**LUND UNIVERSITY**
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**Master in Economic History**

# Does capital dream of chronic depression?[*]
*Crisis, stagnation & transformation in late 20th / early 21st century Swedish Capitalism*

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### *Abstract*

The study asks what role Karl Marx's theory of *the law of the tendency of the rate of profit to fall* has in explaining transformation, crises and secular stagnation in Sweden. Support is presented for the "law", with Sweden exhibiting a long-term secular decline in the rate of profit throughout the late 19th and 20th century. For the period 1950-2016, there is a strong tendency towards "Marx-biased", labour-saving and capital-using technical change, which is the underlying driver towards the fall in profitability. Periods of declining profitability is also found to be periods of relatively higher real GDP growth. It is argued that sharp competition and rapid productivity growth, quite counter-intuitively, leads to a decline in average profitability. One reason for this is the tendency towards increasing outlays on fixed capital and a diminishing wage-share to retain competitiveness, the side-effect being an erosion of the "demand-base" of the accumulation process; a tendency augmented by the "third industrial revolution" and the "neoliberal" political-economic regime. The so-called *secular stagnation* in the wake of the financial crisis of 2007/8 is argued to be an expression of these developments. Furthermore, analysing the Industrial Golden Age of the Swedish Model, and its metamorphosis into a more "neoliberal" political-economic regime in the late 20th / early 21st, the thesis claims that one significant driving force of this transformation has been the secular decline in profitability.

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[*] The thesis title is an allusion to *Do Androids Dream of Electric Sheep,* by Philip K. Dick.

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# 1 – Introduction

The U.S. and the Eurozone have yet to recover to pre-crisis output growth, and unemployment remains high. It's argued that the West has found itself in a *secular stagnation*. In order to understand how this stagnation came to be, it's important to relate it to the structural transformations and political developments during the latter half of the 20th century and early 21st century, or more closely between 1946 and 2016. The present study takes a Swedish focus on the topic and investigates the phenomenon with regard to Karl Marx's theory of *the law of the tendency of the rate of profit to fall* as a central feature in explaining both transformation as well as the present stagnation. The purpose of the study can thus be said to be: *to explore the explanatory-power of the "law" with regard to crises, stagnation and transformation, but moreover how the "law" is impacted by and in turn affects developments in Swedish political economy.*

Two hypotheses will be posed as a point of departure:

**Hypothesis #1:** *Does Sweden experience a long-term secular decline in its general profit rate?*

**Hypothesis #2:** *Does Sweden demonstrate a "Marx-biased technical change"?*

After evaluating these hypotheses, and relating the movements in profitability to developments in Swedish political economy, the study will concern itself more closely with the secular stagnation hypothesis and how it relates to the "law" and political economy.

# 2 – Secular stagnation: Reduced supply or fading demand? Stagnating or accelerating technological growth?

In the wake of the financial crisis of 2007/8, and the subsequent Eurocrisis of 2011, the "Secular Stagnation Hypothesis" – first put forward by Alvin Hansen after the 1930s Great Depression – has seen a revival, in response to the fact that the U.S. and the Eurozone have yet to recover to pre-crisis output growth trends, with unemployment remaining stubbornly high (Summers 2014:30; Jimeno et al 2014:154; Storm 2017:2).

According to theory, the interest rate – "the price of money" – is determined by the supply of savings and the demand for investment in an economy. While excess savings drives interest rates down, excess investment pushes them up. The point where real interest rates (nominal

interest rate minus the inflation rate) balance savings and investments at full-employment is referred to as the "natural/neutral" interest rate (Summers 2016). Alvin Hansen argued for the possibility of there being no achievable interest rate that "will permit the balancing of saving and investment at full employment" (Summers 2014:32). Secular stagnation "refers to a situation in which saving can only equal investment at a negative real interest rate" (Jimeno et al 2014:154). Larry Summers thus warns that "a decline in the full-employment real interest rate [which] coupled with low inflation could indefinitely prevent the attainment of full employment" (Summers 2014:31-32), since in an output slowdown, wages and prices (if flexible) are expected to fall (i.e. low inflation), leading to increasing real interest rates. In the case of deflation, then this scenario would be aggravated, leading to even higher real interest rates, generating greater output shortfalls as it becomes more expensive to borrow for investments, which could lead to further deflation when prices fall more due to dropping demand.

Summers argue that the real interest rate is low due to a variety of structural changes, such as: slower population growth, and potentially slower technological growth; low-priced capital goods; rising inequality; increased friction in financial intermediation; central banks conservative investment strategies and accumulation of reserves; among other factors, contributing to lessen the demand. In principle, this could be solved by pumping up demand, and if not, Summer warns that the lack of demand can create a lack of supply – an inverse of Say's law (ibid:36-37). Storm have similarly emphasised lessening demand due to "rising inequality, growing polarization, and the vanishing middle class" in the U.S. (Storm 2017:4).

While aforementioned authors view the secular stagnation as a result of lack of demand (a growing gap between actual and potential output), Robert Gordon instead sees it as a problem of waning supply (a decline in the potential output growth) over the coming 25-40 years for the U.S. (Gordon 2014:48). The source of this slow growth isn't mainly due to decelerating technological change but rather due to four "headwinds" consisting of: (1) a future decline in labour-force participation due to an ageing population and declining participation due to weak economic conditions; (2) declining high school completion rates, and crippling student debts, combined with the inability of 40% of college graduates to find jobs appropriate for their education; (3) income inequality and precarisation of jobs; (4) increasing government debt-to-GDP ratio and lessening future tax revenue growth (ibid:50-51).

In addition, stagnating or slowing technological growth has been argued to be an underlying cause of the secular stagnation, both in the U.S. and the Eurozone, preceding the crisis by decades. Declining growth in total factor productivity (TFP)[1] has been argued to explain the slowing investment demand, since it leads to a fewer set of profitable investment opportunities (Jimeno et al 2014:156). Gordon, although not assuming a slowing technological growth in his model, is rather pessimistic about the prospects of future technological growth. TFP growth rates reached an exceptionally high order of magnitude in the U.S. economy during the period of 1920-1970 – a period when technologies implemented in the 1870s finally became fully diffused – after which there's been a marked decline in productivity growth. Gordon thinks it's unlikely that future productivity growth will be any higher than the low rates of the past 40 years (Gordon 2014:53-54).

One explanation for the slowing TFP growth is the growing share of labour-intensive and technologically stagnant activities in total output, a so-called "growth disease". This is related to *Baumol's cost disease.*

Baumol & Bowen original argument was that there is a "productivity lag" between the performing arts and activities which apply more machinery. The productivity of for example manufacturing is easier to augment by innovating or expanding the machine-park, while it's more difficult to reduce the labour-time needed in performing arts, without the quality of the act suffering. Since all branches of the economy compete to hire workers in the same nationally integrated labour market, wages tend to increase as much in the "lagging" activities as in the general economy. Therefore, costs and prices in labour-intensive and technologically stagnant branches, such as live performing arts, will rise relative to costs and prices in the economy as a whole (Heilbrun 2003:92; Nordhaus 2008:3). It's this phenomenon that is referred to as *Baumol's cost disease*.

This productivity lag will, on a societal level, engender a "growth disease" as labour-intensive and technologically stagnant activities such as government, education, and construction appropriate a larger share of national output, therefore slowing aggregate productivity growth over time. Nordhaus (2008:22) and Hartwig (2011:483) find that both the U.S. and European Union have caught this disease during the latter part of the 20th century (1948-2001 for the U.S. and 1970-2005 for the EU-15).

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[1] Total-factor productivity accounts for the sources of output growth as caused by capital accumulation, labour inputs, and a "residual", which is the part of growth that cannot be explained by the former two, often taken as an indicator for technological change.

The concept of total factor productivity is a contested one. Seervas Storm criticizes the idea that TFP would be a supply-side phenomenon, instead emphasising that "potential output growth is *not* independent from actual – demand determined – growth" (Storm 2017:8). Anwar Shaikh notes that the "Solow residual", that is taken as "technical change" in the TFP-measure, is nothing but "a weighted average of the growth rates of the wage $w$ and rate of profit $r$" (Shaikh 1974:118), and does not actually measure technical change or productivity at all. Storm further argues that TFP growth to an overwhelmingly degree is determined by labour-productivity growth, suggesting that one should apply Occam's razor and ditch the TFP altogether. And since labour-productivity is partly determined by real wage growth, the secular stagnation of productivity growth in the U.S. is partly attributed to the long-term decline in the growth rate of U.S. hourly real wages, which in turn is associated with the "neoliberal political regime" shifting away from full-employment towards low and stable inflation, labour-market deregulation, dismantling of social safety nets, and undermining of the bargaining power of unions (Storm 2017:21). Measuring real labour-productivity, Storm finds that there is a Baumolian pattern of "unbalanced growth", where the secular decline in aggregate U.S. productivity growth is hiding a divergence between a "dynamic sector" (of "manufacturing", "information & communication services", "financial, insurance, & real estate services", and "professional & business services") which is actually experiencing an acceleration of productivity from the period of 1947-1972 to 1995-2008. The stagnation instead seems to lie in "construction", "education, health & private social services", and "art, entertainment, recreation, food, etc.". Storm argues that the secular decline in aggregate productivity growth is associated with the polarisation of the U.S. labour market, where mediocre jobs and "alternative work arrangements" have constrained real wages and working conditions, and leading to a polarisation between higher-paying jobs in "dynamic" sectors, and lower-paying jobs in "stagnating" sectors. The resultant slowing average real wage growth tend to decelerate productivity growth, capital intensity, and aggregate demand (ibid:22-33).

Other argues that we in fact are experiencing acceleration in innovation associated with ICT, expressed as "secular joblessness" (Glaeser 2014:74-76). These prophecies have been whispered before, both by John Maynard Keynes in 1930 and Wassily Leontief in 1952 that expected that workers would eventually be replaced by machines. So far, these predictions have yet to be materialised, but recently, these forecasts have been picked up again by several authors, arguing that we are now on the verge of seeing them realised.

What's different with this round of technical change? Frey & Osborne argue that due to a secular price decline in the real cost of computing, and the increasing ability to turn non-routine tasks into well-defined problems susceptible for computerisation, an estimated 47% of total U.S. employment are considered to be in the high-risk category, their occupations being very susceptible for automation in the near future. The occupations most susceptible for automation are transportation, logistics, office and administrative support, as well as production occupations. But they also find that "a substantial share of employment in services, sales and construction occupations exhibit high probabilities of computerisation" (Frey & Osborne 2013:41) – supposedly "technologically stagnant activities".

In a recent paper, Acemoglu & Restrepo argue that there is no guarantee that these technological advances presumed by Frey & Osborne, would necessarily materialize, since it would depend on: (1) the cost of substituting machines for labour, and corresponding wage change to this substitution; (2) the labour market impacts of the new technologies, where some sectors and occupations might expand to soak up labour freed from technological advancements. Thus, they try to "move beyond these feasibility studies" and "estimate the equilibrium impact" of *industrial robots* on US labour markets (Acemoglu & Restrepo 2017:1-2). Their resulting scenarios suggest that until 2025 – depending on the estimated growth of stock of robots – the growth of the employment to population ratio would shrink between 0.54-1% in the conservative scenario, and 0.94-1.76% in the more "aggressive" scenario; and lower wage growth to between 0.75-1.5% in the conservative scenario, and 1.3-2.6% in the aggressive scenario (ibid:36-37).

Research on the effects of computerisation on a global scale is scarce, but some studies exist on how it engenders a global decline of labour's share (total compensation) in GDP. Karabarbounis & Neiman documents a 5% decline in the global labour share in the corporate sector since the 1980s. They find that trade-integration of relatively "labour-abundant" and "wage-competitive" countries such as China and India, doesn't seem to have any effect on the labour shares of the rest of the world – indeed, these labour-abundant countries also experience a declining labour share. Rather, 90% of the declines in labour shares reflect within-industry declines, being the result of falling relative price of investment goods relative consumption goods. They conclude that increased productivity in capital producing sectors associated with ICT seem to induce a global shift away from labour (Karabarbounis & Neiman 2013:8-12).

The nature of the third industrial revolution is argued to be of such a kind, as to even render the conventional tools of measurement for output and productivity growth obsolete. While it's commonly known that GDP underestimate wealth, Brynjolfsson & McAfee (2016:107ff) suggest that it's increasingly becoming misleading. Because many new services and goods – in the wake of the third industrial revolution – have been heavily reduced in price or even have "zero price", these products are heavily underestimated or virtually invisible in the official statistics. And since productivity data are based on GDP metrics, the increasing availability of free goods does not transfer over to productivity measures. Indeed, the proliferation of free products even *lowers* GDP in some instances, even though well-being increases. As such, production have more and more come to depend on intangible assets such as intellectual property, organizational capital, user-generated content, and human capital – relative to physical equipment and structures. This hypothesis has been met with critique from Storm (2017) arguing that the stagnation is due to *actual* productivity stagnation, not merely the result of mismeasurement.

## 2.1 – Stagnation & structural cycles in Swedish economic history

The demand-view of a gap between potential and actual output has been echoed in the Swedish debate on the "seven lost years", referring to the stagnating productivity between 2007 and 2014. The stagnation is regarded to be one of slow technological development and low rate of investment (KI 2015). Both the *Confederation of Swedish Enterprise* (*Svenskt Näringsliv*) and the *Swedish Trade Union Confederation* (*Landsorganisationen*) notes that productivity growth has been close to null, 0.1%, viewing the problem as one of lacking demand (SN 2015; LO 2015). In addition, an extended period of low inflation or even deflation has prevailed, with the Swedish Riksbank lowering the prime lending interest rate to sub-zero rates since 2015 in order to spur investment and inflation. Although inflation has approached the 2% goal in recent years, unemployment remains high and the low interest rates provide fuel for a worrisome accretion of household debt (Svensson 2014; Sveriges Riksbank 2017).

From the perspective of structural analysis, the stagnation would be seen as just a momentary impasse; an instance on the road towards transformation and revitalisation of the economy. Lennart Schön argues that the economy goes through structural cycles of transformation and rationalisation. What drives these cycles are different *Development blocks* – complementary activities around innovations, with a definite set of demand and supply functions that creates imbalances which attract entrepreneurial activity and investments – that are formed

throughout the process. In phases of *transformation* industrial structures are changed, with a subsequent reallocation of resources between industries and diffusion of innovations, with an emphasis on capacity-raising investments in new areas of production. The effects on productivity are often delayed due to shortages in supply of competence and the need of learning processes. During phases of *rationalisation* on the other hand, resources are concentrated to the most productive units within branches, with emphasis on increasing efficiency. Investments are directed towards cost-reducing and resource-saving measures, with more direct effects upon productivity, growth and real income (Schön 2009:3-5). The Swedish economy is argued to alternate between transformation and rationalisation with a regularity of approximately 40 years; with about 25 years emphasising transformation, and 15 years emphasising rationalisation, with structural crises marking the end of a structural cycle. In its wake, new developmental blocks are diffused, marking a new wave of transformation, followed by rationalisation (ibid:6).

These structural crises have occurred in the 1840s, 1890s, 1930s, 1970s, and currently in the 2010s. The structural crisis in 1975/80, marked the shift from the development block formed around electrification and the combustion engine, towards one centred on microprocessors and electronics. The Swedish economy experienced a transformation phase up until 1990/95, as investment rose faster than output to increase industry's capacity, labour and resources were reallocated, productivity growth was low, and "creative destruction" took place. In the subsequent rationalisation phase that lasted up until the 2010s, investments has risen slower than output (but increasing the share of investments in machinery), indicating efficient use of existing capacity, accelerated labour-productivity and enhanced competitive-power of industry (Schön 2009:9-12,16-17; Edvinsson 2010a:670,677). Moreover Schön argues that after the crisis decade of the 2010s, a phase of transformation awaits (Edvinsson 2010a:676).

Several critiques have been directed towards Schön's theoretical framework;[2] not only is there a tendency towards working out a "clockwork" theory of cycles with the pretension of

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[2] Schön argues the structural cycles are driven by constant disruptions of equilibrium created by the development blocks as the economy transforms, engendering a succeeding period of "convergence" towards neoclassical conditions, which eventually is disrupted anew by another developmental block (Schön 2009:6). The proposition of the current author, while rejecting the neoclassical leanings of the perspective, rather sees profitability (and crises of overaccumulation; see *section 3.2.1*) as driving the emergence of different "development blocks", which undergoes rationalisation up until it gives rise to overproduction of the output/goods of said "development block". New development blocks arise out of profitability crises, which of course are related to political and international developments, following a discontinuous trend not necessarily conforming to any periodisation. This could be the basis for future research.

predicting economic developments (Edvinsson 2010a:673), trying "to encapsulate these phenomena under deterministic equilibrating representations", effectively turning cycles into "intermittent equilibrium […] under the form of two attractors (the maximum and the minimum levels of the tide)" (Freeman & Louçã 2001:119). Empirical criticisms have been raised as well, arguing that the pattern of transformation and rationalisation has been broken during the 1970s; with investment rising slower than output already in the 1970/80s, and the share of machinery-investments has declined, and exports increased, contrary to what is expected of a rationalisation phase (Edvinsson 2010a:673).

## 2.2 – Disposition & contribution of present study

The secular stagnation hypothesis not only brings into question the nature of depressions – as a demand-side or supply-side problem – but also the nature of technological change – which seem to be stagnating and accelerating at the same time, depending on theoretical perspective. In addition, the discussion brings attention to the relationship between productivity and economic growth. This study aims to explore some of these issues from a Marxian perspective. According to Keynesian theory, increases in aggregate demand is what propels total output growth in the long run, but according to Marxian theory, profitability precedes demand, determining investment-demand – therefore also the demand for funding, hence impacting interest rates – in the economy which in turn generates output, employment, and wage growth. Marx argued that capital accumulation as such has a tendency towards depressing the profit rate, as competition drives firms to cost-cutting and productivity-enhancing measures, implying successively growing outlays on capital assets and shedding labour in order to gain competitive advantages, simultaneously undermining the demand-base as the wage-share drops. Where profitability descends, speculation and bubbles takes off. As a result, capital accumulation throws the economy into crisis, stagnation and depression. The profitability is what drives and unites movements in both supply and demand.

# 3 – Theory & previous research

This part outlines the Marxian perspective on the law of the tendency of the profit rate to fall, and how it arises out of the normal workings of capital accumulation.

## 3.1 – The General formula of capital, the labour-process & the circulation process

For Karl Marx, capital isn't merely the stock of assets, or wealth, but a process of value set in motion; the *process of wealth-creation by means of commodity exchange on a market,*

*mediated by money, which is the independent expression of value* (Ramsay 2015:8). His *General Formula for Capital* is very simple, but a pregnant and succinct observation:

$$M \rightarrow C <^{L}_{mp} ... P ... C' \rightarrow M'$$

The purpose of capitalist commodity production is the *advancement* of value, expressed as a sum of money capital (*M*), for the purchase of commodity capital (*C*), in the form of labour-power (*L*) and means of production (*mp*), which through the production process is rendered into production capital (*P*), resulting in a commodity capital with an incremental increase ($C' = C + \Delta C$) that, through exchange is realised into an incrementally increased sum of money capital ($M' = M + \Delta M$). The increment $\Delta M$ is what is referred to as *surplus-value.* The formula is often simplified as $M \rightarrow C \rightarrow M'$. This incrementally increased sum of money capital is the telos of the whole process (Marx 1976:247ff; 1978:109ff).

Like the classical political economists, Marx similarly argued that labour was the sole source of value and hence surplus-value in capitalist society. One vital alteration of the labour theory of value set Marx apart from the classics: it's not the privately concrete labour, and the individual labour-time expended by isolated producers within a branch that creates value (in that case, a good would be worth more the longer the producer worked on it), but rather, what counts as value-creating labour is the amount of *abstract labour* expended, whose magnitude is determined by the *socially necessary labour-time*.

