Indeed, decreased GDP reduces budgetary incomes and limits demand for imports. As a result, because $\Delta D > 0$ and $\Delta E > 0$, *IPED* decreases less markedly than *IP* alone. The GDP slump may, however, be compounded by an increased saving rate provoked by a reduced u. Indeed, from (8), considering the relationship $Y = uY^*$, we have:

$$u = [(IP)/(Y^*sp)], \tag{14}$$

along with the partial derivative:

$$[\partial u/\partial(sp)] = - IP/[Y^*(sp)^2] < 0. \quad (14')$$

Derivative (14') 'formalizes' the so-called savings paradox under which GDP decreases when *sp* grows *ceteris paribus*. However, this derivative also means that *sp* grows when *u* decreases. If consequently, as a result of a drop in *IP*, both GDP and *u* fall, then a decrease of *u* leads to an increase in *sp* and deeper stagnation.

4 The key arguments of the saving rate function

The *sp* function occurring in (8) and (12) is rather complicated. Some of its arguments are difficult to formalize; others are not known well enough. Let us limit ourselves, then, to a few arguments that seem to be especially important for our analysis. GDP can be divided into wage and salary fund *W,* and gross profits *R* (i.e., profits inclusive of amortization). The wage and salary fund can be defined as:

$$W = aY + bY^*, \quad (15)$$

where aY chiefly (though not exclusively) means the wage part of the wage and salary fund dependent on the volume of *Y*, while bY^* chiefly means the salary part of the wage and salary fund that largely depends on the volume of production capacity Y^*. Costs generated by aY are variable costs, while costs linked with bY^* are constant costs (overheads). They are covered from markup on variable unit costs. The salary fund includes salaries received by senior executives and managers, i.e., relatively high high-income employees. Therefore we will assume that the propensity to save in the group represented by aY and defined as s_a is lower than in the group represented by bY^* and defined as s_b, which means $s_b > s_a$. Profits are the difference between GDP and the wage and salary fund:

$$R = Y - W = Y - aY - bY^*$$

$$R = (1-a)\,Y - bY^*, \quad (16)$$

while the share of profits is expressed as

$$(R/Y) = (1-a) - (b/u) \quad (16')$$

Let us denote the propensity to save from profits, *R*, as s_r.

We will now deal with disposable incomes, which means the after-tax incomes of companies and individual groups of employees. We will differentiate among three tax rates: t_a (taxes paid chiefly on wages), t_b (taxes paid chiefly on salaries) and t_r (taxes on company profits). We assume that in each group the average and marginal tax rates are equal and that there is an inequality:

$$t_a < t_b,$$

which means that wage earners benefit from a lower tax rate than salary earners. Therefore the respective savings of individual income groups are:

$$SP_a = s_a\, a\, Y\, (1\text{-}t_a)$$

$$SP_b = s_b\, b\, Y^*\, (1\text{-}t_b)$$

$$SP_r = s_r\, [(1\text{-}a)\, Y - bY^*]\, (1\text{-}t_r),$$

where it is assumed that:

$$s_b < s_r.$$

Consequently, total private savings are:

$$SP = s_a\, a\, Y\, (1\text{-}t_a) + s_b\, b\, Y^*\, (1\text{-}t_b) + s_r\, [(1\text{-}a)\, Y - bY^*]\, (1\text{-}t_r), \qquad (17)$$

while the private saving rate $sp = (SP/Y)$ is defined by the following formula:

$$sp = s_a\, a\, (1\text{-}t_a) + s_b\, (b/u)\, (1\text{-}t_b) + s_r\, [(1\text{-}a) - (b/u)]\, (1\text{-}t_r). \qquad (18)$$

Bringing together the relevant expressions, we obtain that:

$$sp = a[s_a\, (1\text{-}t_a) - s_r\, (1\text{-}t_r)] - (b/u)\, [s_r\, [(1\text{-}t_r) - s_b\, (1\text{-}t_b)] + sr\, (1\text{-}tr). \qquad (18')$$

Using (18'), we can examine the relationship between the *sp* function and several arguments that will play a major role in the subsequent analysis. At the same time, we assume that parameters s_a, s_b, s_r and *b* are constant.

The relationship between *sp* and argument *a* is determined by the partial derivative:

$$[\partial(sp)/\partial a] = [s_a\, (1\text{-}t_a) - s_r\, (1\text{-}t_r)] < 0, \qquad (19)$$

if, as we assume, $s_r\, (1\text{-}t_r) > s_a\, (1\text{-}t_a)$.

This last assumption means that the propensity to save from profits, even after deducting the tax paid, is higher than the wage earners' propensity to save from their disposable incomes. This assumption should raise no doubts because savings from profits also include fixed capital amortization. That *sp* is a decreasing function of *a* results from the fact that the increased share of wages (mostly of blue-collar workers) in GDP means an increase of those incomes that are characterized by the lowest propensity to save. It should be noted that argument *a* is strictly linked with the growth of real wages and labour productivity. Dividing (15) by Y, we get:

$$(W/Y) = [(aY + bY^*)/Y] = [a + (b/u)]. \qquad (20)$$

Dividing the numerator and denominator of the left side of (20) by *L*, employment, we obtain (w/y), where *w* and *y* are the real wage rate and real labour productivity respectively. If, then, the growth of wages is slower than the growth of labour productivity, the left side of

[20] decreases and its right side must adjust. When wages fall in relation to labour productivity, demand for consumer goods increases at a slower rate than in a situation when the *(w/y)* ratio is constant. If, at the same time, private investments do not rise to a sufficient extent (which may well happen due to such factors as the time lag between investment decisions and actual investments), then *u*, which directly depends on the depth of the market, decreases, leading to an inevitable increase in *(b/u)*. In this situation, *a* must fall – even more dramatically than if *u* remained constant. If real wages grow at a slower rate than real labour productivity, *a*, this means that the share of wages (chiefly those earned by blue-collar workers) in GDP falls. In keeping with (18), this means that the saving rate, *sp*, grows when *a* decreases.

The relationship between *sp* and t_r, according to (18), is:

$$[\partial(sp)/\partial t_r] = -sr\,[(1-a) - (b/u)] < 0, \tag{21}$$

because, in keeping with (16'), the expression in brackets denotes the share of (gross) profits in GDP, which in essence cannot be negative. Formula (21) means that *sp* is a decreasing function of the profits tax rate, t_r, which is otherwise obvious because the weight of the highest propensity to save decreases when t_r grows.

Finally, *sp* depends on the progression of the personal income tax system. Indeed, from (18), it may be derived that:

$$[\partial(sp)/\partial t_b] = -s_b\,(b/u) < 0, \tag{22}$$

which means that *sp* decreases when the tax rate for the more affluent households t_b grows, *ceteris paribus*. The ratio (t_b/t_a) can thus be used to measure the progressivity of the personal income tax system. If t_b grows in relation to t_a, the tax progression increases, leading to a consequent decrease in *sp*, as shown by (22). This is understandable because the disposable incomes of taxpayers that are characterized by a relatively high propensity to save decrease when t_b/t_a rises. On the other hand, when income tax progression decreases, the saving rate *sp* grows. All this results from the inequality $t_b > t_a$, which decreases with a decrease in the progressivity of the personal income tax system. An extreme example of decreased tax progression is a flat tax rate, in the case of which a uniform *marginal* tax rate t_{lin} is introduced that fulfils the double inequality:

$$t_b > t_{lin} > t_a.$$

This condition must be met if the government's revenue from personal income tax is not to be reduced. Formula (18) then takes the form of:

$$sp = s_a a\,(1-t_{lin}) + s_b\,(b/u)\,(1-t_{lin}) + s_r\,[(1-a) - (b/u)]\,(1-t_r), \tag{23}$$

which leads to identical weights at $s_a a$ and $s_b\,(b/u)$. On the other hand, when the personal income tax system is progressive, the weight at $s_a a$ is lower, while the weight at $s_b\,(b/u)$ is higher. These differences in weights grow with the progression compared to the flat tax

rate system. Both these factors produce the same effect – that of an increasing private saving rate, *sp*, during the transition from a non-flat to a flat personal income tax rate.

It must also be added that potential budgetary revenue losses resulting from the introduction of a flat tax rate system are often made up for by a higher indirect tax rate (VAT). However, indirect taxes are, by their very nature, strongly regressive, because they place the greatest burden on households with the lowest propensity to save (and consequently the highest propensity to consume). So if a flat tax rate is combined with increased indirect taxes, the weight at s_a drops further, while showing additional growth at s_b, thus contributing to an extra growth of *sp*.

To sum up, let $h = [a, t_r, (t_b/t_a)]$ represent a linear vector composed of the aforementioned elements. Then the private saving rate, *sp(h)*, can be presented as a decreasing function of the share of wages (mostly of blue-collar workers) in GDP, *a*, of the tax on profits t_r, and of the expression measuring the progressivity of the personal income tax system (t_b/t_a). However, it should be stressed that *sp* also depends on other factors. In particular, we assumed that s_a, s_b and s_r are constant, which in practice is uncertain because within each income group the distribution of incomes and their volumes undergo frequent changes. Moreover, these parameters also depend on property, including ownership of financial assets,[7] and thus on stock exchange speculation, on expectations, and so on and so forth. Thus, the presented function *sp(h)* is only an imperfect approximation of the reality.

5 Investment and the saving rate at a time of 'stunted growth'

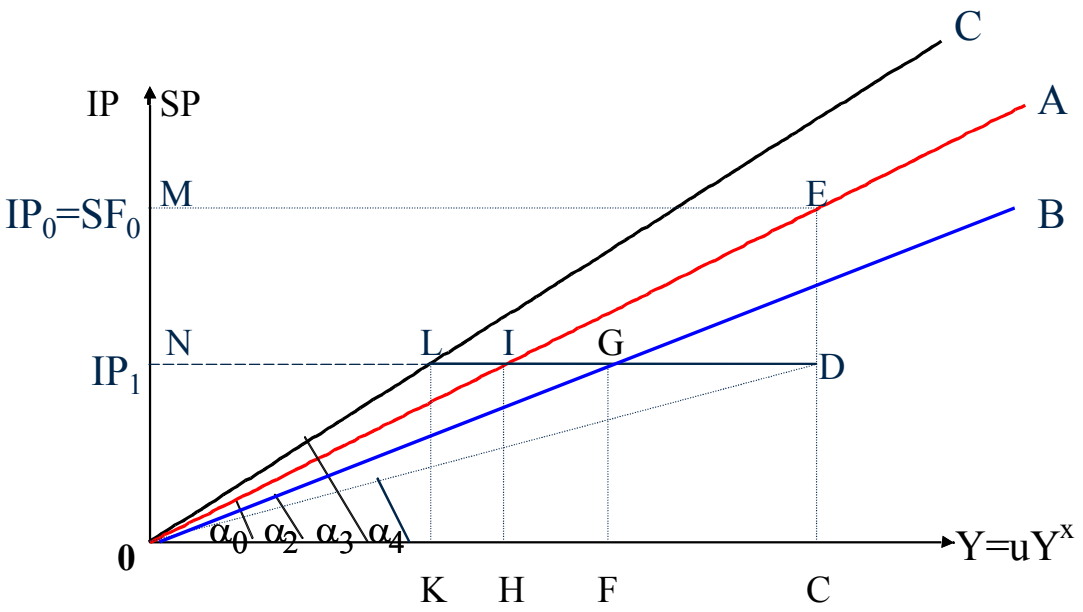
When GDP growth is insufficient – as has been the case in the European Union over the past decades – it is essential to support the rate of expansion of *IP*, with a given private saving rate. In turn, with private investments growing too slowly, it is necessary to work towards reducing *sp*, or at least not to cause that rate to increase. Figure 1 illustrates the further course of our analysis. On the x-axis we measure GDP, which is the product of potential production and the coefficient of the degree of production capacity, i.e., $Y = uY^*$. With the full utilization of production capacity, *u* would be '1' and we would have $Y = Y^*$. But the optimum degree of capacity utilization should be less than 1, to ensure sufficiently flexible supply in terms of both its volume and structure. If u_0 represents an optimum level of utilization, then $Y_0 = u_0 Y^*$, with the $OC = Y_0$ section in Figure 1 showing the GDP obtained under these conditions. Let us assume that the private saving rate, sp_0, is equal to the slope of radius *OA*, which is $tg\,\alpha_0$; then $sp_0 = tg\,\alpha_0$. In that case, assuming that $E_0 = D_0 = 0$, we need private investments, $IP_0 = CE$, to have GDP = Y_0. Let us note that this volume of private investments corresponds to private savings SP_0, which are also equal to section *CE* in Figure 1.