> Socially necessary labour-time is the labour-time required to produce any use-value under the conditions of production normal for a given society and with the average degree of skill and intensity of labour prevalent in that society. (Marx 1976:129)

Simply put: the *average* or *regulating productivity-level*. To what extent the privately expended labour of individual capitals counts as value-creating, depends on how it measures up to the social average of productivity. Capitalists producing a good by expending *less* labour than the social average will be regarded as more efficient in the competitive struggle, and consequently be able to gain market-shares with their cost-advantage, and receive higher profits; while capitalists who expend labour *above* the average, will receive lower profits due to their relative inefficiency. The labour-time socially necessary for the production of a particular use-value is always changing; if the productivity of labour increases, the more products can be created in the same time-span, and thus the socially necessary labour-time for

producing that item diminish, and with it the value of the article, hence it experiencing a cheapening (Heinrich 2012: 43,51-52).

Furthermore, Marx emphasised the significance as to what degree the commodities produced must be a part of the monetary/payable demand prevailing in society; one has to produce not only a use-value, but "use-values for others, social use values". A use-value of which there's no demand for, contains no value (Marx 1976:131).

Outlays on means of production (machinery, raw materials, etc.), or *constant capital, c,* merely transfer their bestowed value – itself determined by the labour-time expended on it – onto the product (Marx 1976:307ff). Since "the quantity of constant capital transferred cannot be greater [therefore *constant*] than the original quantity of constant capital advanced" it cannot be a source of value and surplus-value (Moseley 2016:30). The only commodity on the market whose use-value consists in the ability of being a *creator of value* is *labour-power,[3]* whose value is determined by "the value of the means of subsistence necessary for the maintenance of [the working class]", as well as by the claims workers are able to assert in the class struggle (Marx 1976:274 *quote from here*; Heinrich 2012:94). Outlays on wages for labour-power is called *variable capital, v.*

**Labour functions as a source of value in a twofold way:** Not only does labour put the means of production to work, but wage-earners are needed in order to absorb the commodities produced, which profit-earners are dependent upon in order to generate the monetary means to purchase means of production, to be utilised to strengthen their position in the competitive market-struggle, from which they'll capture profits. *I.e. labour make out the reproductive demand-base.* The magnitude of value, in turn, is determined by the socially necessary labour-time. *I.e. the regulating/average labour-productivity becomes the benchmark of competitiveness to which the participants have to adapt.*

In the overall accumulation process, the labour process encompass $M \rightarrow C'$, with the subsequent movement $C' \rightarrow M'$, constituting the circulation process. The process could be summarised by the following equations, starting with the labour process:[4]

The initial sum of money advanced equals the outlays for constant and variable capital.

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[3] The very existence of labour-power as a commodity necessitates a specific *class relationship* – the *capital-relation,* as Marx called it – with on the one hand "a *class of property owners* (owners of money and means of production), and on the other hand there must exist *a class of largely propertyless, but legally free workers*" (Heinrich 2012:91-92).

[4] The following equations are informed by Freeman (1996:4-6).

$$M = c + v$$

The incrementally increased commodity capital, before realisation in circulation (sale), is equal to constant capital plus the new value created by labour.

$$C' = c + L$$

Of the new value created, a part of it consists of *replacement cost* for the outlays on variable capital, the residual being the surplus-value generated (Moseley 2016:30).

$$L = v + s$$

$$s = L - v$$

(The ratio of the constituent parts of this new value *L,* being the rate of surplus-value/exploitation $s' = s/v$; a higher rate of exploitation contributes to increasing the profit rate [*section 3.2.1*].) Accordingly, *C'* can also be written as the sum of constant capital, variable capital, and the surplus-value generated.

$$C' = c + v + s$$

This incrementally increased commodity capital is then circulated (taken to market), to be realised through sales. The amount of new value *L* isn't known before exchange takes place. In production, the individual capitalist can only estimate *L* – to what extent the labour expended correspond to the socially necessary labour-time – i.e. to what extent the productivity of his production process matches the social productivity-level – and to what degree his commodities corresponds to the monetary/payable demand. If the production process proves to be too inefficient and no demand exists for the produced use-values, then the commodities has no value, and the capitalist fail to realise the value-creating labour expended onto *C'* (Heinrich 2012:51-55). Therefore, regardless, in the circulation process, the sum values of *C' realised* are *per definition* equal to the incrementally increased sum of money (Freeman 1996:5).

$$M' = M + \Delta M$$

$$M' = c + v + \Delta M$$

$$\sum M' = \sum C'$$

And this incremental money-sum equals the total amount of surplus-value produced.

$$\sum s = \sum \Delta M$$

Circulation while important for establishing the norms of what constitutes value-creating abstract labour (i.e. rendering the social/average productivity level palpable for individual firms), isn't in itself a source of value, it merely circulates values. An individual capitalist may receive $M'$ that differ from their $C'$, since someone may sell goods worth more or less than the value of their $C'$, but this is merely a redistribution of the total value between capitalists, since total value is unaltered by exchange (Marx 1981:135; Freeman 1996:5; Heinrich 2012:147; see *section 3.2.1.b*). Furthermore, John Smithin argues that the only possibility for $M'$ to be greater than $M$ is because money and credit creation must have taken place throughout the labour- and circulation process.

> … for profits to be "real" (not inflationary), $M' > M$ must stimulate production, that is $C' > C$ in "value" or "real" terms, to the same extent. If the quantity of commodities, $C$, stays constant, then $M' > M$ will only mean a rise in money prices. (Smithin 2009:13)

## 3.2 – The general law of accumulation & the tendency of the profit rate to fall

Individual capitalists are on the one hand *motivated by the extra profits* gained by increasing productivity above the social average; on the other *compelled by competition* to raise their productivity in order to not get eliminated in the market arms-race.

> [Competition] forces individual producers to set prices with an eye on the market, just as it forces them continually try to cut costs so they can cut prices and expand market share. Cost-cutting can take place through wage reduction, increases in the length or intensity of the working day, and through technical change. The latter becomes the central means over the long run. (Shaikh 2016:259)

Increasing productivity allow the capitalist to cut their costs and continue to sell their output at prices determined by the more cost-inefficient firms, thus, increasing their profit margin and likewise granting them a leeway to cut prices in order to force out rivals from the markets and gain market-shares. Therefore, there's a bias towards labour-saving and capital-using technical change, or a higher *organic composition of capital* (Ω), which is the ratio of capital to labour-power (*section 4.1.2*). Increasing the organic composition of capital is an important measure for raising the productivity of labour-power and facilitates an increased rate of

surplus-value extraction from the workers by cheapening their means of subsistence (thereby the value of labour), the cost of raw materials, and machinery.

Capital can accumulate under constant conditions, i.e. constant organic composition of capital and constant rate of exploitation *s'*, where the demand for labour-power grows proportionally with capital; a 20% growth of capital leading to a 20% growth of workers demanded. But the rising demand for labour-power usually brings about an improvement in workers bargaining position, thus leading to the price of labour-power to rise. This tends to diminish the rate of surplus-value, weaken competitive cost-advantage, and thus slow down accumulation, inciting the introduction of labour-saving machines into the labour process (Marx 1976:762-772; Heinrich 2012:124-125). Therefore, the accumulation process typically takes place under an increasing composition of capital, where the demand for labour-power and wage-rises are restrained by the accumulation process itself. Accumulation incorporates labour in a constantly diminishing proportion, i.e. in a *relatively* declining ratio to means of production. From accumulation, an *industrial reserve army of workers* – workers impelled to sell their labour-power but can't easily find buyers – arise (Marx 1976:772-794). In other words, full-employment isn't brought about naturally by capitalism.

### 3.2.1 – The law of the tendency of the profit rate to fall

Capitalists, albeit interested in increasing the rate of surplus-value *s'*, don't themselves measure profit in these terms, instead they measure it as surplus against the total capital advancements.

$$p' = \frac{s}{C}$$

Where $C = c + v$. On a macro-level, the total mass of profit equals the total amount of surplus-value($\sum s = \sum \Delta M$); profit, therefore, is just another name for surplus-value (Marx 1981:320). The profit rate is closely associated with both the rate of exploitation and the organic composition of capital, and can be rewritten as:

$$p' = \frac{s}{c+v} = \frac{\frac{s}{v}}{\frac{c}{v}+\frac{v}{v}} = \frac{s'}{\Omega + 1}$$

The rate of exploitation *s'* have a positive correlation to the profit rate *p'*, whereas to the organic composition of capital, *p'* has a negative correlation. Meaning *p'* increases/decreases

if *s'* increases/decreases, while the reverse is the case with Ω; an increase/decrease in Ω leads to a decrease/increase in *p'*.

Suppose we have a "closed" economy, where the rate of exploitation equals 100% $\left(s' = \frac{100}{100} = 1\right)$, and the initial constant capital employed is 200, then the profit rate is 33% $\left(p' = \frac{100}{200+100} = 0{,}33\right)$. Suppose further that the constant capital grows 10% every year, while surplus-value and variable capital remains the same (implying an increasing organic composition of capital) – the following pattern emerge:



A falling rate of profit (%) & increasing organic composition of capital (as ratio to 1)
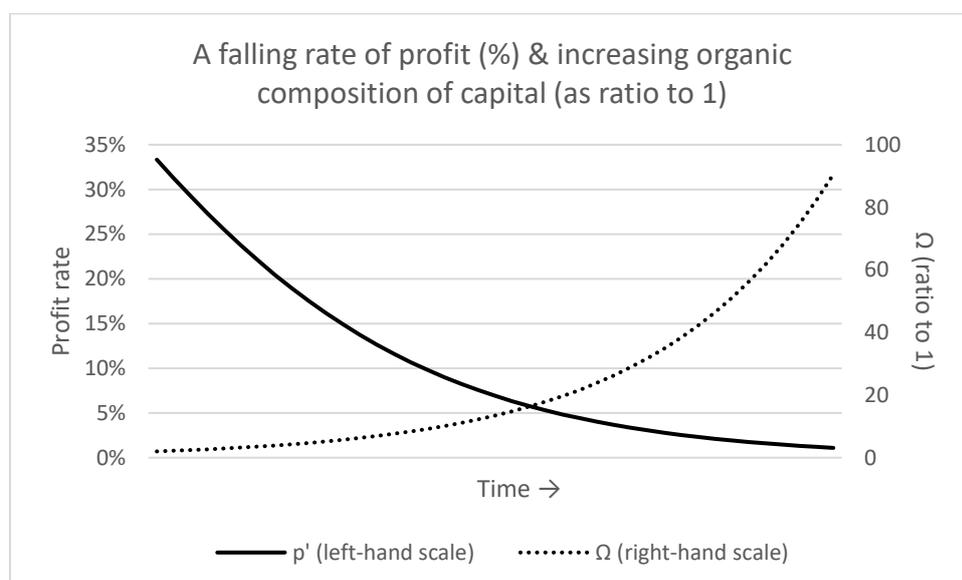
*Figure 1: Illustration of the law of the tendency of the rate of profit to fall*

*Author's calculations.*

As apparent from this simple illustration, the rate of profit declines as the organic composition of capital rise, since *relatively* less living labour and thus *relatively* less surplus-labour underpinning surplus-value, is absorbed by the total capital; the *absolute* magnitude of surplus-value may still increase. This is under assumptions of a constant value of labour (*v*), and a constant rate of surplus-value (*s'*).

Several scholars have argued that Marx's "law" isn't rigorously worked out; an increase in organic composition of capital doesn't necessarily lead to a decline in *p'* as long as it facilitates a cheapening in the means of subsistence that determines the value of labour and subsequently an increase of in the rate of surplus-value *s'* that outweighs the rise in Ω. Similarly, if increased productivity cheapens the elements of constant capital, Ω might remain stable or even see a decline (Heinrich 2012:152; Harvey 1982:177f). Robert Kurz argue that even if labour is devalued, the rate of surplus-value increased, and constant capital cheapened, this could still lead to a fall in the rate of profit, but not due to the growth of total

capital stock relative labour, but due to faltering demand, as increased productivity lead to not only cheapening products, but also a declining labour-share, creating difficulties in realising output, thus deteriorating new value-creation *L*, which leads to a decline in surplus-value.

*Figure 2* shows an example of productivity increases in a "closed" economy, referring to a single commodity or a "shopping basket" of arbitrary composition. Technological innovation increases productivity by 25%, i.e. reduces socially necessary labour-time (*L*) required for production by 20%. The shopping basket is also the means of subsistence determining the value of *v*. By implication the necessary paid labour (*v*) decreases by 36% by the combined effects of productivity increases and cheapened subsistence, effectively reducing the "demand-base", but leading to a simultaneous increase in the rate of surplus-value (*s'*). Even though the rate of surplus-value is increasing, the total amount of surplus-value (*s*) declines as a side-effect of total value *L* decreasing (Ortlieb 2008:92ff). Since $L = v + s$, a reduction of socially necessary labour (*L*) – new value created – leads to a corresponding decrease in the total surplus-value, *despite* an increase in the share of *s* in *L*.
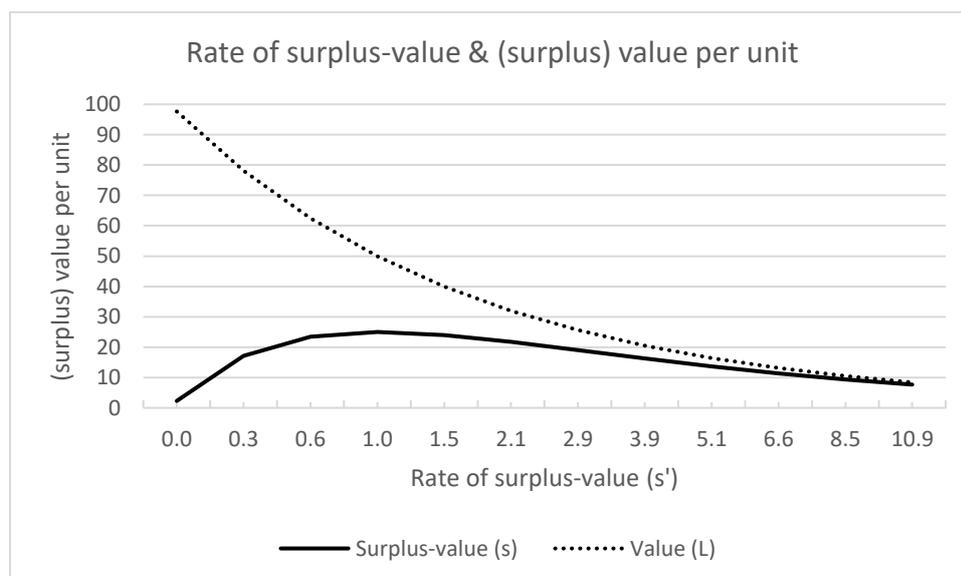


*Figure 2: Illustration of the tendency of productivity to accelerate and the consequent erosion of the demand-base*

*Author's calculations, based on Ortlieb (2008)*

In this simplified model "the rate of surplus value increases in direct proportion to productivity, and as long as the rate of surplus value remains below 1, the mass of surplus value also grows" (ibid:98).

Therefore, the profit rate may decline not only because of a swollen stock of constant capital, but also because the value-creating labour is being diminished as productivity is increased. It's increasing productivity – declining value of individual products, escalating material output, and labour-saving/wage-share depressing technical change – that brings forth the necessity of limitless capital accumulation on an increasingly larger scale ("economic

growth") in order to compensate for the trends (demonstrated in *figure 2*) of continuous and successive erosion of the demand-base. For Kurz, the tendency of the profit rate to fall and overaccumulation is nothing but a surface phenomenon of this contradiction (Kurz 1986:47-50).

### 3.2.1.a – Consequences: the "law" as an indirect cause of crisis & depressions

A healthy profit rate is important in order to spur investment and economic growth. Therefore, the law of the tendency of the profit rate to fall may perhaps not be a direct cause of crisis and depressions, but instead an *indirect cause* (Kliman 2011:14).

Henryk Grossman writes that a declining rate of profit is "a permanent symptom of the progress of accumulation" in its normal functioning, and often "goes together with an expanding mass of profits [total surplus-value]" (Grossman 1992:*u.a.*). That is, the fall of the profit rate tend to lead to higher concentration of capital through mergers and acquisitions, since "a large amount of capital with a lower rate of profit accumulates more quickly than a small capital with a higher rate of profit" (Marx 1981:359). But when the fall in the profit rate isn't outweighed by an increase of its mass, a "plethora of capital" emerge; whenever expanded capital investments only generates the same or less surplus-value as did before a lesser capital investment (when an investment of $M \rightarrow C + \Delta C \rightarrow M \leq C$), there is an overaccumulation of capital, which likewise is an overproduction of commodities (Marx 1981:359). Since this surplus capital emerges from the same process that creates a surplus population of labourers, a problem of realisation of commodities (hence imperfect valorisation of capital) emerges:

> Imperfect valorisation due to overaccumulation means that capital grows faster than the surplus value extortable from the given population, or that the working population is too small in relation to the swollen capital. (Grossman 1992:*u.a.*)

*Surplus capital appears alongside surplus population.* As a consequence, the process breeds demand-problems as the given working population are incapable of valorising the excessive (overproduced) commodities spawned by the excess (overaccumulated) capital. In the face of a falling mass of labour-power, assuming the rate of surplus-value/exploitation isn't increased, an *absolute decline* in the *mass* of profit (total surplus-value) follows (Marx 1981:360).

As capital hunts for steadily diminishing profitable outlets, the formation of idle surplus tends to channel into financial activity, inciting "speculation, credit swindles, share swindles,

crises" (Marx 1981:359-360). Therefore, low profit rates lead to a falling rate of capital accumulation, which in turn result in low growth rates of employment, output, income, and demand. Consequently, when income growth in the form of profit, wages, and tax revenue is slow, it's more difficult for businesses, households, and governments to repay their debts. Additionally, when the rate of accumulation is low, interest rates will tend to be low as well (since decreasing investments implies less demand for credit), and this, in due time tend to make borrowing more attractive and subsequently encourage speculation in asset markets for bonds, stocks, and real estate – paving the way for a crisis-prone economy, potentially leading to long-term stagnation (Kliman 2011:18-19). Speculation and credit expansion creates options for workers and capitalists to borrow and spend more than they earn, subsequently solving the "realisation problem" (Roberts 2016:28). A drop in the profit rate, and more immediately, a fall in the mass of profit (total surplus-value), is often a preamble to a credit bubble bursting (ibid:93). As a result of the tendential fall of the profit rate spurring overaccumulation and overproduction, crisis ensues in abundance.

### *3.2.1.b – Counteracting tendencies*

The "law of the tendential fall of the profit rate" isn't a deterministic and linear process, but is constantly met with several counteracting tendencies. The profit rate falls unless the total surplus-value $\sum s$ rises, but $\sum s$ cannot exceed the value added, *L,* in any period; $\sum s < L$. If not proportionately more labour is employed as value-substance/demand-base to valorise capital, the profit rate will fall.

Some of the counteracting tendencies, with regard to labour, are: **(1)** Increasing the magnitude of human endeavour *L*, and thus the production of absolute surplus-value by incorporating absolutely more workers, prolonging the working day and intensifying the labour process (Marx 1981:339f; see *section 3.1.3*). **(2)** Reduction of wages below their value (ibid:342) which is intricately intertwined with **(3)** the development of labour-productivity, and the subsequent creation of a surplus population of workers it brings about, diminishing wage-labourers bargaining position thus keeping them both cheap and quantitatively available (ibid:344). Both of the latter mentioned countertendencies imply a devaluation of labour by depressing or holding back the growth of *v*.

With regard to constant capital, we encounter: **(4)** Cheapening of the elements of constant capital as a result of higher labour-productivity. Although the material volume of machines continually grows, this enhancement of productivity cheapens machinery and prevents the

value of *c* to grow, making it possible to employ more means of production to a lower capital value (ibid:343). Here Marx also mentions devaluation of existing capital. In particular, the tendency is interrupted and counteracted through the destruction of capital value that takes place during crises. This refers both to destruction of physical capital – machines and buildings that lay idle, rust, and deteriorate – as well as destruction of capital in terms of value – decline in the value of physical capital assets and decline in fictitious value of financial assets. However important destruction of physical assets can be, "the predominant factor that causes capital value to be destroyed is falling prices. As debt goes unpaid, the prices of financial assets such as mortgage loans and mortgage-backed securities fall" (Kliman 2011:22).

An often-overlooked countertendency is **(5)** the impact of increased turnover-speed; the advancements on circulating capitals (intermediate consumption and wages) return to the capitalist faster (through sales and the analogous spending of wage-earners and other capitalists purchasing inputs), than the outlays on fixed capitals, that takes years to amortise. The time-span it takes for capital outlays to be recuperated through sales is called turnover-time, or *n*. This means that a capitalist just need to advance a small part of the yearly total wage bill and other outlays on intermediate consumption etc., since these costs tend to be recuperated by sales faster than investments in fixed assets; therefore the portion laid out on wages and raw materials is, due to its lower turnover-time, smaller, and can be decreased with increased turnover-speed; if all wages are spent during a month, the capitalists recuperates their original outlays for wages through those sales, and can thus be used to pay for the next month's wages. Increased turnover-speed thus has a positive impact on the profit rate, since it can increase surplus-value when outlays on variable capital – as well as repress the organic composition of capital as the portion of circulating constant capital – decline (Marx 1978:369ff).

One important contribution of the present study is to adjust for turnover-time; wages adjusted for turnover is argued to better reflect firms' *actual* outlays on wages. Neglecting to take into account the turnover-speed of for example the wage bill, would seriously overestimate labour-costs; in core countries such as the U.S., Japan and the Netherlands, the wage bills exceed 50% of GDP, but due to the turnover-speed, the true annual labour-costs to the capitalists are just about 5% (Maito 2014a:12).

One crucial and under-theorised counteracting tendency is the role of **(6)** foreign trade, which can function to cheapen, by import, both the elements of constant capital and the necessary means of subsistence, and therefore raise the rate of surplus-value as the outlays on variable capital is reduced (Marx 1981:344-345). Furthermore, as previously mentioned (*section 3.2*), in competition, more capital-intensive (high-composition) firms (or national economies), often being the more efficient and cost-competitive capitals, will by virtue of their larger market-shares, capture a larger share of surplus/profit relative their less-efficient international competitors. Investors, driven by profitability, tend to accelerate investments into activities with higher profit rates, accelerating expansion of output and capacity in that industry or sector, "until their output begins to grow faster than their demand, at which point their prices and profit rates will begin to decline" (Shaikh 2016:263-270, *quote from p.106*).

Foreign trade can also facilitate the fall in the profit rate by permitting an increase in the scale of production, which accelerates accumulation, therefore potentially accelerates the rise in $c$ relative $v$, hence a fall in the profit rate (Marx 1981:345).

Another counteracting tendency **(7)**, as a way to solve crises of overaccumulation, is destruction of capital value, the prime examples being the Great Depression and World War II. Losses caused by devaluation of financial and physical assets, or the actual destruction of physical assets, can create conditions for new profitable investments and thus restore profitability. When a crisis or slump hits, and some capitalists close down, others take over the vacant economic space, subsequently expanding production by hiking capacity utilisation. The expanded production at higher capacity tends to generate employment effects. In addition, the new capitalists buy up the means of production, raw materials, semi-finished products, etc. of the bankrupt firms at deflated prices, and depreciation is increased as a result of the higher capacity utilisation (effectively reducing the value of the assets further). As a result, the organic composition of capital decreases as the numerator ($c$) is depressed and the denominator ($v$) expands, together with increased purchasing power of labour as employment rises, and rising profitability of capital, facilitating the realisation of output (Kliman 2011:3; Roberts 2016:17-18).

### 3.2.2 – The Marxian notion of productivity

When it comes to economic development, it's common to regard each country as the smith of its own fortune, notwithstanding that domestic institutions and governance are important in providing an environment conductive to economic growth, it's problematic to regard a

country in isolation, without taking into consideration the international environment which conditions each individual nation's actions, providing limits as well as room for manoeuvre. Common sense tells us that a more productive capitalism is a more profitable one. This intuition is reinforced by the fact that on a micro-level this relationship always seems to hold: more technologically advanced firms are more profitable than backward ones. Productivity is then conceived as having a simple, obvious and unidirectional causal relationship to economic growth; productivity-enhancing rationalisations and investments of the magnitude of *X* undertaken, leads to economic growth *Y*. But to assume that the general profit rate would rise with economy-wide productivity increases is a logical error; a *fallacy of composition* – what holds for the parts doesn't necessarily hold for the whole (Kliman 2011:15).

On a macro-level increased organic composition of capital lead to a reduction in the general rate of profit, while on a micro-level a higher than average organic composition of capital implies an ability to retain a larger market-share, hence larger share of the total surplus-value/profit produced (Kurz 1986:61).

As mentioned in *section 3.1*, to what extent the privately expended labour counts as value-creating depends on to what extent it corresponds to the *average*, or *regulating* productivity-level, as well as fulfils a societal monetary demand. While the outlays on constant and variable capital are *prima facie* – given and known quantities – the new value created *L,* isn't known before exchange, but can merely be estimated and is a reflection of competitiveness and market-shares. Since competition is a war waged with prices, a highly productive capital with cheaper goods will yield larger market-shares, thus capturing/absorbing more of the circulating monetary demand. With more commodities of a firm/nation being realised in circulation, more capital is valorised and a larger share of the total surplus-value produced in circulation is captured by the specific firm/nation. Hence, the correlation between productivity and growth is always possible to establish *between* firms, or *between* nations. But what happens when a *general* amplification of productivity occurs is quite another question. When sharp economy-wide competition compels capitalists to cheapen the real costs of commodities, augmented by investments in constant capital, while the share of wages is decreasing in total output as labour-saving machinery are introduced (and labour-devaluing politics are pursued) – thus generating realisation problems (or demand problems) – then the profit rate tends to trend downwards, with less investments, less output, and less employment as a result. What appears rational for individual firms, engender irrational aggregate results.

Furthermore, productivity in capitalism refers mainly to the "abstract process of the formation of value", represented as exchange value, whose substance is abstract human labour (Kurz 1986:21). The only productive labour is the labour expended which contribute to this process of value-formation, while labour related to circulation-functions such as buying and selling (marketing, market analysis, advertising, financial intermediation, wholesale/retail trade, etc.) are no creator of value. Non-production-activities are dependent upon production-activities; the former circulate and facilitate the exchange of the latter. Without production, there would be no commodities to circulate, no entrepreneurial initiatives and development projects to finance, and no stream of revenue that could be taxed for setting up a social infrastructure. These functions and activities are necessary for the whole process, but are never really a part of the material labour process (ibid:23-25). If one is interested in the *actual* investment behaviour and realised profits of firms, one should focus on the "productive" sector (Kliman 2011:94f).

## 3.3 – Previous research on the tendency of the profit rate to fall

The literature on the law is extensive, but findings of recent papers suggesting that the law seem to be a general economic feature. Li, Xiao & Zhu notes there's been several "long waves" in the movement of average profit rate and rate of accumulation since the mid-19th century. They especially point towards the drastic fall that followed in the transition from U.K. hegemony to U.S. hegemony, where the fall in profit rate is explained by a rising wage and taxation cost, i.e. a profit-squeeze theory (Li et al 2007). Esteban Maito, using a turnover-adjusted method and a sample of fourteen countries,[5] demonstrates a secular decline in "core countries" since the mid-19th century until the 2000s, and in "peripheral countries" since the 1950s onward. His world-mean measure for the period 1950-2010 shows a trough in the beginning of the 1980s, followed by a somewhat stable profit rate (Maito 2014a). Michael Roberts (2016) general argument is that the financial crisis of 2008 was caused by the "law" and that the world-economy since that have been entering a long depression, with surplus capital incapable of being recycled through investments (i.e. overaccumulated capital).

By looking at historical data on real labour-productivity and output-capital ratios, Marquetti investigates whether or not the tendency towards labour-saving and capital-using technical change is prevalent in a series of capitalist economies as well as the patterns of the worlds regions over time. A "Marx-biased technical change" – as opposed to Harrod-neutral (labour-

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[5] His sample consists of Argentina, Australia, Brazil, Chile, China, Germany, Japan, Korea, Mexico, Netherlands, Spain, Sweden, U.S.A., U.K.

saving but neither capital-saving nor capital-using) and Hicks-neutral technical change (equally labour- and capital-saving) – thus implies increasing real labour-productivity indicating labour-saving,[6] and a declining output-capital ratio indicating capital-using (Marquetti 2002:192).

Marquetti finds that the US, UK, Netherlands, Germany, France, and Japan all experience a labour-saving and capital-using pattern in general, albeit not universally for the whole period of 1820 and 1992 (ibid:193ff). For the world as a total (excluding the Middle-East due to the effects of oil prices in GDP) his regression seems to confirm this Marx-biased technical change, although the standard deviation is quite large relative the mean (ibid:197). In the regional analysis which stretches over the period of the 1960s or 1970s to 1990, the trends are quite differing. The regions of the U.S. & Canada, East Asia, South Asia and Eastern Europe demonstrate a Marx-biased technical change over the period, while Western Europe, Southern Europe, and Oceania demonstrate a labour-saving and capital-using pattern up until the 80s, when capital-using starts stagnating into constancy or a *slight* capital-saving. For North Africa, Sub-Saharan Africa, and Latin America, the experience seems to be a Marx-bias up until the middle of the 80s, followed by a reversal of the trend (ibid:197-198).

### 3.3.1 – The case of the U.S.

Andrew Kliman demonstrates that for the U.S., the profit rate started to fall, failing to rebound, after the slumps of the mid-1970s and early 1980s. Checking for inflation, the fall already started in the mid-1950s (Kliman 2011:77f). The persistent fall in profitability produced a fall in the rate of capital accumulation, leading to sluggish growth in per capita GDP, growth of corporations output, of compensations of employees, and rising debt burdens (ibid:89f). Kliman demonstrates that the slow growth of employment relative to the accumulation of fixed capital (i.e. an increasing organic composition of capital) accounts for the lion's share of the fall in the nominal rate of profit in the post-war era, while the profit-share remained pretty much constant over the period (ibid:130ff). Accompanying the ICT-revolution, there's been an increase in the rate of depreciation due to obsolescence. This increased rate of destruction of capital value is a mechanism that work to boost profitability, but *despite* that, the profit rate of the U.S. has seen a significant fall. Thus, when controlling for the increased rate of moral depreciation, the fall in the profit rate during the last few decades is even greater (ibid:141ff).

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[6] "industries with more rapid productivity growth tend to displace labor and show lower growth of hours" (Storm 2017:26).

Fred Moseley (1997) similarly argues for the secular decline in the rate of profit after the war, causing not only the stagflation of the 1970s, but profitability never fully recovered after that. He argues that one of the most important determinants of the fall in the profit rate has been the growing proportion of unproductive activities relative productive ones. If non-production labour performed increases faster than production labour performed, this will cause the profit rate to fall, since it implies increasing costs and less value-creation. Moseley notes that this increased ratio of unproductive to productive labour seem to be a consequence of technological change conductive to increasing productivity of production-activities more rapidly than that of the non-production-activities (Moseley 1997:7).

One common way of measuring the profit rate, is by the ratio of surplus to capital. This profit rate can be decomposed into the product of the share of surplus in the output, multiplied with the ratio of output to the fixed capital stock $\left( \frac{s}{c} = \frac{s}{y} * \frac{y}{c} \right)$. The profit rate is "proportionately related to the surplus share and inversely related to the capital/output ratio" (Edvinsson 2010b:481). Of these ratios – the profit share, and the output-capital ratio – the latter one is regarded to be the more important one influencing the profit rate. Alan Freeman (2009:8) found that for the U.S., the output-capital ratio explained 91.9% of the variations in the movements of the profit rate from 1929 to 1965, and 75.7% of the variation during the whole period of 1929 and 1996.

### 3.3.2 – The case of Sweden

In the case of Sweden, Rodney Edvinsson – decomposing the profit rate into the product of surplus-share times the output-capital ratio – suggests that there's been a secular decline in the output-capital ratio during the course of Swedish capitalist development, implying a declining profit rate. This decline in the output-capital ratio continued up to the mid-1970s, after which it saw a rise, consequently leading to a rise in the rate of profit. He attributes 62% of the increase in the profit rate to an increasing surplus-share, while the remaining 38% is attributed to a declining output-capital ratio. This development is connected to the regime of flexible accumulation, where the slashing of the inventory stock relative the value added, was the main cause of the decline in the capital-output ratio (Edvinsson 2010b:479).

## 4 – Methodology & data

In this section, an operationalisation of the theory will first be presented, followed by remarks on the datasets, definitions of categories such as surplus, capital stock etc., and their linking.

## 4.1 – Operationalisation & measurement

The profit rate is related to the organic composition of capital, whose dynamic is in turn related to capital accumulation, which is governed by the rate of profit. These components are interrelated and part of one process, feeding and flowing into each other. Therefore, this subsection will deal with the rate of profit, the organic composition of capital, capital accumulation, and decomposing changes in the profit rate.

### 4.1.1 – The profit rate

Marx formula for measuring the rate of profit could also be formulated as the rate of exploitation/surplus-value, divided by the organic composition of capital plus one.

$$p' = \frac{s}{c+v} = \frac{\frac{s}{v}}{\frac{c}{v}+\frac{v}{v}} = \frac{s'}{\Omega+1}$$

This demonstrates the importance of the rate of exploitation/surplus-value, as well as $\Omega$ in determining the profit rate. In the present study, we will focus solely on the profit rate of "productive activities" (*section 4.2.2*).

### *4.1.1.a – Adjusting for turnover-time*

The impact of the turnover-time of variable and circulating capital (intermediate consumption, raw materials) is crucial to take into account when measuring the rate of profit, since they have a great impact on the ratio.

The formula proposed by Esteban Maito (2014a:3f) follows the Marxian formula – dividing net operating surplus (*s*) with the sum of fixed constant capital ($c_f$), circulating constant capital ($c_c$), and variable capital (*v*) – but where the size of the circulating capitals (intermediate consumption and wages) are adjusted, by division, for their turnover-speed (*n*).

$$p' = \frac{s}{c_f + \frac{c_c}{n} + \frac{v}{n}}$$

Turnover-time is calculated in different ways in the literature, but in general it relates the costs and flows of sales to the inventory stock (Maito 2014a; Fichtenbaum 1988; Jones 2017). Our method for calculating turnover-time is provided by Peter Jones (2017:89f), done in three steps. Firstly, we need to estimate the initial stock of variable capital advanced by multiplying the initial inventory stock with the share of compensation in output for the preceding year.

$$v_t = \frac{w_{t-1}}{y_{t-1}} * inv_t$$

Next, we measure the amount of variable capital *realised* during a year, *vr,* which in practice is likely to be the wages cost share of commodities sold during the period, or the share of wages in total output sold, multiplied with output less the change in inventories.

$$vr_{t+1} = \frac{w_{t+1}}{y_{t+1}} * \left(y_{t+1} - (inv_{t+1} - inv_t)\right)$$

Jones suggest one should also exclude the revaluation of the inventory stock when subtracting the change in inventory stock, but such an exclusion of the effect of revaluation has not been possible, which will impact the turnover-time some.

From this we can, finally, calculate the turnover-time by dividing the realised variable capital to the preceding years advanced variable capital.

$$n_{t+1} = \frac{vr_{t+1}}{v_t}$$

This can also be checked by an easier approximation of the turnover, similar to Fichtenbaum's (1988:224) method, taking value added *less* the change in the inventory, divided by the total inventory stock. This measure can be used as a proxy for turnover-time, and in fact tends to follow the "proper" calculation closely (Jones 2017:90).

$$n_{proxy} = \frac{y^{t+1} - (inv^{t+1} - inv^t)}{inv^{t+1}}$$

The turnover-adjustment impacts on the basic categories of the profit-rate-equation: since total surplus-value is defined as output *less* consumption of fixed capital assets *less* variable capital $(s = y - CFC - v)$, a turnover-adjusted variable capital implies a larger amount of surplus-value; an increase in the denominator of $\frac{v}{n}$, leads to a decrease of the numerator, i.e. declining wage-outlays. This, in turn, translates into a larger amount of *s*, since the amount of *v* subtracted is lessened. This will in effect impact the rate of surplus-value (*s'*). The adjustment has the same diminishing effect on the circulating portion of constant capital (intermediate consumption). Therefore, the resulting ratios of the profit rate and organic composition of capital will also be affected. (See *section 5.1.*)

### 4.1.2 – The organic composition of capital & the accumulation of capital

The rate of profit depends not only on the rate of surplus-value, but also on the proportions of productive constant capital to productive variable capital. The definition often referred to in the third volume read as follows:

> The *organic* composition of capital is the name we give to its value composition, in so far as it is *determined by* its technical composition and *reflects it*. (Marx 1981:245)

This is quite an ambiguous definition of the concept. But could be simplified as the merely the ratio of capital to labour; the organic composition of capital is to be understood as "the ratio of the quantity of money constant capital advanced (affected by both the quantity and the value of the means of production) to the quantity of living labour set in motion (with variable capital as an index of this quantity of labour, on the assumption that wage rates are equal across industries" (Moseley 2016:347). Which gives the algebraically expression:

$$\Omega = \frac{c}{v^*} = \frac{c}{L}$$

Where $v^*$ is an index for $L$. There is a crucial difference between the impact that changes in constant and variable capital has on the general rate of profit. Since constant capital merely transfers its value to the total societal product, it's irrelevant whether a change in constant capital is due to changed monetary value of the means of production or a change in the physical quantity of the means of production. Whether or not a change in variable capital is due to a change in the number of workers, or in the wage rate, make all the difference in the world, since these have opposite effects on the rate of profit; more workers increase surplus-value (due to more workers to exploit, and that create value), a higher wage rate decreases it. This is the reason why constant capital needn't be an index for the physical quantity of the means of production, while it's necessary for variable capital. By assuming that the wage rate is equal across industries, a change in the amount of variable capital will unambiguously represent a change in the labour employed. Variable capital has an *organic* relationship to the valorisation of the total capital – hence the *organic* composition of capital – while constant capital doesn't have an organic relationship to the total capital due to its value-transferring function. Moseley also emphasise that the constant capital should be related to the *value-creating* labour (Marx 1981:245; Moseley 2016:338,347-348).

Thus, we need to index $v$ for the productive workforce $L_p$, by calculating average wage, and then multiply it with the productive workforce, so a change in $v$ unambiguously represent a change in the productive workforce.

$$v = \frac{\left(\frac{W}{n}\right)}{L} * L_p$$

Further, we're interested in relating the constant capital (fixed and circulating) of production-activities ($c$) in the economy – thus excluding the fixed assets pertaining to unproductive activities – to the productive workforce. The organic composition of capital is thus the total capital stock ($K$) *less* assets pertaining to non-production-activities ($K_u$), *plus* turnover-adjusted intermediate consumption ($IC$) divided by the average wage of total labour multiplied with the number of production-workers.

$$\Omega = \frac{c}{v} = \frac{(K - K_u) + \left(\frac{IC}{n}\right)}{\frac{\left(\frac{W}{n}\right)}{L} * L_p}$$

*4.1.2.a – Indicators of a "Marx-biased" technical change in the course of accumulation*

The definition, or "fundamental law of accumulation" (Freeman 1996:7) is investment oriented towards expanding the capital stock. Accumulation is commonly measures as the ratio of investments to surplus $\left(\frac{I}{s}\right)$ (Kliman 2011:90-92). But since accumulation isn't reducible to the capital fixated in assets within the nation, but also flows through trade (exports, foreign direct investments, etc.), it's also important to take into consideration the extent of foreign trade.