[7] Laski and Römisch (2001).

The coordinates of point *E* in Figure 1, where section $CE = IP_0$ crosses radius *OA*, point to this configuration. Because existing production capacity is vY^*, with investments IP_0 the growth of production capacity is (IP_0 / vY^*). Let us denote it as g_0.[8] Let us also assume that the rate of growth of employment, *L* (equal to the rate of growth of the labour force), is *m*, while the rate of growth of labour productivity, *y,* is *n,* with $g_0 = m_0 + n_0$. Let us assume that, with GDP = Y_0, the rate of GDP growth is g_0. Under these assumptions, the unemployment rate remains constant, and we will also assume that we are dealing with relatively small frictional unemployment which tends to accompany the essentially full employment of the labour force. Then, under full employment, private investments IP_0 are equal to private savings SP_0. Of course, the position of point *E* in Figure 1 is not constant over time, but moves to the right along section *OA*. We ignore this movement because, in steady-state growth, the overall relationship between investment and GDP will remain constant even though their volumes increase.[9]

Figure 1

GDP as a function of private investments and the rate of private saving



Let us assume that private investments decrease for any reason from $IP_0 = CE$ to $IP_1 = CD$. While previously private investments corresponded to private savings at full employment, now they are smaller, i.e. $IP_1 < SP_0$. Consequently, still assuming that $E = D = 0$, we see that the volume of GDP is $Y_1 = OH$, which corresponds to the abscissa of point *I*, marking the intersection of *ND* with the radius *OA*. We also have $OH = Y_1 = u_1 Y^*$,

[8] To simplify the analysis wear and tear of equipment is ignored.

[9] If the analysed period is *t*, then in any period $t = 0, 1, 2, 3$ etc. GDP will be $Y_t = Y_0 e^{g(0)t}$, and private investments will be $IP_t = IP_0 e^{g(0)t}$ etc.

where $u_1 < u_0$ implies a lower degree of production capacity utilization. Because $Y_1 < Y_0$, the rate of GDP growth falls from g_0 to $g_1 = m_1 + n_0$, if we assume that the rate of growth of labour productivity, n_0, remained unchanged. As a consequence, the entire burden of the reduced growth rates of investments and GDP falls on the employment growth rate, making employment constant or even decreasing, if $n_0 \geq g_1$. The position determined by the coordinates of point *I* is unstable, however, because 'automatic stabilizers' begin to work in the form of an increased budget deficit and a stimulated balance of trade.

Obviously, in the first place, policy-makers should not disturb the work of automatic stabilizers, for example by attempting to pursue a 'sound budgetary policy' or tolerating an appreciation of the domestic currency. However, this is just the minimum. A policy aimed at putting the economy back on track for full employment growth is needed, primarily by supporting those private investments that create new jobs. This can chiefly be attained by policy measures supporting applied research and innovation, as well as education and basic sciences, which are the foundations of research and development. These measures also include industrial policy instruments, regardless of the name and form in which they are used.[10] Because armaments are exceptionally science-intensive today, the armaments policy in many countries, in particular the United States, produces a number of benefits in the form of external effects, innovation and inventions, which are later used in private investment projects. Another example of an effective industrial policy in several EU member states is the development and production of the Airbus plane. A certain role can also be played by incentives offered to investors. Monetary policy may play a major role as well, particularly by reducing interest rates when investment activity declines – instead of exclusively concentrating on the fight against inflation. It is also necessary to mention the dangers lurking for real investment (in fixed and working capital). These dangers result from stock market speculation, where high and fast profits may cause a situation in which companies in the non-financial sector will increasingly become involved on the capital market instead of concentrating on non-financial investments that either create or retain jobs.

The issue of technological progress, the main driving force behind private investments, requires separate treatment. The present work, as its title indicates, focuses on the private saving rate. We have already said that, next to supporting private investments, reducing the private saving rate should be another way to combat 'stunted growth'. If the price mechanism in a capitalist economy should indeed work in the way it is described in academic textbooks, after a drop in investments from IP_0 to IP_1, given nominal wages, prices of consumer goods should also decrease, while consumption should increase fast enough to have private savings (chiefly out of profits and high personal incomes) adapt to the reduced level of investment. In terms of Figure 1, this would mean a reduction of

[10] See Wade (1992), in particular Chapter 1, 'States, Markets and Industrial Policy'.

section *CE* by section *DE*. Section *DE* would be filled by consumption, while the saving rate would fall from $sp_0 = tg\alpha_0$ to $sp_4 = tg\alpha_4$ (the slope of radius *OD*). Of course, profits would also fall, but because they are not used for investment, they should be replaced by consumption. Such a perfect price mechanism would adjust the savings rate to investments IP_1, instead of adapting GDP, in the volume of $Y_3 = OH$, to the savings rate, sp_0.

However, since the price mechanism does not work this way, an economic policy is needed that will either prevent or, at least, as far as possible reduce the negative consequences of the absence of such a mechanism. In the present context, this requires attempting to reduce the private saving rate *sp(h)*. It should be noted that the goal is to reduce not the volume of private savings, but the rate of savings. These two different concepts are often confused, which gives rise to many misunderstandings. Of course, the confusion is not accidental. If one assumes that GDP is 'given', then *SP* and *sp* change together. This is indeed the essence of the orthodox theory, according to which GDP is always defined by the supply-side factors.