Since Marx's theory of accumulation and the consequent tendential fall of the profit rate predicts that technical change will have a bias towards labour-saving and capital-using, this can be addressed by measuring the nominal output-capital ratio and real labour-productivity. The latter measure is nominal figures deflated by the volume indices provided by the national accounts of SCB. We will expect the ratio of constant capital to output to increase over time (i.e. the output-capital ratio $\left[\frac{y}{c}\right]$ to decrease) as an indication of rising organic composition of capital, while labour-productivity is expected to increase as an indication of labour-saving technical change.

## 4.2 – Remarks on the datasets & discussion of definitions

Two data-sources will be used in the construction of a linked series. The first source will be Rodney Edvinsson's time-series, which stretches from 1800 to 2000, and are based on the *Swedish Historical Naitonal Accounts* (SHNA) compiled by Olle Krantz and Lennart Schön for the period before 1950. All Edvinsson's data are especially adjusted to the SCB time-series of 1980-1995. The second source will be time-series from the Swedish *Statistical Central Bureau* (SCB) for the period 1993-2014. This mainly concerns series of produced fixed assets, wages and social benefits,

Besides this we will, whenever possible, use available and coherent data series for the postwar period from the SCB. Especially when calculating real labour productivity, thus avoiding complications that may arise when mixing series deflated with volume indices that may differ.

### 4.2.1 – Linking of datasets

In the present study, where the focus is the post-war era (1946-2014), the series of Edvinsson need to be supplemented with additional data from the Swedish Statistical Central Bureau (SCB) for the period after 2000, of which the SCB-data partly overlaps, extending from 1993-2016. The SCB-dataset is linked to the price level of Edvinsson's dataset, where the latter dataset's levels are prolonged or extrapolated forward onto the subsequent period, according to: $\frac{B_{t+1}}{B_t} * A_t$. B signifies the SCB-series stretching from 1993-2016, and A denotes the historical national accounts, t is the base-year (or year of linking) of1993.

The datasets aren't fully coherent in their construction and definitions, which will give rise to differences in terms of values. The linking will alter the values of the SCB-data after 1993, although the trend will remain the same.

The datasets differ in several aspects. For example, with the adaptation of the Swedish national accounts to the 1995 version of the European System of Accounts (ESA), equipment with a lifespan of under three years, such as immaterial assets and computer software, are no longer regarded as intermediate consumption, but part of the capital stock (SCB 2013:29), which means that these should be subtracted for full compatibility between Edvinsson's dataset and SCB's dataset. But such an adjustment has not been made, which will affect the aggregates. Since 2010 an update of the Swedish national accounts was made in accordance with the 2010 version of the ESA, "Research & Development" is no longer a part of fixed gross investments, but is instead filed under intermediate consumption (SCB 2013:25). This

latter change has the effect of raising the GDP level about 4% compared to previous system of accounting. Coupled with other overviews and new ways of calculating, the overall GDP level is raised 5% (SCB 2014:18f).

Both Edvinsson and SCB calculates the capital stock according to the Perpetual Inventory Method, which add yearly investments to the capital stock of previous year. A geometrical depreciation rate – the asset is depreciated by a fixed value of its value in the previous year – is utilised in both series, and their series are relatively compatible, argues Edvinsson (Edvinsson 2005:107; SCB 2016:29). Since data is lacking for the capital stock for the last two years (2015 and 2016), and there's no possibility to add net investments and reflate those to replacement costs, I have merely expanded the capital stock from 2014 to 2016 with the annual percentage growth rate of the capital stock in 1993-2014.

Since Edvinsson constructed his dataset, there have been several changes in sectoral classification (SCB 2011), but these won't affect the aggregates of the present study, since the reclassified activities merely just been transferred from one productive activity to another or from one unproductive activity to another.

## 4.2.2 – Defining productive and unproductive economic activity

For the present study, we will focus on the productive activities – regarding employment, compensation, produced assets, and output. There isn't one "true" measurement of profit, but depends on what is under scrutiny and what questions are posed. If our interests concern the historical performance of an economy, and actual investment behaviour and realised profits of companies, such a "narrow" measure on the "productive" branches of the economy would be proper; meaning excluding unproductive activities, workers, compensation and assets.

Pertaining to the value-creating productive (or *production*) activities are the labourers and assets (including depreciation on related assets) utilised in capitalistic production for the creation of use-values – goods or services – such as commodity-producing industry, agriculture, non-residential construction, transportation services, communication services. Among to the surplus-absorbing unproductive (or *non-production*) activities are the labour and assets involved in wholesale/retail trade, real estate, financial intermediation, advertisement, legal and civil services, and private and governmental reproductive services such as restaurants, hotels, education and health services, R&D, non-governmental associations, household services and other personal services (Shaikh & Tonak 1994:20-29; Kliman 2011:94,99; Roberts 2016:273-276). The latter activities are "supported" by the

former activities, which make out the base for value-creation. This isn't to say that these activities aren't materially valuable for the sustainment of the economy, but rather that they are unproductive with regard to value-formation (section 3.2.2).

The category of surplus-value comes close to the definition of "productive" activities, being based on output-data from the most of aforementioned branches. Although some activities which are usually considered as non-production maintenance (garbage disposal, repairs etc.) are included in this category. Furthermore, all state activities aren't necessarily considered unproductive with regard to value-formation, but since neither Edvinsson's or SCB's national accounts are disaggregated enough to make such distinctions, the choice was to exclude the public sector altogether.

Due to the lack of sectoral disaggregation over the capital stock of Edvinsson's dataset – with produced assets being categorised after type of asset – the capital stock of the private sector will be taken as the "productive" capital stock, thus including the assets pertaining to private reproductive services and circulation. Consequently, the "unproductive" capital stock will only consist of governmental and residential assets, which understate the amount of unproductive assets in the economy, and correspondingly overstate the amount of productive assets. This will affect the measures of profit and organic composition of capital for the productive sectors, effectively overstating the productive sectors organic composition of capital, as well as understating the rate of profit. For the period 1993-2014, which we have sectoral disaggregated data, the composition of capital is overstated by between 20-46%, while the profit rate is understated by about 20-27% (see *appendix table 1*). With regards to the trends of change in profitability and composition of capital, this doesn't seem to matter much, with the "proper" measures demonstrating the same general trends as the aggregate economy-wide measure. Fortunately, the latter mentioned aggregated general rate of profit won't be affected at all by this, since the weight of the non-production sectors are included in the calculations, although the share of non-production assets in the decomposition will he understated (see further section 4.1.2.a).

### 4.2.3 – Valuating the capital stock at historical cost or at replacement cost
Of great impact on the measurement of the rate of profit is whether the capital stock is valued at historical costs or current costs. The *historical cost* method values the goods and assets intended for production at the prices at which they were purchased, while the *replacement (or current) cost* value the capital stock at the prices at which they could be purchased in the

market currently. These measurements respond differently to inflation/disinflation; "during periods of inflation in the price of capital goods, historical cost profit rates will fall by less (or rise by more) than the corresponding replacement cost profit rates; during periods of disinflation, the opposite will be true" (Basu 2012:2).

Kliman is a strong proponent for measuring the profit rate by the historical-cost estimated capital stock, and argues that the current-cost rate of profit is, in fact, *not* a measure of profit. He gives several reasons for this, amongst some of the most important ones for this study are:

1. businesses and investors don't base their investment decisions on such measures of profitability;

2. since it *revalues* past investment, it fails to measure businesses' and investors actual rates of return – profits as a percentage of the original investment;

3. while the rate of profit is important when assessing the rate of accumulation, the current-cost measure doesn't bear any clear relationship to the rate of accumulation;

4. inflation distorts the measure, since current-cost measures are replacement-cost measures – i.e. it measures the cost of replacing the entire current stock of capital assets, and not changes in the cost of the actual capital assets acquired (Kliman 2011:114-119).

In opposition to Kliman, Moseley argues that the current-cost valuation is the correct way of measurement when assessing dynamic issues such as the falling rate of profit. According to Moseley, the constant capital being transferred is determined by the *social average* of the transferred constant capital pertaining to a specific commodity-class, and not the transferred constant capital of the individual company; meaning, if that social average changes for a commodity-class during the process of production, then the given constant capital being transferred will also change, or be *revalued* to the level "currently" prevalent at the time when the output is sold (Moseley 2016:287,304).

In practice, choice of measurement makes minor difference. Several authors have demonstrated that the different cost-accounting techniques nevertheless display similar trends, albeit on different levels (Robert 2011; 206; Basu 2012). While I regard the historical-cost technique to be more proper when measuring *"actual"* profit rates, the present study is forced into agnosticism as of which way is the "right" way, since replacement-cost valuation of the capital stock is common praxis when constructing national accounts. This is the case

with the national accounts compiled by Edvinsson (2005:102) as well as the data retrieved from SCB (2014:29).

### 4.2.4 – Nominal terms or real terms?

It could be beneficial to measure the rate of profit in nominal terms for several reasons. Volume and nominal price ratios can substantially differ from each other since the price indices of private consumption, output and capital goods develop differently. Furthermore, the nominal ratios are the basis of economic decisions (Edvinsson 2010b: 472), since businesses don't only use their profits to buy goods and services:

> If that were the only use of profits, it wouldn't matter how much nominal profit they bring in. All that would matter is the quantity of goods and services that the profit can buy, that is, inflation-adjusted profit. But businesses also use – and need – profit in order to repay their debts and pay taxes, and so the level of nominal profit is important. (Kliman 2011:95)

But a nominal profit rate isn't an "all-purpose index" if one is interested in assessing the "health of the economy". Such cases justify measures adjusted for changes in the price level, for example real labour-productivity and real GDP growth, in addition to nominal rates.

### 4.2.5 – Definitions of fundamental categories

**Surplus-value** (*s*)**:** is defined as GDP by activity (value added), at basic prices,[7] *less* consumption of fixed capital assets *less* variable capital. The category is very similar to *net operative surplus*, which is GDP by activity *less* CFC *less* total compensation (of non-production as well as production-workers).

**Variable capital** (*v*)**:** is defined as compensation paid out to production-activities, calculated as the average compensation (wages *plus* social benefits), multiplied by the number of employed involved in productive activities. (Productive/production labour is defined as employed involved in commodity-producing activities, such as agriculture, forestry, mining, manufacturing and handicrafts, as well as non-residential construction work. It also includes employed in transportation services, as well as information- and communication activities.)

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[7] GDP by activity at basic prices refers to value added where non-commodity-related indirect taxes are included, and non-commodity-related subsidies are excluded. Additionally, commodity-related indirect taxes are excluded and commodity-related subsidies included. Even though a large part of value added goes to paying taxes, most of them are redistributed back to the private sector in one way or another; to the workers through social benefits and welfare services; through maintenance of infrastructure and other services; to uphold a judiciary and policing system; and in the form of subsidies to companies (Edvisson 2005:54).

This indexes compensation for the number of employed, so a change in *v* unambiguously indicates a change in number of employed. In addition, it's also divided by the turnover-time, so as to reflect the speed of which the outlays on wages return to firms through sales.

**Productive constant capital (*c*):** due to the lack of data of fixed assets disaggregated on a sectoral basis, non-production constant capital is taken to be residential and governmental assets. The constant capital pertaining to production-activities is thus taken to be the total private sector capital stock, which includes certain assets pertaining to non-production-activities, such as private reproductive services and circulation.

# 5 – Analysis & historical contextualisation

The final part contains remarks on how the turnover-adjustment impact upon the fundamental categories, as well as a presentation of the results for the two hypotheses, followed by a closer analysis of the different phases of the profit rate movement and secular stagnation, with reference to the developments in Swedish political economy.

## 5.1 – Some remarks on the impact of the turnover-adjustment on the fundamental categories of the profit rate equation

The turnover-adjustment will impact upon all the basic categories of the profit rate equation. As is evident from *figure 3*, both measures of turnover, *n* and $n_{proxy}$, give similar trends, showing a radical increase during the 1970s, from having seen periods of general deceleration (with phases of stability) over the period 1850-1970. This coincided with the transition to so-called post-fordist production. Between 1991 and 2008 the turnover-speed seems to stagnate, just to accelerate again thereafter.

Furthermore *figure 4* shows that the turnover-adjusted share of total labour-compensation in the total value added is markedly lower than the simple non-turnover-adjusted share; the turnover-adjusted compensation-share paid out increases slowly until the mid-1970s, after which it sees a marked decline to a marginal 10% share of a couple of percentage points of total value added at the turn of the century. Intermediate consumption of raw materials and other inputs as share of output are affected in a similar fashion, where an increase in turnover-speed reduces the capital advanced on inputs to a mere 8% in 2014 (*figure 5*). Since net operating surplus is attained by subtracting depreciation and compensation paid out to employees, a turnover-adjustment which reduces the size of compensation effectively shifts

the surplus-share in total output upwards, making out 70-90% of total output throughout the period (*figure 6*).



*Figure 3: Turnover time*

Sources: Based on inventory stock and output data from Edvinsson (2005) up until 1993, and from SCB (2016) for 1994-2016.
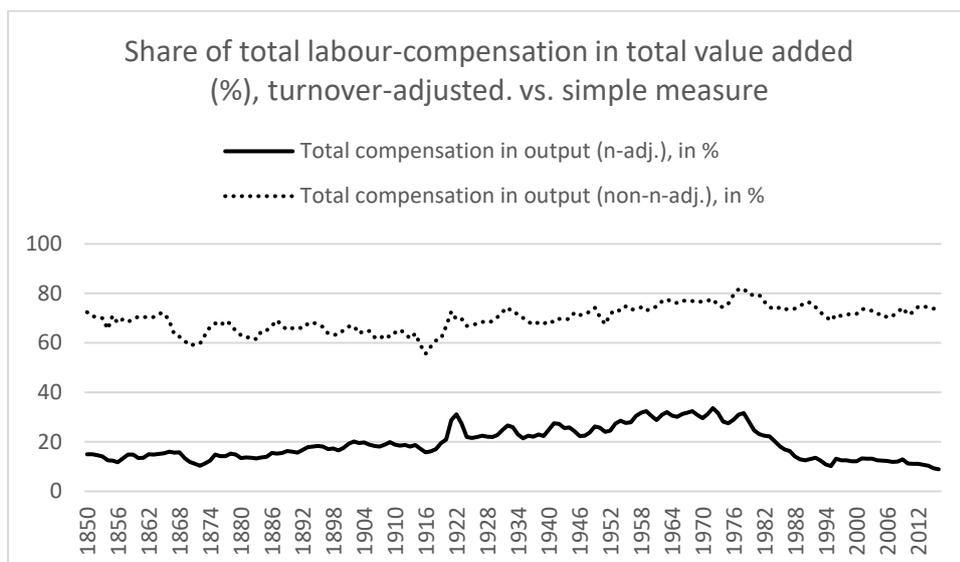


*Figure 4: Labour-share, adjusted and non-adjusted for turnover*

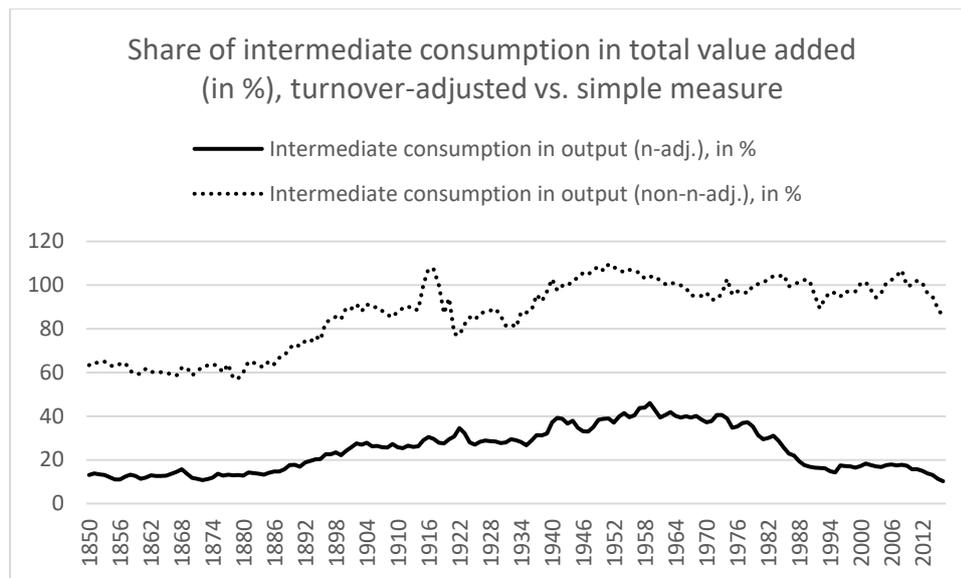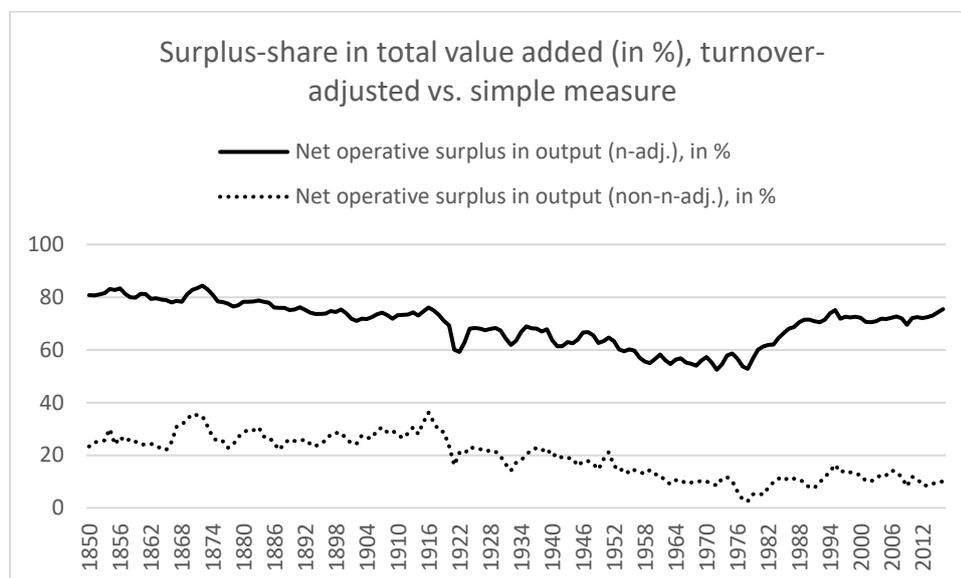Sources: Compensation and output data for 1850-1993 from Edvinsson (2005), and for 1994-2016, from SCB (2016).

Share of intermediate consumption in total value added (in %), turnover-adjusted vs. simple measure

— Intermediate consumption in output (n-adj.), in %

···· Intermediate consumption in output (non-n-adj.), in %



*Figure 5: Share of intermediate consumption, adjusted and non-adjusted for turnover*

Sources: Intermediate consumption and output data for 1850-1993 from Edvinsson (2005) and for 1994-2016 from SCB (2016).

Surplus-share in total value added (in %), turnover-adjusted vs. simple measure

— Net operative surplus in output (n-adj.), in %

···· Net operative surplus in output (non-n-adj.), in %



*Figure 6: Surplus-share, adjusted and non-adjusted for turnover*

Sources: Surplus calculated according to definition in section 4.2.5, based on output, depreciation and compensation data for 1850-1993 from Edvinsson (2005) and for 1994-2016 from SCB (2016).

## 5.2 – Presenting the results for hypothesis #1

When evaluating the support for **hypothesis #1** – *if Sweden is experiencing a long-term secular decline in its general profit rate* – the trends displayed in *figure 7* supports the theory. The rate of profit decline secularly, attaining periods of relative stability (from the end of the 1870s, to the end of the 1910s; from the 1920s to the middle of the 1950s). The steady decline during the "golden industrial era" of 1950-1977 might come as a surprise, but it's also important to note that this needn't be a contradiction; the profit rate only measures the *relative ratio* of surplus to constant and variable capital, and doesn't concern itself with the *absolute* magnitude of surplus-value. A larger capital accumulating under a lower profit rate accumulates faster than a smaller capital with a higher profit rate. And this era was also one of comprehensive concentration of ownership and formation of large companies within Sweden (see *section 5.4.1*).
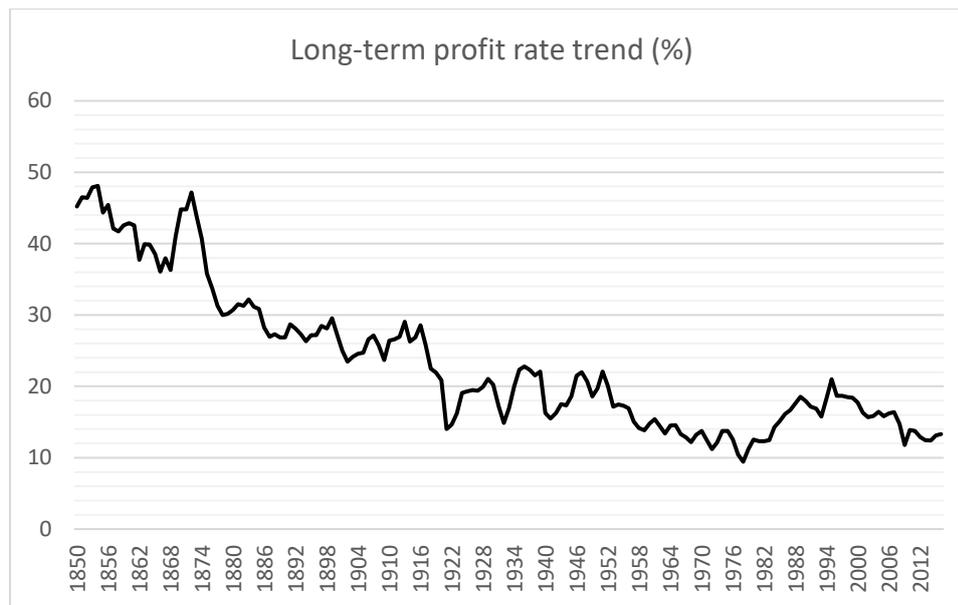
*Figure 7: Long-term profit rate trend, 1850-2016*

Sources: Based on output, capital stock and compensation data for 1850-1993 from Edvinsson (2005), and for 1994-2016 from SCB (2016).

Perhaps most curiously is the surge of the profit rate from the end of the 1970s to mid-1990s, after which it declines once again. Compared to the historical trend, this bump in the profit rate is quite extraordinary. Although it trends downwards again post-1995, reaching levels in 2016 akin to the levels of the beginning of the 1980s. The periodisation fits quite well with Schön's periodisation of transformation (up until 1990/95) and rationalisation post-1995, with increased productivity (*section 5.5*) and competition pulling the profit rate down.

## 5.3 – Presenting the results for hypothesis #2

The results largely support **hypothesis #2** – *whether or not Sweden demonstrates a Marx-biased technical change,* which is *capital-using* and *labour-saving* technical change.

The fall in the profit rate is very much mirrored by the build-up of the capital stock, measured as produced fixed assets to total value added. *Figure 8* shows that, over the long-term, there's an increasing capital stock relative the total output generated (i.e. capital-using tendency). Furthermore, *figure 8* suggests there's been several "waves" in the growth of the capital stock; the first wave initiated in the beginning of the 1870s, after which it keeps a fairly stable rate to the total output, up until around the break-out of the first world war, when the stock of produced assets once again expand, with a third wave of asset expansion following in the wake of the second world war. The increases in capital stock correlates well with the waves of machinery-cheapening, with a reduction in relative prices of machinery leading to an increase in the stock of produced assets (Schön 2009:6). But the beginning of the 1980s signals a break: for an extended period, the capital stock actually declined up until the middle

of the 1990s – perhaps being the effect of cheaper capital costs associated with "third industrial revolution" – after which it starts increasing once again.

Furthermore, the figure also reveals an increased gap between total and private sector stock of assets, the difference making out governmental and residential assets, the latter two absorbing an increasingly larger share of the total produced assets.
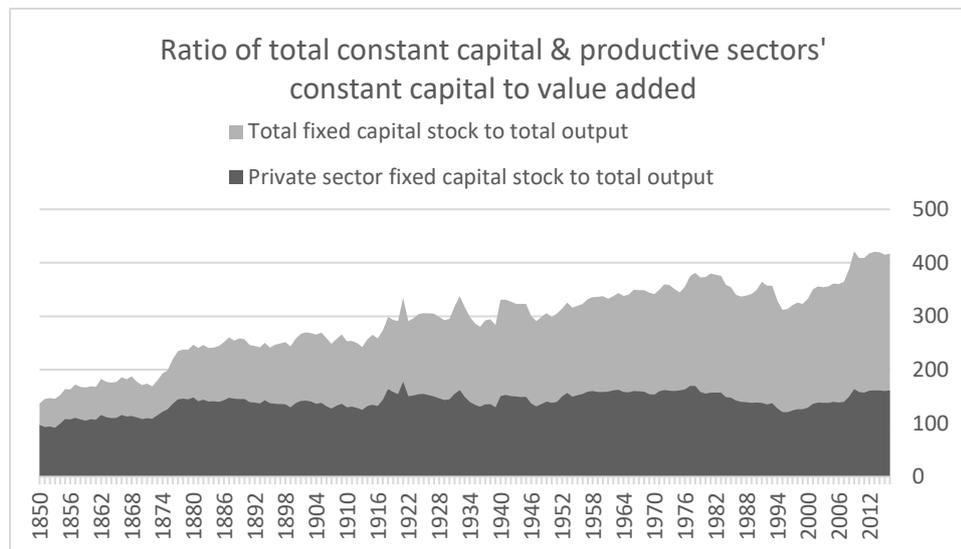


*Figure 8: Stock of constant capital, 1850-2016*

Sources: Capital stock and output data for 1850-1993 from Edvinsson (2005), and for 1994-2016 from SCB (2016).

But I argue that the output-capital ratio isn't necessarily an accurate or at least not unproblematic measure of capital-using technical change (i.e. increasing organic composition of capital). The critical notion of productivity outlined in *section 3.2.2* encompasses also the output-capital ratio. While increasing capital-productivity (increasing output per unit capital) is interpreted as a capital-saving tendency, the opposite might be the case; the increasing capital-productivity might be the result of an increasing organic composition of capital, with an increased use of fixed capital augmenting the production process, rendering it more competitive. A more efficient capital with enhanced material productive capacity, lower production-costs, and cheaper constant capital (or other "zero-cost" effects, *section 2*), will by implication, enjoy larger market-shares, therefore more abled to realise more output.[8]

As *figure 9* suggests, the trends in real labour-productivity as well as the organic composition of capital – classically measured as the monetary quantity of means of production relative variable capital indexed for the number of employed – conform quite well with the theory; a secular increase in real labour-productivity implying labour-saving technical change, and a

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[8] Schön, measuring the output-capital ratio in real terms, indeed demonstrates a secularly capital-using pattern, with generally similar waves as the ones demonstrated in *figure 8,* with the big exception of the trend during the 1980s onwards not exhibiting a decline, but instead remains relatively stable (Schön 2009:6).

strongly upward trending organic composition of capital, taking off during the 1970s (contrary to the evidence of capital-saving in *figure 8*). The increase in Ω is an idiosyncrasy of late capitalism, from 1850 to 1970 accumulation have tended to proceed during a generally constant composition of capital, with outlays on constant and variable capital exhibiting a balanced growth. So, while the capital stock undoubtedly grown throughout the late 19th and 20th century, and labour-productivity likewise, the accumulation process has tended toward having comprehensive employment effects – with unemployment only attaining marginal levels of around 2% from the Great Depression up until 1991 (when unemployment skyrocketed) – retarding any drastic increase in organic composition of capital throughout large parts of the 20th century. This was mainly the hallmark of the full-employment policies of the Bretton Woods-backed Swedish Model (see *section 5.4.1*).
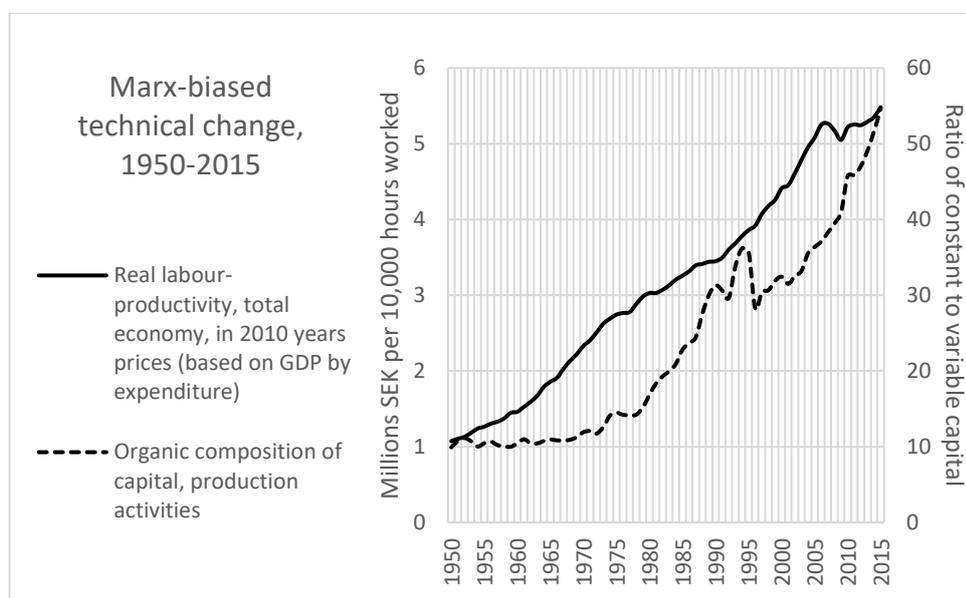


*Figure 9: Marx-biased technical change, 1950-2015*

Sources: Real GDP for 1950-2015 from SCB (2016); Capital stock, compensation data and worked hours for 1950-1993 from Edvinsson (2005), and for 1994-2015 from SCB (2016; 2017).

To summarise, however measured, there is indeed a pattern for what we might call a *Marx-biased technical change*.

## 5.4 – Historical narration of the movements in the profit rate

When taking into consideration of the turnover-time of variable capital, then wage-costs and social benefits should make out a lesser amount of total expenditures (as already shown in *figure 4*), with expenditures on (especially fixed) constant capital making out the primary outlays. It follows that the main driver of the fall in the profit rate should be the increasing organic composition of capital. *Figure 10* below show the development of the share of surplus and variable capital in total new value *L,* over the course of 1946-2016.
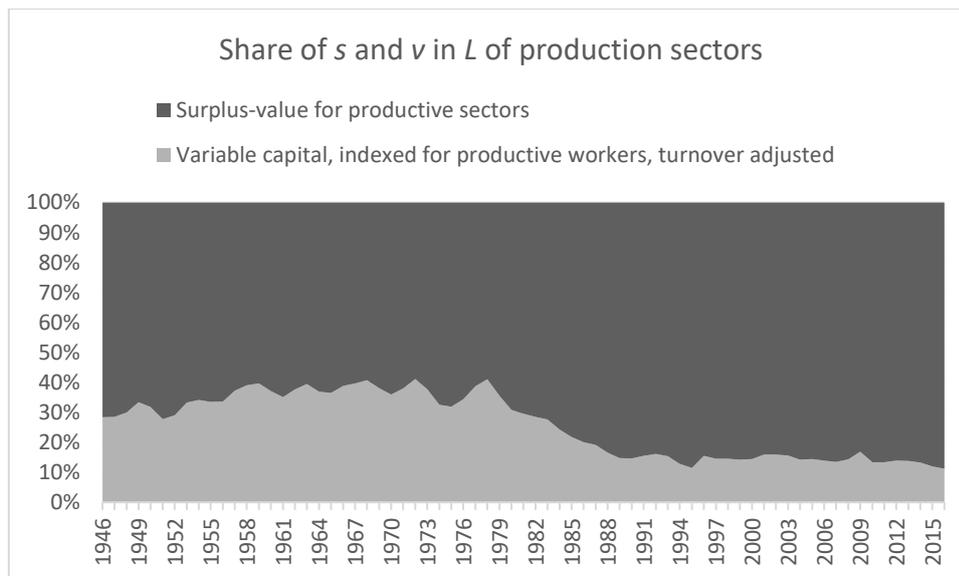
Figure 10: Share of surplus and variable capital in value added

Sources: Based on output, depreciation and compensation data (turnover-adjusted) from Edvinsson (2005) for 1946-1993, and from SCB (2016) for 1994-2016.

The shares between surplus and variable capital experienced a quite bumpy development from the late 1960s and 1970s, indicative of the many wage-hikes and devaluations of the period. From the late 1970s something radical happens, as the *v*-share drops in light-speed velocity to a level of 10-13%, which it keeps gravitating around until 2016 – and the surplus-share swells accordingly, gaining a fat 87-90% of new value in 1989-2016. Perhaps the fall in profitability preceding the 1980s could be argued to be one of a profit squeeze by an increasing share of labour-costs, rising from ca 30% to ca 40% in 1946-1978. But from then on, the outlays on variable capital makes out a successively declining share of total expenditures, which rules out subsequent falls in the profit rate (post-1995) to be due to any "excessive" wage-demands from workers.

Upon closer examination of the constituent parts of the profit equation, we see (in *table 1*) that the ratios exhibit different phases of covariance. For the whole period of 1946-2016, the *p'* exhibits a falling tendency, and Ω an increasing trend. In the next three sections, a more thorough analysis of the specific periods will follow, with reference to *table 1*, accommodating the developmental trends of the variables with the political-economic history of Sweden.

| Table 1: Annual percentage change in basic categories of the profit rate equation[9] | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Periods* | *p'* | *s' (s/v)* | *Ω (c/v)* | *v* | *c_c* | *c_f* | *n* |
| *1946-2016* | *-0.74* | *1.61* | *2.47* | *5.03* | *5.90* | *7.87* | *1.35* |
| **1946-1977** | -1.90 | -0.92 | 1.08 | 8.84 | 9.57 | 10.12 | -0.51 |
| **1977-1995** | 3.64 | 9.29 | 5.30 | 0.43 | 2.59 | 6.73 | 5.56 |
| **1995-2016** | -2.12 | 0.71 | 2.98 | 2.24 | 2.23 | 5.67 | 1.44 |

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[9] See *appendix table 2* for data-series.

*\* Sum of last three years divided by sum of first three years, discounted by number
of years.*
*p' – rate of profit*
*s' – rate of surplus-value/exploitation*
*Ω – organic composition of capital*
*v – variable capital*
*$c_c$ – circulating constant capital*
*$c_f$ – fixed constant capital*
*n – turnover-speed*

### 5.4.1 – Stagger & fall: the transience of the Swedish Model

*What underlying developments – political and economic – worked to bring the rate of profit
down between 1946 and 1977, bringing an end to the industrial golden age?*

The period of the 1940s to 70s is usually referred to as a part of the industrial golden age for
Sweden, and the maturation of the "Swedish Model" – a construct very much associated with
the Bretton Woods System and Fordism. The Bretton Woods System – of pegged but
adjustable exchange rates to eliminate balance-of-payments deficits, and capital controls to
insulate countries from destabilizing capital flows (which was necessary to make the pegged
exchange rates feasible) – made possible national policies oriented towards full-employment,
job security, collective wage-bargaining, tax and income policies that kept inequality at bay,
state control of key industries, and Keynesian pro-cyclical policies (Eichengreen 1996:93ff;
Harvey 2005:19f; Streeck 2014:28f). Following decades of harsh conflict, a spirit of
consensus was eventually nurtured between the unions represented in *the Swedish Trade
Union Confederation (Landsorganisationen, LO)*, and *the Swedish Employers' Confederation
(Svensk Arbetsgivarförening, SAF[10])*, with the *Saltsjöbaden* agreement reached in 1938. The
confederations acknowledged the importance of economic growth and productivity-raising
measures. Collaborations like these became necessary, partly due to the stronger bargaining
position of the trade unions which employers couldn't ignore. Out of the spirit of consensus
grew (among other institutions) the system of centralised and collective bargaining for wage-
settlement between the parts of the labour-markets, thus excluding the government from
intervening in wage-settlements. Cooperation came to be seen as a way of avoiding labour-
market conflicts and economic imbalances (Lundh 2010:181f).

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[10] SAF would later – through a merge with *the Federation of Swedish Industry* – be replaced with *the
Confederation of Swedish Enterprise (Svenskt Näringsliv, SN),* as the most important confederation representing
the interests of employers.

Within the framework of this system of collective bargaining a wage-policy aimed at reducing wage gaps between different occupations and sectors was pursued, with wages being set in relation to the wage-leading sector (the most competitive-pressured sector). LO was willing to pursue the objective of moderating the wage-demands order to inhibit inflation, while SAF wanted to stifle competition between the firms of their affiliates over a short labour-supply, to prevent it from leading to rising wage-costs (Lundh 2010:195ff). A collectively defined wage benefited the big export-oriented companies, since it would inhibit wage-demands in their sectors, thus raising their competitiveness (ibid:217f). The system also facilitated the consolidation of large companies, as wage-costs effectively was raised in the less expansive sectors', successively weeding them out, augmenting structural change, rationalisation and expansion (ibid:213f).

Expansionary politics – inspired by Keynesian ideas of demand-stimulation – was commonly practiced in most countries. However, the central problem for Sweden in the postwar era wasn't faltering demand, but rather to strike a balance between on the one hand monetary- and price stability, with full-employment on the other. The weeding-out of unprofitable firms and restraining excessive wage-demands retarded demand, and curbed inflation somewhat. The main method wasn't to stimulate demand, but rather to hold back; although the "Keynesian idea" of expanding demand during recessions and reducing demand during booms, remained a general guiding principle throughout the period (Magnusson 2016:407f).

Furthermore, the Swedish Model was very much connected to a movement of rationalisation associated with ideas of Frederick Taylor and Henry Ford, which aimed to increase efficiency and reduce unit-costs. Mechanisation was extended, division of labour was increased, and labour processes were simplified. With time production became more machine-driven and automated, work tasks were specialised and simplified so non-skilled workers could handle the machines, and production were focused on mass production on a large scale of standardised commodities. Under supervision of a hierarchical organisation, productivity increased radically (Lundh 2010:156ff).

During the period, *table 1* above suggests that $\Omega$ increased slightly, while *s'* exhibits a negative rate of change, resultantly *p'* falls; the components of constant capital – circulating and fixed – grew rapidly during this era (9.57 and 10.12% respectively) – indicative of the heavy industrialisation taking place – while at the same time exhibiting low unemployment, and a yearly growth rate of variable capital of 8.84%, above the 5.03% average for the entire

period, 1946-2016 – symptomatic of the full-employment policies backed up by the strong bargaining position of labour pushing for increases in wages and social benefits, consequently acquiring a larger share of the new value produced (and reducing the rate of exploitation).  The fall of the profit rate seemingly reflected a "squeeze" of surplus between on the one hand an increasing organic composition of capital, on the other of labours increasing wage-demands. The reason the profit rate could fall for such an extended period of time is probably because of the counteracting effect that the absolute increase of the mass of profits (total surplus-value) that concentration of capital implied, as a side-effect of the weeding-out of smaller and uncompetitive firms, to the benefit of larger owners.

During the 1960s, Swedish industry was in deep crisis: large deficits in its current account amounted, as an expression of its declining competitiveness; industry stopped expanding. Competition tightened successively during the postwar era due to the gradual spread of the Industrial Revolution to the developing world – their share of world manufacturing output nearly doubled from 12% to 20%, while industrialized countries' share fell accordingly in 1970-1995. The tightening competition was felt in Sweden already during the 1960s and 70s, especially within shipbuilding as Japan modernised production technologies and kept labour-costs low, but also from Newly Industrialised Countries which heightened competition within labour-intensive production lines such as electronics. Another competitive pressure arose from the restoration of previously war-torn Europe, with updated technological levels (Findlay & O'Rourke 2007:513; Lundh 2010:233f). The problems facing the Swedish economy was to the core a result of declining profitability as firms were rendered successively uncompetitive, resulting in waning accumulation as domestic investment as share of surplus dropped (*figure 11* below). These structural problems would soon come to the fore as capital controls eroded and the with the incipient stagflation crisis of the 1970s.