Considering the function *sp(h),* where *h* represents arguments of this function, it is easy to formulate recommendations for economic policy in the sense of what measures should be taken to overcome the state of 'stunted growth', and what measures should be avoided in order not to aggravate the problem. The basic goal, unless the conditions change, is to restore the rate of growth $g_0 = m_0 + n_0$ through investment and fiscal policies, as pointed out already in the previous section. As far as the saving rate is concerned, the optimum solution would be to reduce it to $sp_4 = tg\alpha_4$, adjusted to $IP_1 = CD$, which would guarantee a return to $Y_0 = OC$. However, as already noted, a market economy lacks a spontaneous mechanism working in this direction. The available policy measures that should be used to reduce the saving rate relate primarily to influencing variable *a* and the progressivity of the personal income tax system as measured by the (t_b/t_a) ratio. Changes in the tax on profits, t_r, also influence the saving rate.

5.1 Tax on profits

The analysis of function *sp* shows that the private saving rate will be reduced (or at least prevented from growing) primarily by refraining from reducing the tax on profits. However, in practice taxes on profits tend to be reduced, on the strength of the argument that this would support private investments.

The problem of supporting investments by reducing taxes on profits deserves more comprehensive analysis, especially if this policy is not accompanied by increasing the budget deficit. We must first of all ask ourselves a more general question: does a parallel reduction of taxes and budgetary expenditure contribute to, or harm, economic growth? In

keeping with the balanced budget multiplier theorem developed by Trygve Haavelmo, a simultaneous increase of taxes and government expenditure stimulates the economy, because the government expenditure multiplier in such a case is 1. If this holds for a simultaneous rise in taxes and expenditure, it must also hold for a simultaneous reduction of taxes and government expenditure; a fall of tax revenue by 1 euro is bound to make GDP fall by 1 euro.

However, this question requires further examination, because Haavelmo assumed a uniform tax rate on profits and wages. If a distinction between taxes on wages and taxes on profits is introduced (or, more generally, between taxes paid by taxpayers with a low saving rate – chiefly manual labourers, and taxes paid by taxpayers with a high saving rate – capitalists), the balanced budget multiplier equal to one is a special case of the Haavelmo theorem. From a more general perspective, the theorem shows that, depending on the ratio between the growth of the profits tax and the growth of the wage tax, the balanced budget multiplier increases together with this ratio. In particular, the multiplier reaches its maximum when the tax on profits is increased while wage taxes are unchanged and budget expenditure is increased in such a way that the budget deficit remains unchanged. Then pre-tax profits grow in step with the growth of taxes on profits, while after-tax profits remain unchanged. In this case, GDP grows by the same volume as the wage bill; coefficient *u* increases, and conditions are created to encourage new investment decisions – especially if at the same time investment breaks are offered or other measures are taken to counteract the reduced profitability of investments due to reduced after-tax profits following their increased taxation.

Of course, the above argument applies *mutatis mutandis* to a decrease in the tax on profits accompanied by a simultaneous decrease of government expenditure with an unchanged budget deficit. In this case, GDP, employment and the wage fund decrease; *u* falls as well, and investment decisions suffer despite their improved profitability in terms of after-tax profits.[11]

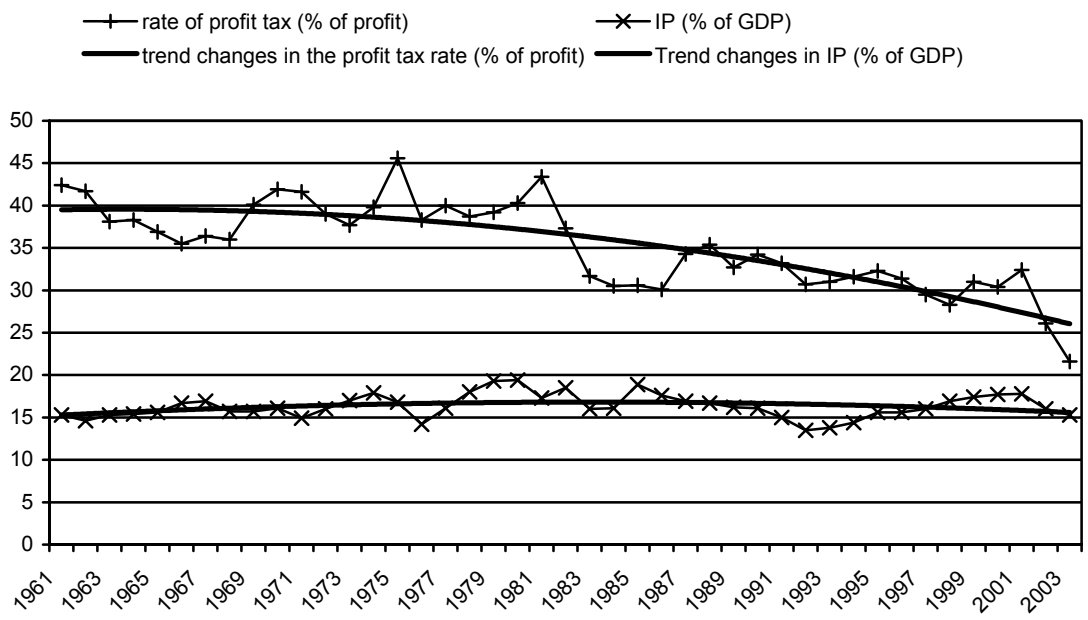
An increase in the tax on profits and a simultaneous increase in government expenditure played a major role during the period of rapid economic growth after World War II. Steindl (1990) considered this factor the most important in his analysis of the causes of this growth (p. 119). Figure 2 illustrates the volume of taxes on profit in the United States and the share of private investments in the US GDP in 1961 to 2003.[12] These data show that a steady decrease in the profits tax rate (from about 40% in 1961 to about 25% in 2003) was accompanied by a roughly constant share of private investments in GDP (at about 15%).

[11] The key work in this area is an essay by Michał Kalecki (1937), 'A Theory of Commodity, Income, and Capital Taxation' (p. 319). See also Laski and Podkaminer (1995), in particular Appendix A (pp. 54-55).

[12] Laski and Römisch (2004).

Figure 2

Profits tax and private investments, USA, 1961-2003



Sources: AMECO and Economic Report of the President 2004.

The profits tax rate in the EU has also exhibited a long-term downward trend. In the EU-15[13] the average rate was about 50% in 1982, falling to about 30% in 2006[14]. A comparison of the profits tax rates (in per cent of profit) and the growth of private investments (in average per cent p.a.) in a number of EU member states leads to similar conclusions (see Table 2).