The Bretton Woods System became harder to sustain, as tariffs, quantitative restrictions and capital controls were unravelling on a global scale. After 1959, international capital markets started to find ways around rich countries' capital controls, as it became easier to channel capital transactions through the current account by over- and under-invoicing imports and exports; "it became difficult to distinguish and segregate purchases and sales of foreign currency related to transactions on current and capital accounts" (Eichengreen 1996:93ff, *quote from p.136*). The erosion of capital controls made adjustments to the pegged exchange rate unviable, since every hint from governments and central banks to adjust the peg could stir massive capital outflow (although Sweden would retain its regime of fixed exchange rates

until 1992). The ongoing development on financial markets, propelled by telecommunications and information-processing technology, with competing financial centers emerging, made liberalization and a transition to floating exchange rates imperative in order not to lose one's financial business to offshore markets, or being passed over by foreign investors (ibid:136-137).

The death blow would come from the OPEC oil embargo in conjunction with the Arab-Israeli war, and the resultant hiking of oil prices, generating a supply shock that would instigate macroeconomic problems across the OECD, of rising prices and lowering output and employment, thus slowing growth rate for the western economies during the 1970s. Coupled with inflationary Keynesian politics, this came to generate the dread-phenomenon of stagflation – inflation and simultaneous productivity stagnation (Findlay & O'Rourke 2007:495-499). An affliction that similarly crippled the Swedish economy, especially since the stagnation in production was met with "wage-cost explosions" demanded from the unions, were wages and social benefits rose markedly, causing Swedish exports to become less competitive, enhancing the stagnation (Magnusson 2016:427f).

The recession bred drastic rationalisation measures and coerced a structural transformation from primary industries towards capital- and knowledge-intensive activities with high value added, such as electronics and chemical manufacturing, and an increasing share of services and industrial services. The transformation was very much based on the electro-technological development, which came to facilitate the transition from Fordism to "Toyotaism/post-fordism" (Lundh 2010:240), which is discernible in the accelerating turnover-speed, rising rate of exploitation, and the incipient profit rate rebound from 1977 onwards (*table 1*). This was also facilitated by a set of devaluations of the Swedish krona up until 1982, intended to re-establish Swedish competitiveness, effectively neutralising the "wage-hikes" of the 70s. The politics of the "third way" played an important role, with trade unions agreeing on moderating wage-demands in exchange for supply-side economic policy aimed at curbing inflation and restoring profitability of companies, however, full-employment was still the goal. Financial markets for credit was also liberalised in the process, resulting in credit expansion and huge capital exports (Magnusson 2016:427f,432-433). This was a prelude to the rebound of the profit rate.

## 5.4.2 – Towards neoliberal capitalism & the reassertion of capitalist class-power

*What caused the rate of profit to surge – or, what made possible the augmented realisation of output, increased cost-competitiveness, hence valorisation of capital on an increased scale – in 1977-1995?*

In 1977-1995 the ratios of the profit equation (in *table 1*) move together; an increase in $\Omega$ was accompanied with an explosive increase in *s'* and, therefore, *p'*. Underlying the increase in $\Omega$ is, on the one hand the heavy reduction of outlays of variable capital, only growing at 0.43% a year, as a result of the frequent devaluations of labour of the period and the radically increased turnover-speed (5.56% annually). On the other the growth of fixed constant capital, albeit at a rate (6.73%) below the 1946-2016 average (7.87%). Outlays on circulating constant capital, like variable capital, saw a heavy reduction to a growth rate of 2.59% due to the accelerating turnover-speed. The figures suggest that among the most prevalent counteracting factors in neutralising the "law" are **#3-6**: (3) development of labour-productivity and a creation of a surplus population of workers along with a diminished bargaining position; (4) cheapening of the elements of constant capital; (5) increased turnover-speed; and (6) foreign trade, leading to a cheapening by the necessary means of subsistence, either through imports or through competitive pressures forcing rationalisations of the domestic production process.

Despite restored profitability, capitalist abstained from investing domestically, and growth remained low in 1977-1995 (*figure 11 & 13, table 2* below). The 80s lingered in stagflation inherited from the 70s. With an overvalued currency as a contributing factor, this caused Swedish exporters to lose market shares, with a housing bubble building up since financial markets had been liberalised in 1985. A "stoppage package", with hiked interest rates, was implemented 1990, which coincided with an international recession, dragging Sweden down with it. It was not long until prices started to fall in the real estate bubble, throwing the country into one of its deepest crises, as domestic demand collapsed, and unemployment rose radically (Magnusson 2016:434-436). The crisis was mended by a heavy devaluation of 25% of the currency value, as floating exchange rates were implemented 1992. Resulting in increasing exports, with current account surpluses starting to amount during the 1990s (*figure 11*), which have been sustained into the 21th century, being one of the highest surpluses in the world, percentage-wise (Magnusson 2016:436-404). The period also saw a shift towards more "neoliberal" politics, deemphasising full-employment as a political goal, towards keeping inflation low and enhancing competitiveness by keeping relative costs of production

low; a shift hurried by EU-membership. "Neoliberal" politics have often implied diminishing trade union power, dismantling social solidarity schemes for competitive flexibility, rolling back commitments of the welfare state, privatizing public enterprises, reducing taxes (especially on wealth and capital gains, while taxation on wages would remain), encouraging entrepreneurial initiatives, and create a business environment that would induce foreign investments (Harvey 2005:19-23; Streeck 2014:28-29). In this regard, Sweden is quite unique; from having had one of the harshest capital tax regimes, to perhaps one of the mildest ones in the West, Sweden has transformed into a European tax-haven (Waldenström 2008).

The victory of the "neoliberal" political paradigm of austerity and liberalisation was made possible by the diminution of the legitimacy of the Swedish model; slow economic growth and increasing difficulties for the export companies; the structural transformation of the economy, the growth of the service and public sector, and growing influence of employed associated within these sectors; the political radicalisation of the workers movement and political polarisation; the centralised system became more rigid and gave less space for local influence on wage-settlements while the necessity of wage dispersion increased. Criticisms came from both LO and SAF, and the spirit of consensus was eventually broken. As a consequence, the state abandoned its former passive role and participated more actively in wage-settlements, through income policies and labour legislation. The conflicts between different unions pushed up nominal wages immensely, which in turn were eaten up by inflation and devaluations. The Swedish model of centralised bargaining came to be replaced by a relatively more decentralised and fragmentised system of bargaining, and since the 2000s, the collective agreements have often presupposed local negotiations about the room for salary increase (Lundh 2010:258ff, 284-285).

As a way to solve the brewing conflicts between labour and capital, costs has been shifted around in order to sustain the legitimacy of capitalism; when larger costs were incurred upon capitalists by the increasing wage-demands of the 70s, spawning inflation, costs were shifted from capitalists (by means of diminished wage-share, devaluations and precarisation) to governments (increasing public debt), and in the latest instance (post-1995), from governments (by welfare-cuts and consolidation of budgets) onto the households (by means of private debt), giving rise to "privatized Keynesianism" (Streeck 2014:32-39; *figure 17* below).

Furthermore, the global mobility of capital *per se* has facilitated the transition towards austerity and liberalisation in several ways. Firstly, it reduced states abilities to conduct national economic and social policy, due to the risk of big multinational companies threatening to relocate their activities and thus employment opportunities if the political conditions are considered unfavourable to them (Lundh 2010:241). Secondly, another important component is the liberalising and austerity pressures arising from the institutional owners of capital (countries' pension funds, hedge funds, insurance companies, banks and investment banks) endowed with power by virtue of their ownership of governmental bonds – exercising disciplining power over owners and managers by hunting the firms with highest stock value (Magnusson 2016:445). Governments not only have to serve the interest of their citizens, but also the interests of bondholders, whose claims has increased as their capacity to assert these have risen with more liquid financial markets – effectively curtailing the sovereignty and democracy of states. Much like the increase of shareholder value obliges management to discipline its workforce and persuade or compel them to put efforts to increase share price, the trust of creditors requires governments to persuade/compel its citizens to moderate their claims on the state in favour of the financial markets. Albeit creditors have no voting rights, they can influence politics by selling off government bonds or refrain from participating in auctions of public debt. The state must thus appear credible to its creditors, while simultaneously gaining the support of their citizens (Streeck 2014:80-81). The crisis of democracy and sovereignty in late capitalism stems from the excessive – "exploding" – demands from the capitalist class, as they are paying increasingly little into the public purse, causing "structural deficits of public finances", while their "income and assets have multiplied rapidly over the past twenty years, not least thanks to tax cuts, while wages and social services at the bottom end of society have stagnated or fallen – a development masked, and for a time legitimated, by money illusions supported by inflation, public debt and 'credit capitalism'" (ibid:74).

Taken as a whole, the class-power of labour has been reduced, having attained a structurally disadvantageous, therefore weaker bargaining position. By means of devaluation of the currency, coupled with precarisation/flexibilization of labour-markets and its participants, outlays on variable capital saw a deceleration during the period (*table 1*), and the share of labour-expenditures has declined (both with regard to variable capital in new value, as well as the wage-share traditionally measured *figure 4 & 10* above). Real wages normally used to rise together with productivity, but remained flat from 1980, only picking up pace again in

1995 onwards.[11] Furthermore, unemployment rose; from having gravitated around 2-4%, prior to the 1990s crisis, exploded as the crisis unfolded 1990-94, stabilising at a higher level of 6-8% during the 2000s, showing an inclination to increase over time (*figure 12*).

Coinciding with aforementioned alterations in class-power and ideology, was the rising tide of ICT and "post-fordist" production processes, increasing efficiency and productivity, and, as a result, real wages. Albeit not total, the transition to "post-fordism" already underway in the 1970s and 80s in many developed countries, first started to break ground in Sweden during the 90s. To counter the sharpening competition from newly industrialised countries within traditional branches of production, industrialised countries augmented their production processes with ICT – with its great potential not only to cut labour-costs, but also reduce capital expenses by shortening its turnover (the time taken for outlays to be recuperated through sales), in addition to more efficient use of machinery, raw material and facilities, less waste, higher quality of products, reduction of interruptions, and diminished adaptation- and starting-times (Lundh 2010:241-242; Magnusson 2016:436-404). Post-fordism also implied a shift from mass production of standardised goods, to customised products of high quality and *just-in-time* deliveries to avoid building up large inventories for finished products. *Lean production* was promoted, meaning rationalisations not only with regard to labour-productivity, but also regarding capital expenditures bound up in raw materials, finished products, machinery and facilities, expenditures in the organisation as such, inventories was slimmed down, as well as the number of workers. Flexibility in the workforce – regarding working hours, the size of the workforce, and acquisition of new abilities and adaptive ability to new functions – in order to match the ebb and flows of the business cycle was equally prompted (ibid:246ff).

Constant capital saw a decline in growth rates compared to the previous period of 1946-1977, the relatively lower growth rates have prevailed since (*table 1*). Seemingly the result of the cheapening of machinery and equipment that took place in the 1980s onward (Schön 2009:14), coupled with the reductions on outlays on circulating constant capital as turnover-speed has been accelerated through aforementioned "post-fordist" practices.

Taken as a whole the reductions in costs of production ($c_f$, $c_c$ & $v$) rendered the Swedish production process relatively more efficient, cost-competitive and capable to capture a larger

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[11] Compare the real wage trends of *figure 15* below with real-labour productivity growth in *figure 9 & 14* (also presented in *appendix table 3*).

share of the total surplus-value as market-shares was conquered. The discernible increase in the appropriation[12] of surplus-value, *s'* in 1977-1995 being an expression of the political, organisational and rationalising measures taken in order to cut costs. Furthermore, the growth rate of the organic composition of capital was retarded by the diminished costs of production, which – coupled with a enhanced *s'* – caused the profit rate to surge. (See *table 1* or *appendix table 2*.)

Augmented by the liberalisation of capital markets – and the enforced bargaining position of capital it imparted – the health of the profit rate and the competitiveness of Swedish industries was restored, and soon current accounts surplus started to amount. Perhaps best portrayed in *figure 11*, showing a shift of capital from domestic investments to foreign direct investments; production-oriented investments as a share of surplus exhibiting a drop from 9% in 1990 to – 1.2% in 1993, after which it keeps a stable level under 3%; FDI more or less explodes, especially as it runs up towards the IT-crash, but keeps a relatively high level afterwards as well. Net-exports as a share of GDP after having seen a rise and fall during the 1980s, gains a share of about 5-7% throughout 1995-2016. The pattern is quite clear: a larger part of the accumulation of capital is taking place abroad rather than domestically.

While the neoliberal political regime and the post-fordist organization of production performed wonders for the Swedish capitalist class, it did less so with regard to growth. Eventually, in the mid-1990s, the law came to assert itself on the Swedish economy.
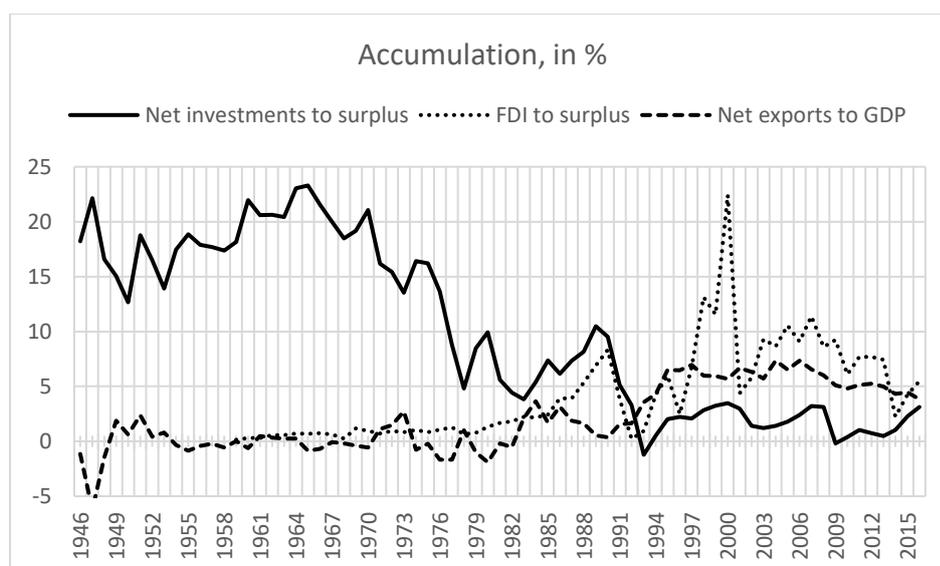


*Figure 11: Accumulation, 1946-2016*

Sources: Investment, surplus, GDP and export/import data for 1946-1993 from Edvinsson (2005), and for 1994-2016 from SCB (2016); FDI for 1946-2016 from SCB (2016).

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[12] I write "appropriation" since, in an open economy, surplus-value don't merely reflect the increased exploitation of the national workforce, but also the surplus appropriated through the conquest of market-shares in competition, and thus appropriation of surplus-labour of foreign countries' workforces.
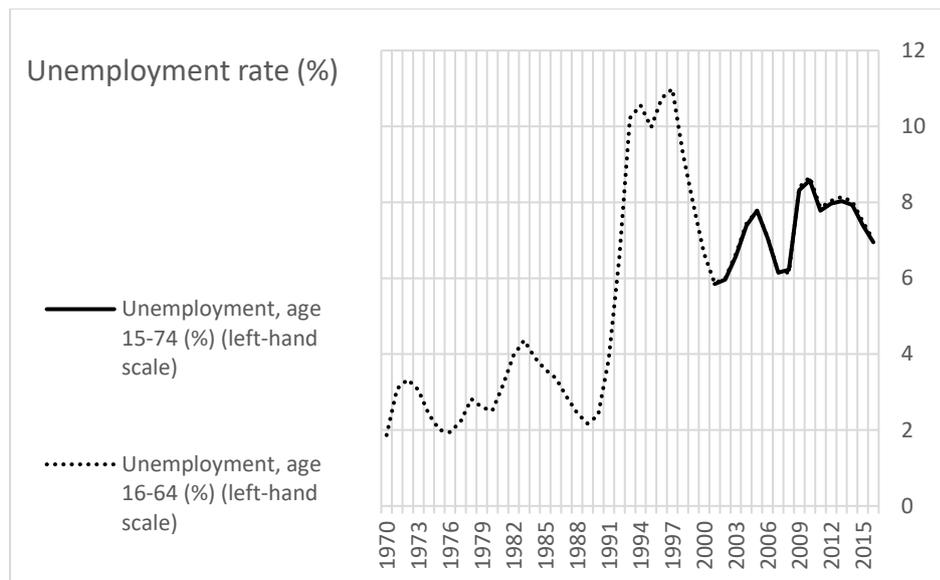
*Figure 12: Unemployment, 1970-2016*

Source: SCB (2017).

### 5.4.3 – The heaviest matter of the bourgeoisie mode of production[13]

*What developments explain the reassertion of the law since 1995? How has the neoliberal political-economic regime performed?*

For a brief moment, Capitalism – or, as Marx termed it: *the bourgeoisie mode of production* – in Sweden seemed to defy the "law", but the surge in the profit rate in 1977-1995 was only an intermission in the historically normal gravitational pull of swelling capital in relation to labour.

After 1995 the ratios in *table 1* show a clearly negative correlation to each other, with an increase in $\Omega$ only being marginally associated with an increase in *s',* and more associated with a decline in *p'*. The growth of the components of constant capital retain similar rates as the preceding period, while outlays on variable capital expands from the previous low 0.48 to 2.24%; while the share of *v* in new value *L* on the whole has remained relatively unchanged in 1995-2016 (*figure 10*), the growth in outlays on variable capital seem to be due to a deceleration in turnover-speed from 5.56 to 1.44%, which, in effect, translates into increasing outlays on variable capital. In the end, the $\Omega$ increases in 1995-2016, unable to facilitate productive capacity and competitiveness enough to raise the exploitation/appropriation of surplus-value – consequently bringing the rate of profit down. While the fall in the profit rate in 1946-1977 seemed to be equally due to labour squeezing profit, as well as an increasing organic composition of capital, the fall post-1995 is more unambiguously due to the latter.

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[13] The title is an allusion to the song *The heaviest matter of the universe*, by Gojira.

Performance-wise, the measures taken to restore profitability in 1977-1995 performed relatively worse than both the preceding and succeeding period with regard to real GDP growth. It seems as if periods of falling profitability are likewise – at least in 1946-2016 – periods of high real GDP growth (*figure 13, table 2*). Moreover, the neoliberal political project has also performed quite badly with regards to accumulation, shifting away investments from the domestic economy – contrary to expectations of "a good business environment" leading to more domestic investments. Far from seeing a wave of investments indicative of a transformation *ala Schön* during the 80s, investments decline successively. In a way, capitalism has bred a sort of mercantilism, where production for home-markets is abandoned in favour for export-orientation, since the home-markets – due to the shrinking wage-share – is incapable of absorbing the output.
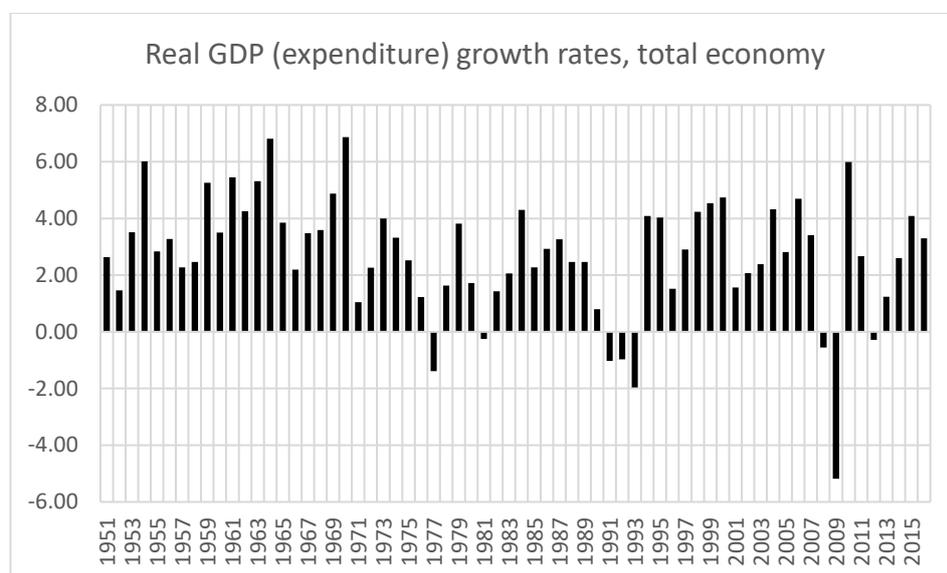


*Figure 13: Real GDP growth rates, 1951-2016*

Source: SCB (2016).[14]

*Table 2: Average real GDP growth rate*

| | |
|---|---|
| **1951-1977** | 3.44 |
| **1977-1995** | 1.67 |
| **1995-2016** | 2.59 |

Michael Kalecki in his 1943 article on *Political Aspects of Full-employment* anticipated the limits of combating unemployment by stimulating private investments – through interest rate and income tax reductions – arguing that in sharp slumps or downturns, and the pessimistic view of the future arising out of that, may have little or no effect upon output- and

[14] See appendix table 3 for data-series.

employment-generating investments. It can further be argued that the greater international mobility of capital has raised the "reservation profit" – "the lowest rate of profit that an investor will tolerate in order to put his or her money to work" (Streeck 2014:75n54). It's not farfetched to conclude – in concurrence with David Harvey (2005:19) – that the neoliberal counterrevolution was a project to not only restore conditions of capital accumulation – which it seemingly failed – but also to re-establish the class-exemption of the representatives of capital.

One expression of the class-power of capital is the increasing surplus-share (*figure 6 & 10*), and the subsequent rising inequality. While Sweden remains among the top ten most equal OECD countries, they still exhibited the most rapid surge of income inequality among all OECD countries, from a Gini of 0.19 in 1985 to 0.27 in 2010 (OECD 2013; 2015). Gains from capital assets are usually disregarded in studies on income inequality; taking capital gains into consideration, "the inequality trend since 1980 [is not only] steeper, but it also begins earlier (in the early 1980s instead of the 1990s, when excluding capital gains)" (Roine & Waldenström 2012:576). Schön argues that the variation in income distribution vary over the structural cycle, with periods of transformation diminishing the wage-share, accordingly expanding the profit-share, with rationalisation periods often implying an increase in the wage-share and squeezing of the profit-share (Schön 2009:21f). When assessing the turnover-adjusted wage- and surplus-share, there is no indication for such a pattern, although the "conventional" measures of wage- and surplus-share supports Schön's claim (*figure 4*). With regard to trends in inequality, income dispersion is not narrowing down.

These developments in profitability and political economy is an important backdrop to which I argue one is to understand the stagnation period of 2007-2014.

## 5.5 – What is stagnating & why?

Aggregate real labour-productivity has exhibited an increase up until 2006/2007, with an annual growth of 2.727% between 1993 and 2007, after which the performance of productivity growth decelerates to 0.299% (*figure 14, table 3*). Under this aggregate unravels diverse patterns with regard to production and non-production-activities (since we're interested in productivity growth with regard to value formation). While non-production-activities, exhibiting a generally lower dynamism, already experienced a slowdown in productivity growth in 2003, production-activities largely follows the pattern suggested by Storm's (2017) result of the "dynamic" sector (which slightly differ from the present thesis

definition of "production" sector), with productivity growth accelerating in three steps up until 2007/8; about 2.5% in 1981-1993, ca 5.3% in 1993-2007, followed by a slower annual growth of 0.485% in 2007-2015. This periodisation fits Schön's phases of transformation and rationalisation quite well, with low productivity growth during the transformation phase taking place before the 1990s, and accelerating productivity growth in the subsequent post-1990/1995 rationalisation phase (Schön 2009:16f; Edvinsson 2010a/b:677).
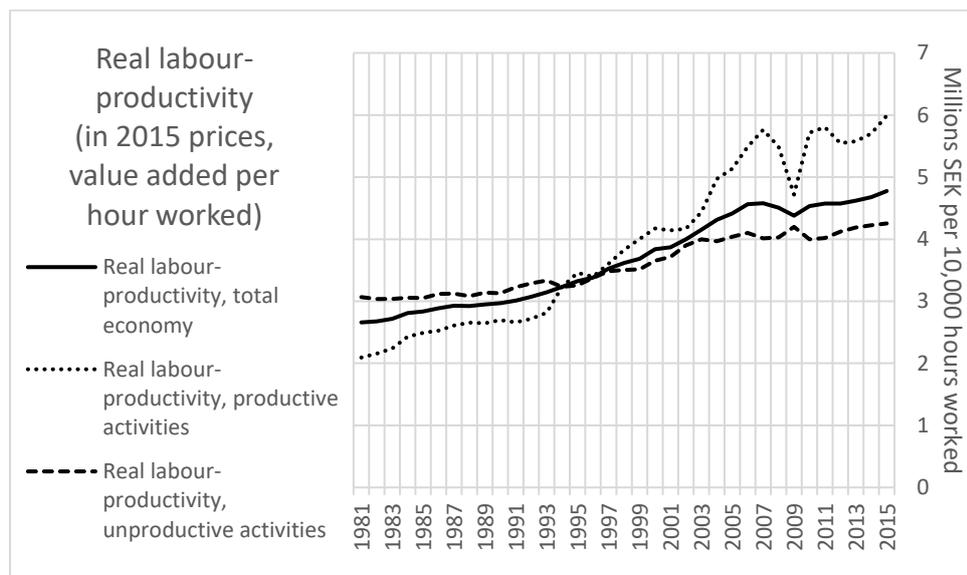


*Figure 14: Real labour-productivity, 1981-2015*

Sources: Real GDP from SCB (2016); worked hours from SCB (2017).

Table 3: Annual percentage change in real labour-productivity

|  | Production-activities | Non-production-activities | Total economy |
|---|---|---|---|
| 1981-1993 | 2.492 | 0.698 | 1.399 |
| 1993-2007 | 5.256 | 1.328 | 2.727 |
| 2007-2015 | 0.485 | 0.736 | 0.527 |

Technical change accelerated in production-activities, up until 2007/8, while it has decelerated in non-production-activities since 2002/3. Hence, lingering stagnation mainly pertain to the period after 2007/8 – and non-production-activities since 2002/3. In the following sections, we'll examine why technical change, or productivity growth, have stagnated in production-activities since 2007/8, and how the accelerating productivity up until 2007/8 and the subsequent stagnation and depression since, can be explained by the Marxian "law of the tendential fall of the profit rate".

## 5.5.1 – Fading impetus to technical change?

As suggested by Storm (2017), real wages are the driver of technical change and productivity raising measures. But since wages, as usually measured – the total sum wages paid out during the course of the year – isn't representative of the *actual* outlays on wages of capitalists, since it doesn't take into consideration the speed at which the outlays are recuperated through sales (turnover-time), the measure of turnover-adjusted variable capital suggested by the present study, is argued to be a more proper measure. *Figure 15* below suggests that while real wage growth exhibits a similar trend to real labour-productivity, outlays on variable capital follows productivity perhaps closer.
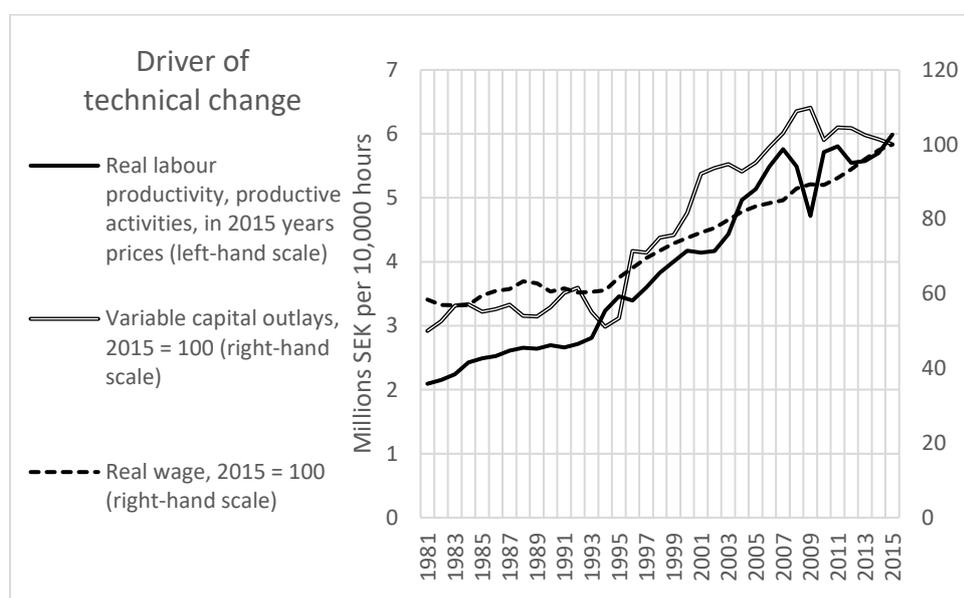


*Figure 15: Driver of technical change, 1981-2015*

Sources: Productivity (see figure 14); compensation for 1981-1993 from Edvinsson (2005), and for 1994-2016 from SCB (2016); real wages from SCB (2016).

Around 2007, productivity breaks down, and *v* stagnates in 2008, and thus the impetus to innovate lessens. The increasing outlays on variable capital during the 1990s and 2000s is due to turnover-speed exhibiting a slowdown in 1990-2009 (*figure 3*); it takes longer for outlays on wages to be recuperated, which effectively translates into increasing outlays on variable capital; wage-costs for companies experiences a general increase as turnover-speed decelerate, meaning increasing incentive to diminish wage-costs by technical change. This is also reflected in the trends in the above *figure 15* where variable capital growth steepens around 1993/4 to 2008, which could be interpreted as stirring the accelerated productivity growth during that period.

## 5.5.2 – Starving in the belly of a whale[15]

The results so far carry quite contradictory and counterintuitive messages; while the profit rate of production-activities commenced its decline already in 1995, labour-productivity

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[15] After the song, with the same title, by Tom Waits.

growth continued to increase and even accelerated between 1993-2007/8, only to attain stagnation in the wake of the financial crisis. It's a clear break between profitability and productivity which exhibit opposite trends up until 2008. How is the lag in labour-productivity to be reconciled with the antecedent fall in profitability?

The Marxian notion of productivity stipulates that competition compels individual capitals to productivity-enhancing technical change in order to attain above average profits, but a general raise in economy-wide productivity also causes the average profit to fall. In this process, not only is a falling rate of profit the result of a Marx-biased (labour-saving and capital-using) technical change undertaken in order to gain competitive advantages and hence extra-profits, but a falling rate of profit could itself spur accelerating technical change as firms frenetically struggles not to lose ground; the falling profit rate is both cause and effect of competitive pressures generating a "Marx-biased technical change". I argue that the increased real labour-productivity post-1993, in the face of the declining profit rate from 1995, should be interpreted as the point where an overproduction of commodities was starting to amount – an overproduction of commodities merely being the expression of an overaccumulation of capital, the point where an investment generates a profit equal to, or lower than the initial investment. A successive gap between actual output and potential output developed (cf. Summers 2014; Storm 2017). Already in the 1980s, Sweden seemed to experience an overproduction of commodities, when current account surpluses started to build, as a cause and response to the falling wage-share; cause in the sense that it made Swedish exports more cost-competitive; response in the sense that the home-market became less able to absorb the output, therefore redirecting accumulation to an international sphere (momentarily deferring problems of overaccumulation). After 1995 Sweden started to experience overproduction (and finally, overaccumulation) with regard to foreign trade as well – perhaps as a result of similar developments of declining wage-shares in foreign countries.

With the accelerated real labour-productivity, its labour-saving effect, and a successively diminishing share of variable capital – reaching lows of 11-17% of total new value from 1989 onwards (*figure 10;* see also wage-share *figure 4*). Consequently, difficulties of realising output arose, i.e. demand-problems; the decreasing turnover-speed of 1990-2009 being an indicator for realisation problems as demand dries up, since variable capital isn't spent at previous velocity, which translates into heavier felt outlays for capitalists. Subsequently a problem of imperfect valorisation commenced (overaccumulation), a problem momentarily

solved, hidden and postponed by credit expansion. These developments proceeded until the point where the fall in the profit rate no longer was outweighed by an increase in the mass of surplus-value as seen in *figure 16.*[16] A drop in the profit rate was still associated with an absolute increase in the mass of surplus-value up until 2006, when the mass of new value generated (and thus surplus-value) began to stagnate, signalling an upcoming crisis, followed by the contraction of the mass of surplus-value (total profit) in 2007-2008.
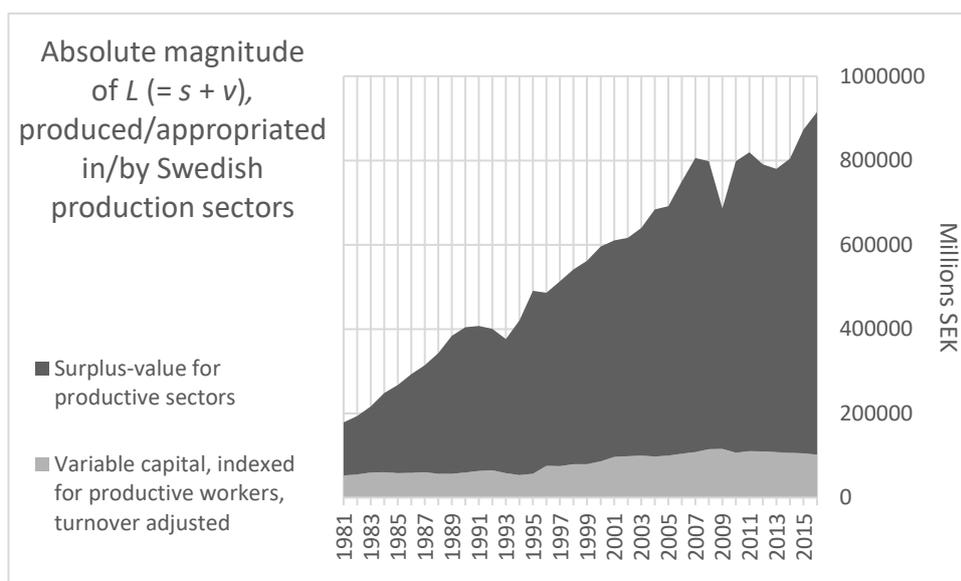


*Figure 16: Absolute magnitude of new value produced / appropriated*

Source: see figure 10.
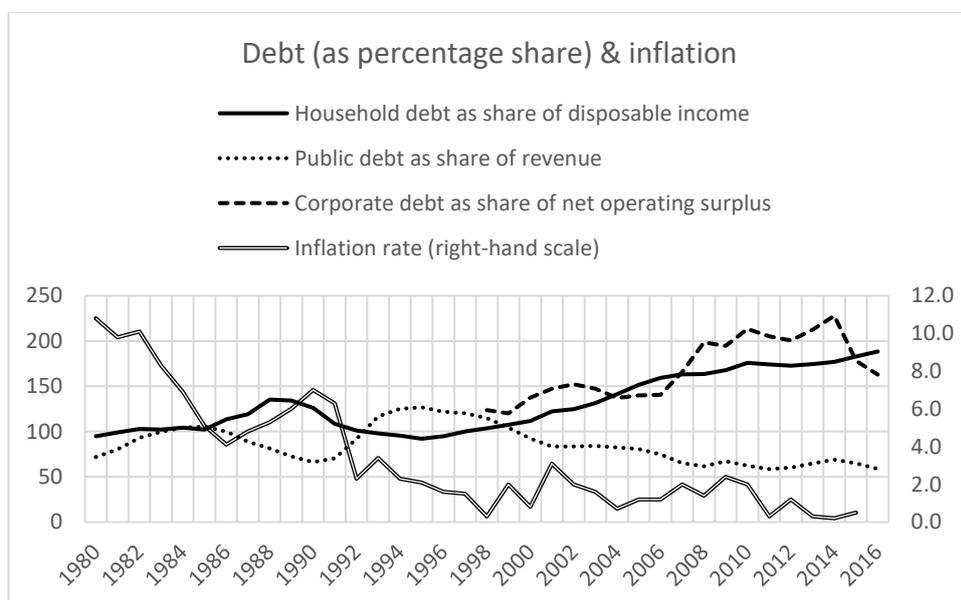


*Figure 17: Debt & inflation rate, 1980-2016*

Source: SCB (2016).

The expansion of private credit, while of course being made possible by deregulated capital markets, is equally symptomatic of overaccumulated capital looking for profitable outlets through speculation (*figure 17*). While public debt has been consolidated since the end of the 1990s, private household and corporate debt has bloated; while household debt increased

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[16] *Figure 16* is the same as *figure 10*, but shown as stacked shares of magnitude.

more or less steadily since the deregulation of the financial markets in 1995, corporate debt (for which the data acquired only stretch 1998-2016), saw a drastic increase from 2006, which, coincidentally was when the fall in the profit rate no longer was outweighed by an increase in the mass of surplus-value.

Value-creation and surplus-value appropriation recovered in 2009 to pre-crisis levels, and have since 2014 started to expand again (enabling the private sector to amortise its debt, as seen in the declining debt-surplus share of 2014-2016 in *figure 17*), seemingly, propelled by a raised rate of surplus-value from 2013-2016, and accelerated turnover-speed from 2009 onwards (*appendix table 2, figure 3*). But the share of *v* in new value created have declined further after 2014, the expansion of household debt is still steadily increasing, and the rate of profit has yet to show a healthy recovering upward trend – suggesting that the underlying problem of imperfect valorisation of capital remains.

## 5.6 – Conclusion & discussion

Sweden exhibits a long-term secular decline in the rate of profit throughout the late 19th and 20th century. For the period 1950-2016, the Swedish economy demonstrates the underlying "Marx-biased", labour-saving and capital-using technical change that is to be expected as a driver of the "law of the tendency of the profit rate to fall". Furthermore, as a response of the profitability crisis emanating from the Industrial Golden Age of the Swedish Model stretching from the 1950s to the 1970s – the neoliberal political regime and post-fordist practices aimed to restore profitability, which saw a surge from 1977 to 1995, although growth rates remained lower than both the preceding period of 1946-1977, and the succeeding of 1995-2016. The neoliberal political economy facilitated the erosion of the demand-base (by reducing the wage-share in the domestic economy), thus undermining any real growth. From 1995 onwards the law of the tendential fall of the profit rate started to assert itself once again, and problems of insufficient demand started to surface. Swedish capitalism entered a period of overaccumulation, a problem postponed and veiled by credit expansion as idle capital flows into speculation for profitable investment outlets. The late secular stagnation is but an expression of this.

The whole postwar period experienced a rapid increase in productivity, up until 2007/8, even after the profit rate started to fall in 1995, when real labour-productivity actually started to accelerate. This is in no way a contradiction as rapidly rising productivity is both the cause and effect of falling profitability, propelled by fierce international competition. With the

eruption of the financial crisis, the eroding demand-base became evident, and stagnation followed.