All the countries listed in Table 2, except Italy, recorded a clear drop in profits tax rates, and all of them, except Spain, saw a slowdown in private investments in 1991-2003 compared with the period 1979-1990. In Italy, investment accelerated insignificantly along with a constant tax rate. In Germany, despite lower tax on profits, private investments dropped in the latter period. Without going into detail, it is possible to conclude that the empirical data do not confirm the intuitive and generally uncritically accepted thesis that reducing the rate of tax on profits is a good method to revive the economy, particularly private investments.[15]

[13] EU-15 stands for the 15 European Union member states prior to the latest rounds of enlargement in 2004 and 2007.

[14] For details see Devereux, Griffith and Klemm (2002) and Klemm (2003, revised 2005).

[15] The National Bank of Poland and Austria's wiiw are pursuing a joint research project to examine this problem in detail in several Western European countries.

Table 2

Profits tax and the growth of private investments in fixed capital in selected EU countries, 1979-2003

(%, in average annual terms for the period)

	Austria	France	Great Britain	Germany	Italy	Netherlands	Portugal	Spain
1979-1990								
t_r	35	33	27	46	29	35	37	42
g(IP)	2.2	2.0	2.9	2.5	0.6	2.5	3,2	3.0
1991-2003								
t_r	24	27	25	39	29	28	25	28
g(IP)	2.0	0.6	2.2	-0.9	0.8	1.2	1.1	3.4

Source: AMECO Database.

5.2 The progressivity of the tax system

Contrary to what most countries do, in a state of 'stunted growth', one should consider increasing the progression of the tax system instead of reducing it. This tendency is evidenced by a reduction of the highest-bracket personal income tax rates in the EU-15 from 66% in 1985 to 47% in 2006 on average. It should also be noted that at the same time the tax rates for incomes derived from employment in the EU-15 (48% on average in 2004) are higher than those for incomes derived from capital (33% on average in 2004). Finally, the value added tax rates have shown long-term growth in the EU-15, even though this tax is otherwise known to be regressive in character. It is an indirect tax, hence its budget revenues depend on the volume of consumption expenditure. Because the share of consumption expenditure in household incomes is the higher the lower the relative volume of those incomes, VAT represents an especially heavy burden on low-income households. By contrast, households with relatively high incomes spend a smaller part of their incomes on consumption and are relatively less burdened by the tax.

An extreme expression of the tendency to reduce the progression of the personal income tax system is the proposal to introduce a flat tax rate equal for all income brackets. In 2005, among the EU countries, a flat tax rate was used in Estonia (24%), Lithuania (25%) and Slovakia (19%), while outside the EU, it ruled in Romania (16%), Russia (13%), Serbia (14%), Ukraine (13%) and Georgia (12%).

All the analysed factors point to a reduced progressivity of the applied personal income tax systems. Considering that the partial derivative $[\partial(sp)/\partial t_b] < 0$, this implies a tendency towards increasing the private saving rate, *sp*. The problem is that under the conditions of 'stunted growth' precisely the opposite is needed, i.e., increasing the progression of the tax system in order to reduce the private saving rate, which by itself does not easily adjust to the reduced propensity to invest. If budget revenues from personal incomes taxation were

increased, as would be advisable, they should be used not to reduce the budget deficit, but to increase expenditure, preferably on investments, and the volume of the existing budget deficit should be preserved. Generating a budget surplus would be counterproductive in this situation, while the expansionary effect of a concurrent increase in budget revenues and expenditure would be the greater, the larger the tax burden on high-saving income groups and the lesser the tax burden on the low-saving (i.e., high consumption-intensive) groups.

If the saving rate could be reduced in this way, to $sp_2 = tg\,\alpha_2$, for example, radius OA, which represents the private saving rate sp_0 in Figure 1, would be replaced by radius *OB* with a slope of $sp_2 = tg\,\alpha_2$, where $sp_2 < sp_0$. In this situation, given the volume of private investments, IP_1, GDP would be $Y_2 = OF$, where $Y_1 \leq Y_2 \leq Y_0$. The GDP drop caused by the decline of private investments would be offset. The opposite effect could be expected if a flat tax rate were introduced and the personal income tax system were made less progressive. In this situation, the GDP drop caused by a decrease in investments would be aggravated rather than offset.

Again, in terms of Figure 1, this means that radius OA, which shows the private saving rate sp_0, turns left instead of right, so it is, for example, replaced by radius *OC* with a slope of $sp_3 = tg\,\alpha_3$, where $sp_3 > sp_0$. In this situation, the GDP drop caused by falling investment becomes aggravated instead of subsiding. Offsetting the GDP decline, instead of making it deeper, is an important policy goal because it makes it possible to reduce unemployment and increase consumption, among other beneficial effects. Further consequences of this policy are also important. A smaller drop of *u* reduces the pressure towards a further decline in investments, which is the decisive development factor in the long term.

Promoting a flat tax rate in a situation when one should actually strive to reduce the propensity to save brings to mind the familiar warning used in medical practice, 'primum non nocere' (first, do no harm). If we cannot afford to have an economic policy that will help the economy at a time of 'stunted growth', then at least we should not compound its problems.

5.3 Share of wages in GDP

Let us now focus on argument *a* of function *sp*. Because, in keeping with (17), the partial derivative $[\partial(sp)/\partial a] < 0$, an increased share of wages in GDP leads to a decrease of *sp*. This means that everything that was said in reference to argument (t_b/t_a) of this function holds true for argument *a* as well. Therefore, if we wish to reduce *sp,* we must increase *a*, as a result of which wages should grow faster than labour productivity. It should be noted, however, that the policy of slowing down the growth of real wages in relation to labour productivity implies a decrease of *a*, which means that, at least from the perspective of our

argument, such a policy contributes to an increase – rather than a drop – of *sp*. In terms of Figure 1, this again means that radius *OA*, which represents the private savings rate, sp_0, turns left instead of right. Notwithstanding this danger, the policy of leaving the growth of wages behind the growth of labour productivity is a universal practice. It tends to be justified by the need to reduce the price of labour, because expensive labour (which means paying high wages) – rather than weak investment activity – is widely blamed as the main cause of unemployment. In reality, the decrease in *a* resulting from the reduction of wages is conducive to an increased propensity to save, so it harms – rather than supports – the fight against unemployment.