The Swedish economy has yet to rid itself of crippling overaccumulation, as the general profit rate remains low, the wage-share declining, unable to valorise the successively swelling capital; i.e. low demand cripples the economy, momentarily mended by credit expansion. The system is in need of expansion and stimulated demand, with new profitable outlets that can incorporate more value-creating workers. Politics focused on profitability, as in 1977-1995, has proved to be unsuccessful with regards to inclusive growth, and instead seem to be generating growing inequalities. As long as inclusive conditions for accumulation is not established – either by *en masse* destruction of capital value setting the stage for a new boom or structural cycle ("creative destruction"); by establishing new markets and incorporating new masses of value-creating workforces; by commodifying new social spaces and functions (by means of structural transformation or intensification of the present techno-economic paradigm); or any other measures that can create conditions for demand-stimulus – further concentration of capital among a few is expected as a compensatory strategy for falling profitability, with a continuing proliferation of the systemic violence of inequality disintegrating society as class-polarisation (resentment, segregation, crime, health- and life-chance differences) accentuates.

Marx claim that capitalism is incapable of generating full-employment and sufficient demand by its own dynamics rings true. And rather than being a purely supply- or demand-side phenomenon, the crises and stagnation it brings about seem to arise "organically" out of the dynamics of capital accumulation: by diminishing its demand-base sustaining the process, further accumulation is curtailed or undermined, tendentially creating a "gap" between actual output and potential output as capital and capacity swells beyond demand. To establish favourable – with regard to wage-dependants – conditions of accumulation, capital is dependent upon state support. Although a politics of demand-stimulus seem to be desirable from the perspective of maximizing economic growth – albeit less desirable from the perspective of environmental sustainability – the possibilities of pursuing such policies are limited by the class-power-equilibrium upheld by the conditions of global capital mobility. It's hard to see how Sweden – a small trade-dependent country – could pursue such policies unrestrainedly without the leverage of a global change in ideological and political-economic regime. The changes required taking power back from global capital, likewise need to be transnational in character.

## 5.6.1 – Further research

Since Marx's mode of analysis deemphasise the nation as a unit of analysis, it would be more appropriate to apply his theoretical framework on larger regions, or a network of relatively more connected trade nodes (i.e. countries that tend to be more intertwined economically). Furthermore, Marx's theory implies, or hints at, a trade theory of absolute advantage – which Anwar Shaikh (2016) has developed further – that could shed light on the relationship between differing organic compositions of capital, and how they mediate competitiveness and conquests of market-shares. Perhaps one would gain insights of how global inequalities and credit-debt-relations (such as that between Germany and Greece, or the U.S. and China) emerge. Another field of research would be the relationship between movements in the rate of profit as a driver of development blocks and structural cycles (see *footnote 2* above).

# Appendix

*Table 1: different results due to different definitions of capital stock. Based on data for output, compensation, capital stock and employment from SCB (2016; 2017).*

| | $p'$ | "Proper" $p'$ | $\Omega$ | "Proper" $\Omega$ | Ratio of $p'$ to "proper" $p'$ | Ratio of $\Omega$ to "proper" $\Omega$ |
|---|---|---|---|---|---|---|
| **1993** | 18.11 | 22.76 | 30.32 | 24.76 | 0.80 | 1.22 |
| **1994** | 20.99 | 26.31 | 32.41 | 26.96 | 0.80 | 1.20 |
| **1995** | 24.15 | 30.50 | 31.95 | 26.82 | 0.79 | 1.19 |
| **1996** | 22.14 | 27.24 | 24.67 | 21.03 | 0.81 | 1.17 |
| **1997** | 21.98 | 27.33 | 26.70 | 22.39 | 0.80 | 1.19 |
| **1998** | 21.69 | 27.17 | 27.00 | 22.35 | 0.80 | 1.21 |
| **1999** | 21.42 | 26.45 | 28.24 | 23.45 | 0.81 | 1.20 |
| **2000** | 20.72 | 26.19 | 28.64 | 23.04 | 0.79 | 1.24 |
| **2001** | 19.05 | 24.28 | 27.77 | 21.84 | 0.78 | 1.27 |
| **2002** | 18.21 | 22.97 | 28.86 | 22.71 | 0.79 | 1.27 |
| **2003** | 18.34 | 23.27 | 29.57 | 23.27 | 0.79 | 1.27 |
| **2004** | 18.95 | 24.60 | 31.69 | 24.54 | 0.77 | 1.29 |
| **2005** | 18.27 | 23.70 | 32.30 | 24.87 | 0.77 | 1.30 |
| **2006** | 18.82 | 24.83 | 32.84 | 25.03 | 0.76 | 1.31 |
| **2007** | 18.89 | 25.50 | 34.03 | 25.41 | 0.74 | 1.34 |
| **2008** | 16.92 | 22.71 | 35.26 | 25.98 | 0.75 | 1.36 |
| **2009** | 13.34 | 16.87 | 37.01 | 27.13 | 0.79 | 1.36 |
| **2010** | 15.61 | 21.08 | 41.61 | 29.90 | 0.74 | 1.39 |
| **2011** | 15.45 | 21.16 | 41.71 | 29.61 | 0.73 | 1.41 |
| **2012** | 14.40 | 19.49 | 43.04 | 30.39 | 0.74 | 1.42 |
| **2013** | 13.79 | 18.80 | 45.21 | 31.38 | 0.73 | 1.44 |
| **2014** | 13.68 | 18.74 | 47.79 | 32.83 | 0.73 | 1.46 |
| *Annual percentage change* | *-1.33* | *-0.92* | *2.19* | *1.35* | | |

Table title above table: Profit rates & organic composition of capital for productive activities, for total private capital stock, and "productive ('proper') capital stock" respectively, 1993-2014, in %

*Table 2: Profit rate, rate of surplus-value/exploitation/appropriation, organic composition of capital, variable capital, constant capital, and turnover-time. Based on data for output, compensation, employment, capital stock, intermediate consumption, and inventory stock from Edvinsson (2005) for 1946-1993, and from SCB (2016; 2017) for 1994-2016.*

| Year | Rate of profit (p'), in | Rate of surplus-value | Organic composition of capital | Variable capital, indexed | Circulating constant capital | Fixed constant capital | Turnover-time, n |
|---|---|---|---|---|---|---|---|

| | % | (s') | (Ω) | for number of productive workers, turnover-adjusted (v), in millions SEK | (turnover-adjusted) (c_c), in millions SEK | (c_f), in millions SEK | |
|---|---|---|---|---|---|---|---|
| 1946 | 21.49 | 2.52 | 10.74 | 3268 | 6834 | 28253 | 3.19 |
| 1947 | 21.98 | 2.50 | 10.39 | 3677 | 7635 | 30560 | 3.18 |
| 1948 | 20.69 | 2.33 | 10.25 | 4211 | 8824 | 34339 | 3.06 |
| 1949 | 18.57 | 1.99 | 9.73 | 4845 | 10123 | 37023 | 2.83 |
| 1950 | 19.70 | 2.15 | 9.90 | 5188 | 11287 | 40083 | 2.75 |
| 1951 | 22.07 | 2.60 | 10.76 | 6011 | 14110 | 50588 | 2.81 |
| 1952 | 20.12 | 2.44 | 11.14 | 6774 | 14935 | 60509 | 2.92 |
| 1953 | 17.13 | 2.01 | 10.72 | 7426 | 16121 | 63475 | 2.69 |
| 1954 | 17.45 | 1.92 | 10.02 | 8186 | 17812 | 64251 | 2.55 |
| 1955 | 17.29 | 1.98 | 10.46 | 8448 | 18212 | 70134 | 2.71 |
| 1956 | 16.95 | 1.98 | 10.66 | 9228 | 20377 | 77991 | 2.63 |
| 1957 | 15.04 | 1.69 | 10.22 | 10698 | 23566 | 85724 | 2.42 |
| 1958 | 14.14 | 1.56 | 10.03 | 11442 | 24693 | 90026 | 2.34 |
| 1959 | 13.84 | 1.52 | 10.00 | 12100 | 27218 | 93736 | 2.26 |
| 1960 | 14.77 | 1.69 | 10.44 | 12428 | 27537 | 102235 | 2.43 |
| 1961 | 15.41 | 1.85 | 10.98 | 12756 | 27841 | 112288 | 2.59 |
| 1962 | 14.40 | 1.65 | 10.46 | 14802 | 31073 | 123770 | 2.48 |
| 1963 | 13.41 | 1.53 | 10.44 | 16125 | 34403 | 133980 | 2.42 |
| 1964 | 14.51 | 1.70 | 10.75 | 17095 | 37066 | 146649 | 2.50 |
| 1965 | 14.54 | 1.74 | 10.96 | 18493 | 40427 | 162231 | 2.54 |
| 1966 | 13.31 | 1.58 | 10.84 | 20462 | 44350 | 177397 | 2.47 |
| 1967 | 12.84 | 1.52 | 10.82 | 22177 | 47455 | 192529 | 2.42 |
| 1968 | 12.17 | 1.45 | 10.92 | 23422 | 51542 | 204287 | 2.37 |
| 1969 | 13.23 | 1.62 | 11.27 | 23646 | 53219 | 213177 | 2.47 |
| 1970 | 13.77 | 1.78 | 11.93 | 24506 | 56833 | 235401 | 2.60 |
| 1971 | 12.48 | 1.63 | 12.06 | 27333 | 63249 | 266499 | 2.47 |
| 1972 | 11.20 | 1.42 | 11.73 | 31031 | 72725 | 291166 | 2.31 |
| 1973 | 12.12 | 1.65 | 12.60 | 32056 | 81330 | 322475 | 2.37 |
| 1974 | 13.76 | 2.08 | 14.09 | 33533 | 92299 | 380023 | 2.64 |
| 1975 | 13.77 | 2.13 | 14.49 | 37359 | 95632 | 445549 | 2.76 |
| 1976 | 12.53 | 1.91 | 14.21 | 43573 | 110124 | 509053 | 2.75 |
| 1977 | 10.44 | 1.58 | 14.16 | 49120 | 124289 | 571209 | 2.63 |
| 1978 | 9.43 | 1.44 | 14.23 | 54245 | 138728 | 633313 | 2.59 |
| 1979 | 11.18 | 1.81 | 15.19 | 53608 | 148517 | 665627 | 2.83 |
| 1980 | 12.54 | 2.24 | 16.85 | 52570 | 148587 | 737181 | 3.21 |

| 1981 | 12.32 | 2.38 | 18.36 | 52683 | 152396 | 814596 | 3.43 |
|------|-------|------|-------|-------|--------|--------|------|
| 1982 | 12.32 | 2.50 | 19.30 | 55372 | 171362 | 897411 | 3.42 |
| 1983 | 12.47 | 2.62 | 19.99 | 59764 | 197037 | 997521 | 3.35 |
| 1984 | 14.27 | 3.13 | 20.94 | 60146 | 203105 | 1056502 | 3.63 |
| 1985 | 15.09 | 3.59 | 22.82 | 58120 | 196292 | 1129866 | 4.07 |
| 1986 | 16.14 | 3.98 | 23.66 | 58793 | 192684 | 1198541 | 4.34 |
| 1987 | 16.66 | 4.24 | 24.43 | 60057 | 198935 | 1268319 | 4.55 |
| 1988 | 17.61 | 5.03 | 27.55 | 56953 | 191761 | 1377429 | 5.23 |
| 1989 | 18.55 | 5.76 | 30.05 | 56746 | 193664 | 1511385 | 5.80 |
| 1990 | 17.97 | 5.81 | 31.31 | 59382 | 201203 | 1658257 | 6.07 |
| 1991 | 17.16 | 5.42 | 30.62 | 63439 | 205658 | 1736537 | 5.83 |
| 1992 | 16.90 | 5.17 | 29.63 | 64890 | 207283 | 1715382 | 5.47 |
| 1993 | 15.75 | 5.49 | 33.86 | 57969 | 205448 | 1757443 | 5.84 |
| 1994 | 18.30 | 6.80 | 36.17 | 53852 | 202329 | 1745511 | 6.54 |
| 1995 | 21.02 | 7.72 | 35.72 | 56304 | 212222 | 1798956 | 6.77 |
| 1996 | 18.68 | 5.46 | 28.25 | 75225 | 268826 | 1856143 | 5.42 |
| 1997 | 18.68 | 5.87 | 30.41 | 74707 | 276701 | 1994938 | 5.66 |
| 1998 | 18.50 | 5.86 | 30.65 | 79001 | 288685 | 2132838 | 5.67 |
| 1999 | 18.39 | 6.05 | 31.90 | 79667 | 291992 | 2249533 | 5.93 |
| 2000 | 17.75 | 5.93 | 32.43 | 85913 | 326040 | 2460250 | 5.89 |
| 2001 | 16.28 | 5.29 | 31.50 | 97035 | 362038 | 2694418 | 5.55 |
| 2002 | 15.67 | 5.25 | 32.52 | 98639 | 361147 | 2846255 | 5.56 |
| 2003 | 15.85 | 5.42 | 33.21 | 99688 | 363143 | 2947805 | 5.55 |
| 2004 | 16.43 | 6.00 | 35.55 | 97661 | 376407 | 3095136 | 5.74 |
| 2005 | 15.80 | 5.90 | 36.36 | 100157 | 406766 | 3235300 | 5.76 |
| 2006 | 16.23 | 6.18 | 37.08 | 104467 | 443195 | 3430349 | 5.72 |
| 2007 | 16.37 | 6.43 | 38.27 | 108439 | 460169 | 3690139 | 5.97 |
| 2008 | 14.75 | 5.97 | 39.46 | 114609 | 481402 | 4041395 | 6.01 |
| 2009 | 11.77 | 4.94 | 40.93 | 115607 | 454230 | 4278061 | 5.73 |
| 2010 | 13.89 | 6.50 | 45.75 | 106506 | 440641 | 4432104 | 6.37 |
| 2011 | 13.75 | 6.44 | 45.86 | 110051 | 455998 | 4590587 | 6.53 |
| 2012 | 12.90 | 6.20 | 47.05 | 109905 | 441193 | 4730381 | 6.74 |
| 2013 | 12.44 | 6.23 | 49.09 | 107898 | 418006 | 4878571 | 6.95 |
| 2014 | 12.41 | 6.54 | 51.67 | 106738 | 414434 | 5100909 | 7.21 |
| 2015 | 13.13 | 7.30 | 54.59 | 105246 | 379393 | 5366412 | 7.87 |
| 2016 | 13.31 | 7.94 | 58.66 | 102355 | 358153 | 5645736 | 8.36 |

*Table 3: Real GDP by expenditure in 2010 years prices, real GDP growth rates, & real wage. Based on data for output, and wages from SCB (2016), and worked hours from Edvinsson (2005) for 1950-1993, and SCB (2017) for 1994-2015.*

| Years | Real GDP by expenditure, in | Real GDP growth rates, | Real labour-productivity, total | Real wage, index 1960 = |
|-------|------------------------------|------------------------|----------------------------------|--------------------------|

| | 2010 years prices | from previous year | economy, in 2010 years prices (GDP by expenditure per 10,000 hours worked) | 100 |
|---|---|---|---|---|
| **1950** | 698689 | | 205,4621 | |
| **1951** | 717073 | 2,631214 | 221,9901 | |
| **1952** | 727561 | 1,462613 | 132,0878 | |
| **1953** | 753100 | 3,510221 | 125,5748 | |
| **1954** | 798373 | 6,011552 | 175,0925 | |
| **1955** | 821004 | 2,83464 | 147,6222 | |
| **1956** | 847909 | 3,277085 | 131,1832 | |
| **1957** | 867154 | 2,269701 | 130,194 | |
| **1958** | 888532 | 2,465306 | 122,0771 | |
| **1959** | 935267 | 5,259799 | 132,6302 | |
| **1960** | 968024 | 3,502422 | 132,3987 | 100 |
| **1961** | 1020770 | 5,448832 | 103,3343 | 104,9843 |
| **1962** | 1064223 | 4,256885 | 101,1868 | 110,4493 |
| **1963** | 1120727 | 5,309414 | 106,2369 | 115,2635 |
| **1964** | 1197031 | 6,808438 | 114,7743 | 119,9564 |
| **1965** | 1243071 | 3,846183 | 99,5076 | 125,2676 |
| **1966** | 1270313 | 2,191508 | 91,55588 | 129,3487 |
| **1967** | 1314422 | 3,472294 | 86,42413 | 135,3752 |
| **1968** | 1361641 | 3,592377 | 93,26487 | 141,4729 |
| **1969** | 1428001 | 4,873531 | 101,8651 | 147,4279 |
| **1970** | 1525980 | 6,86127 | 93,20449 | 150,8374 |
| **1971** | 1541901 | 1,04333 | 71,99388 | 154,8691 |
| **1972** | 1576768 | 2,2613 | 78,90964 | 160,1261 |
| **1973** | 1639752 | 3,9945 | 81,70741 | 161,7411 |
| **1974** | 1694112 | 3,315135 | 77,40643 | 162,219 |
| **1975** | 1736757 | 2,517248 | 52,17211 | 170,4757 |
| **1976** | 1757938 | 1,219572 | 41,41581 | 175,7836 |
| **1977** | 1733462 | -1,39231 | 41,4579 | 174,1693 |
| **1978** | 1761703 | 1,629168 | 51,00914 | 175,7475 |
| **1979** | 1828902 | 3,814434 | 66,13872 | 180,9562 |
| **1980** | 1860426 | 1,723657 | 51,71753 | 173,2746 |
| **1981** | 1855673 | -0,25548 | 37,63599 | 168,1039 |
| **1982** | 1882132 | 1,425844 | 40,3638 | 164,2481 |
| **1983** | 1920860 | 2,057667 | 41,84304 | 160,2718 |
| **1984** | 2003353 | 4,294587 | 40,43107 | 160,0184 |
| **1985** | 2048868 | 2,271941 | 34,15213 | 160,2825 |
| **1986** | 2108836 | 2,926885 | 27,82628 | 167,3123 |
| **1987** | 2177701 | 3,265546 | 30,06986 | 170,8889 |
| **1988** | 2231280 | 2,460347 | 26,83997 | 172,1446 |
| **1989** | 2286235 | 2,462936 | 24,93967 | 177,9252 |

| | | | | |
|---|---|---|---|---|
| **1990** | 2304516 | 0,799612 | 20,22002 | 176,6416 |
| **1991** | 2280853 | -1,02681 | 19,92177 | 170,3407 |
| **1992** | 2258614 | -0,97503 | 26,44073 | 172,7033 |
| **1993** | 2214379 | -1,9585 | 27,93975 | 169,6427 |
| **1994** | 2304894 | 4,087602 | 33,02829 | 170,0501 |
| **1995** | 2397650 | 4,024307 | 23,06943 | 171,3476 |
| **1996** | 2434043 | 1,517861 | 17,02885 | 180,8041 |
| **1997** | 2504642 | 2,900483 | 16,48962 | 188,0746 |
| **1998** | 2610508 | 4,226792 | 15,84814 | 195,4775 |
| **1999** | 2728768 | 4,530153 | 14,99947 | 201,191 |
| **2000** | 2857983 | 4,735287 | 14,48612 | 206,5876 |
| **2001** | 2902665 | 1,56341 | 13,6765 | 210,6827 |
| **2002** | 2962854 | 2,073577 | 14,27968 | 214,7617 |
| **2003** | 3033540 | 2,38574 | 16,92044 | 218,143 |
| **2004** | 3164605 | 4,32053 | 18,61156 | 224,5175 |
| **2005** | 3253794 | 2,81833 | 20,37832 | 230,4916 |
| **2006** | 3406336 | 4,688127 | 20,20613 | 234,4696 |
| **2007** | 3522320 | 3,404949 | 21,92941 | 237,0063 |
| **2008** | 3502699 | -0,55705 | 20,38535 | 239,0545 |
| **2009** | 3321096 | -5,18466 | 16,58714 | 247,8789 |
| **2010** | 3519994 | 5,988927 | 19,68798 | 251,1365 |
| **2011** | 3613781 | 2,664408 | 21,04792 | 250,6426 |
| **2012** | 3603434 | -0,28632 | 19,40934 | 255,9064 |
| **2013** | 3648160 | 1,241205 | 18,19746 | 262,3582 |
| **2014** | 3743012 | 2,599996 | 18,90831 | 270,2034 |
| **2015** | 3895912 | 4,084945 | 19,45126 | 276,8747 |

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