Recently, there has been a lot of talk, particularly in Germany, about the pessimism of consumers, who save rather than spend their money. Real wages have practically not grown in Germany over the past few years despite rising labour productivity. However, as the well-known German economist Heiner Flassbeck has rightly pointed out, cars are not bought by other cars but by the people who produce them. If incomes do not increase, or increase too slowly in relation to labour productivity, this hurts sales of consumer goods – not because people have too much money in their pockets, but because their pockets are running on empty.

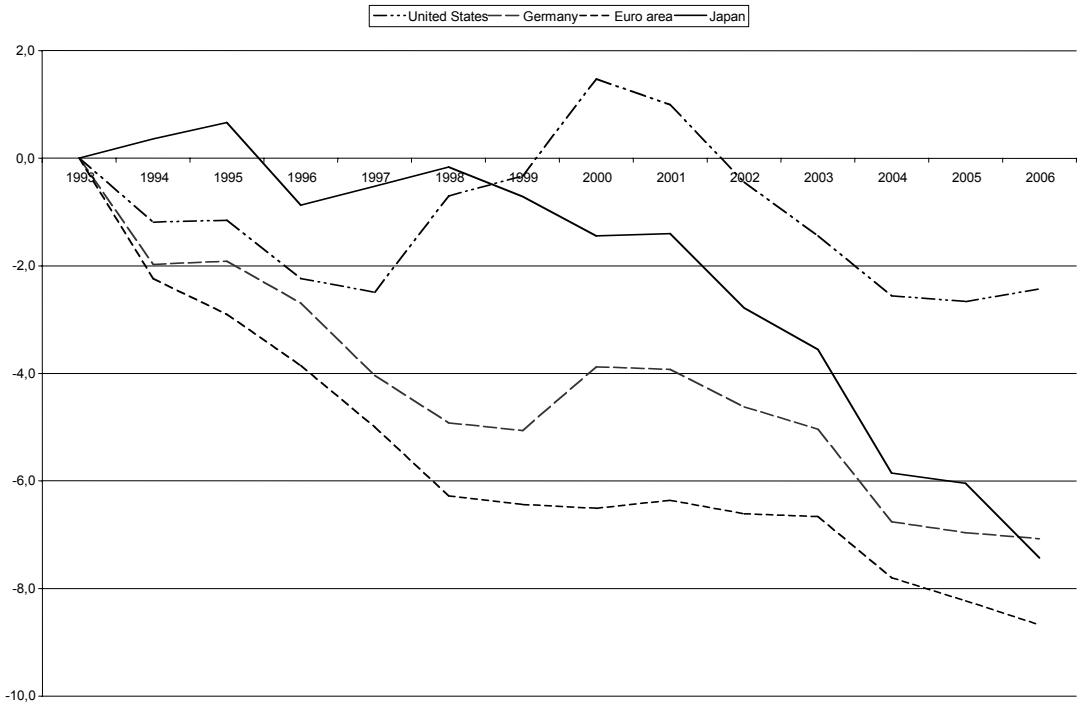
The complaints of liberal politicians and economists who blame consumer pessimism as the main culprit have no justification in liberal economic theory. In keeping with this theory, investments depend on savings, so the question arises, how can 'consumer pessimism' – which implies nothing but an increased propensity to save – harm the economy, especially at a time when investment activity is weak?

Extensive empirical material is available on the relationship between the growth of wage rates and of labour productivity. Wage rises lagging behind labour productivity is an arrangement that, with varying intensity, has been practised by most countries. This makes it possible to compare the data on wage rates and labour productivity changes with those on the saving rates, and check whether our hypotheses are correct. Of course, life is much richer and more complex than our models. But if there is a grain of truth in them, at least in some cases, the empirical data should not contradict the expected effects.

In Germany and Austria, the notion of a 'real wage position' is used to describe the distribution of the benefits of increased labour productivity between labour and capital. The social partnership between the employer and the employee is chiefly based on the understanding that, in the long term, the 'real wage position' in the economy as a whole should not undergo any major changes. This calls for a more or less concurrent increase in real wages and labour productivity in the entire economy. Using this yardstick, the concept of which is actually very similar (though not identical) to parameter *a* as defined

Figure 3

Real wage position in selected countries





in this paper, one can point to clear differences, first, between the United States and the European Monetary Union (including Germany) and second, between Great Britain and France (as well as Italy). This yardstick shows the cumulative differences between the growth of the average real wage and real labour productivity, expressed in terms of GDP per employee.[16]

It turns out that, after a temporary deterioration in the first half of the 1990s, in 1999 the real wage in the United States returned to its 1993 level. However, in 2000 the real wage position in the US began to deteriorate again; and by 2006 it was 2.4% lower than in 1993. Nevertheless, that decrease is insignificant as compared with the EU, Germany and Japan. In these countries, the real wage position in 2006 deteriorated by 8.7%, 7.1% and 7.9% respectively as compared with 1993. In France and Italy, the real wage position kept deteriorating between 1993 and 2006. All in all, it fell by 5.9% and 11.3% respectively over this period. In Great Britain, after a temporary drop in the mid-1990s, the real wage position in 2001-2006 remained almost unchanged from that in 1993.

5.4 Statistical illustration

Table A1 in the appendix contains more detailed data for a number of countries and periods. For each country and period, it gives data on *IP* (excluding inventory changes) and on the sum of *(IP + E + D)*, denoted as *IPED*, as well as on *sp*. As we already know, we have *g(Y) = g(IPED)-g(sp)* (see equation 13). However, we are mainly interested here in the relationship between *sp* and *a*, which in Table A1 is replaced by the share of wages in GDP at the beginning and at the end of each period, and the change in this share, measured as the average annual rate of its increase/decrease. In many cases (though not always), changes in *sp* and changes in the share of wages in GDP correspond to the assumptions of our model. In particular, this applies to the years 2001-2006. In the United States, Japan, Germany, France and Italy, the decreased share of wages in GDP was accompanied by an increased *sp*. With a given increase in IPED, the increase of *sp* reined in GDP growth. A detailed analysis of this data would require further intensive research, which is neither possible nor essential in the present study, however.

What we can and should reasonably do, is to choose, from the presented material and other sources, the most striking examples of counterintuitive changes in the private saving rate (*sp*) and the GDP growth rate. These changes are presented in Table 3. On the one hand, we have a number of countries in which a decrease of *sp* played a significant role in achieving much faster GDP growth than suggested by the growth of *IPED,* and sometimes *IP*. In the United States in 1981-2001, the average annual growth of *IPED* was only 0.8%,

[16] Flassbeck (2000) was the first to use this yardstick. The calculation method used in Figure 3 is borrowed from his work.

Table 3

Changes in the private saving rate and its influence on GDP growth in selected countries and periods

decrease

USA

	1981	2001	1981-2001
GDP			3.2
IP (no invent.)			2.8
IPED			0.8
sp(h)	20.7	13.1	-2.4
W/GDP	69.4	68.2	-0.1

Great Britain

	1981	2006	1981-2006[a]
GDP			2.7
IP (no invent.)			2.9
IPED			1.7
sp(h)	18.4	14.6	-0.9
W/GDP	74.9	74.3	-0.1

Italy

	1991	2000	1991-2000
GDP			1.6
IP (no invent.)			1.4
IPED			-2.6
sp(h)	28.8	19.7	-4.1
W/GDP	70.5	63.7	-1.1

Holland

	1990	2002	1990-2002
GDP			2.6
IP (no invent.)			1.5
IPED			1.1
sp(h)	28.5	24.0	-1.4
W/GDP	66.4	68.9	0.3

Sweden

	1995	2000	1995-2000
GDP			3.2
IP (no invent.)			7.7
IPED			-6.0
sp(h)	26.5	16.6	-9.0
W/GDP	63.8	69.2	1.6

Finland

	1995	2006	1995-2006[a]
GDP			3.5
IP (no invent.)			5.1
IPED			1.1
sp(h)	26.7	20.6	-2.3
W/GDP	64.9	63.6	-0.2

increase

GFR

	1981	1991	1981-1991
GDP			2.8
IP (no invent.)			3.3
IPED			5.6
sp(h)	21.4	27.8	2.7
W/GDP	72.1	67	-0.7

Germany

	2000	2006	2000-2006[a]
GDP			0.8
IP (no invent.)			-2.4
IPED			3.0
sp(h)	20.4	23.3	2.2
W/GDP	67.6	65.4	-0.5

Japan

	1991	2006	1991-2006[a]
GDP			1.2
IP (no invent.)			-0.7
IPED			1.6
sp(h)	26.4	28.4	0.5
W/GDP	69.4	65.1	-0.4

IP (no invent.) = IP without inventory changes.

Note: a) Data for 2005-2006 are forecasted figures.

nevertheless GDP grew by 3.2%, because *sp* fell from 20.7% to 13.1% during this time, which means on average by 2.4% per year over a period of 20 years.[17] A similar, though less intense trend occurred in Great Britain. Spectacular declines in the saving rate were also reported in other countries (including Sweden and Italy), but these decreases were short-lived. On the other hand, there are countries in which the effects of slowly growing private investments are actually strengthened by an increased propensity to save. A classic example is Japan in 1991-2006 (where *IP* dropped on average by 0.7% per year during this period, while *sp* rose by 2.2% and GDP grew by 1.2%). Another example is Germany in 1981-1991 and in 2000-2006 (in the latter period, *IP* dropped on average by 2.4% per year, while *sp* rose by 2.2% and GDP grew by 0.8%).

These examples drastically confirm that, in a capitalist economy, there is no spontaneous coordination between the propensity to invest and the propensity to save. At the same time, this is a serious warning for EU governments and authorities not to neglect this problem in their economic policies, but to try to resolve or at least offset it. In particular, no decisions or initiatives should be made that would add to the difficulties.

Conclusions

Aggregate demand and aggregate supply increase *pari passu* only when the growth of private investments (in a closed economy without government revenues and expenditures) is constant and adjusted to *sp, v, u* and *d*. When this condition is not met, the growth of aggregate demand and GDP, at any given saving rate, depends on the growth of private investments combined with the export surplus and the budget deficit: *IP* + *E* + *D (IPED)*. Given the rate of *IPED* growth, GDP growth accelerates when the growth of the private saving rate (*sp*) slows down. Even though this relationship assumes the existence of partly unutilized production capacity and unemployment, such developments are commonplace at a time of 'stunted growth'. A decrease in *sp* should not be identified with a decrease in the volume of savings (*SP*), as is done by orthodox theory, which holds that factors of production are fully utilized in the long term, leading to concurrent changes in *sp* and *SP*.

The decelerated growth of private investments that started in the mid-1970s has triggered stagnation trends instead of stabilizing Europe's developed economies on a new path of slower growth. Stagnation has stemmed from factors such as decreased utilization of production capacity (*u*), which not only reduces the propensity to invest, but also influences the growth of *sp*. In keeping with the Steindl theorem, this leads to stagnation unless specific historic circumstances or a deliberate government policy counteract this tendency.

[17] There were some special reasons for this spectacular decrease in *sp* in the United States – see Laski and Römisch (2001) and Bhaduri et al. (2004).

The private saving rate (*sp*) depends, *ceteris paribus*, on the distribution of GDP between wages and profits, and on taxes on incomes of wage and salary earners as well as companies. Rate *sp* is a decreasing function of the share of wages, chiefly those earned by blue-collar workers (and the egalitarianism in income distribution), of the profits tax, and of the progressivity of the tax system. It turns out that most developed countries have recorded a decrease in the share of wages in GDP (accompanied by a growing diversification of wages in favour of the high- and highest-income groups), along with a drop in the progression of the tax system and reduced rates of taxation for profits. These changes are the reverse of what is needed to overcome the state of 'stunted growth', because they contribute to increasing *sp*, while stunted growth would require *sp* to fall. The empirical evidence of a number of countries shows that decreased *sp* promotes GDP growth (as has been the case, in particular, in the United States) and that increased *sp* adds to stagnation (as can be observed especially in Germany and Japan).

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Appendix

Table A1

GDP, IP, IPED, sp and (W/GDP) in some countries in the years 1970-2006

USA		**1970-1980**			**1981-1990**			**1991-2000**			**2001-2006**		
		A	B	C	A	B	C	A	B	C	A	B	C
	GDP	3450,6	4749,6	3,2	4866,2	6491,1	3,3	6478,4	8983,5	3,7	9051,4	10592,2	3,2
	IP (w.inv)[a]	506,4	833,8	5,1	851,2	955,4	1,3	876,1	1545,9	6,5	1479,9	1779,8	3,8
	IPED	609,4	943,4	4,5	1007,6	1165,9	1,6	1171,8	1127,2	-0,4	1181,4	1596,4	6,2
	sp(h)	17,7	19,9	1,2	20,7	18,0	-1,6	18,1	12,5	-4,0	13,1	15,1	2,9
	(W/GDP)[b]	70,0	69,9	-0,1	69,4	68,1	-1,3	68,1	68,6	0,5	68,6	65,9	-2,7
Japan					**1980-1990**			**1991-2000**			**2001-2006**		
	GDP				312892,5	460560,7	3,9	475992,7	529247,6	1,2	530322,9	565544,5	1,3
	IP (w.inv.)[a]				70523,9	118760,5	5,3	120272,3	103632,2	-1,6	102386,4	108992,9	1,3
	IPED				90029,4	120423,7	3,0	125549,0	147555,6	1,8	139749,5	160412,0	2,8
	sp(h)				28,8	26,1	-1,0	26,4	27,9	0,6	26,4	28,4	1,5
	(W/GDP)[b]				77,4	69,3	-8,1	69,3	69,4	0,1	69,4	65,1	-4,3
UK		**1970-1980**			**1981-1990**			**1991-2000**			**2001-2006**		
	GDP	419,7	509,8	2,0	502,4	661,4	3,1	652,3	840,1	2,9	859,5	973,2	2,5
	IP (w.inv.)[a]	61,9	82,2	2,9	75,5	118,4	5,1	101,4	133,3	3,1	132,9	154,4	3,0
	IPED	52,2	98,3	6,5	92,5	99,6	0,8	102,0	105,8	0,4	104,7	142,4	6,3
	sp(h)	12,4	19,3	4,5	18,4	15,1	-2,2	15,6	12,6	-2,4	12,2	14,6	3,7
	(W/GDP)[b]	72,7	73,6	0,9	74,9	75,4	0,5	75,4	74,2	-1,2	74,2	74,3	0,1
Germany		**1970-1980**			**1981-1990**			**1991-2000**			**2001-2006**		
	GDP	897,0	1178,7	2,8	1180,0	1479,6	2,5	1710,8	1969,5	1,6	1986,0	2064,3	0,8
	IP (w.inv.)	191,1	230,0	1,9	221,9	285,4	2,8	359,7	391,0	0,9	367,5	337,9	-1,7
	IPED	215,1	248,5	1,5	252,0	387,0	4,9	387,7	402,0	0,4	419,4	480,9	2,8
	sp(h)	24,0	21,1	-1,3	21,4	26,2	2,3	22,7	20,4	-1,2	21,1	23,3	2,0
	(W/GDP)[a]	69,9	72,2	2,3	73,1	66,8	-6,3	68,5	67,6	-0,9	67,6	65,4	-2,2
France					**1980-1990**			**1991-2000**			**2001-2006**		
	GDP				878,1	1121,0	2,5	1132,2	1348,8	2,0	1377,1	1496,2	1,7
	IP (w.inv.)				181,1	214,1	1,7	207,5	229,1	1,1	233,9	252,7	1,6
	IPED				163,4	223,4	3,2	230,2	269,8	1,8	272,8	345,3	4,8
	sp(h)				18,6	19,9	0,7	20,3	20,0	-0,2	19,8	23,1	3,1
	(W/GDP)[a]				77,5	69,6	-7,9	69,6	66,7	-2,9	66,7	65,8	-0,9

Table A1 contd.

Table A1 (contd.)

Italy									
		1980-1990			**1991-2000**			**2001-2006**	
	GDP	692,8	866,6	2,3	878,6	1015,1	1,6	1033,0	1083,0	0,9
	IP (w.inv.)	153,2	157,5	0,3	156,5	176,7	1,4	178,4	183,9	0,6
	IPED	191,8	249,9	2,7	253,1	200,4	-2,6	208,3	232,4	2,2
	sp(h)	27,7	28,8	0,4	28,8	19,7	-4,1	20,2	21,5	1,3
	(W/GDP)[a]	73,4	69,9	-3,5	69,9	63,9	-6,0	63,9	63,8	-0,1
Portugal									
		1980-1990			**1991-2000**			**2001-2006**	
	GDP	53,9	74,3	3,3	77,5	97,6	2,6	99,3	102,4	0,6
	IP (w.inv.)	13,8	17,0	2,1	16,6	23,6	4,0	23,0	20,3	-2,5
	IPED	13,2	18,0	3,1	17,6	16,5	-0,7	18,3	18,8	0,6
	sp(h)	24,6	24,3	-0,1	22,6	16,9	-3,2	18,5	18,4	-0,1
	(W/GDP)[a]	74,9	67,0	-7,9	67,0	75,7	8,7	75,7	76,5	0,8
Spain									
					1995-2000			**2001-2006**	
	GDP				437,8	529,7	3,9	544,5	617,5	2,5
	GFCFp				79,9	117,3	8,0	119,9	153,3	5,0
	IPED				104,97	107,6	0,5	110,4	121,9	2,0
	sp(h)				24,0	20,3	-3,2	20,3	19,7	-0,5
	(W/GDP)[a]				67,3	67,0	-0,3	67,0	64,5	-2,5

Columns A and B: absolute values of GDP, IP(w.inv.) and IPED; sp(h) – % in GDP: average annual variable growth rate in %.
Column C: average annual growth rate in % of the variables GDP, IP(w.inv.), IPED and sp(h).

a) IP (w.inv.) = IP without an increase of inventories. - b) (W/GDP) the wage share in GDP; in column C the difference in percentage points.

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