How structural reforms of labor markets contribute to a productivity crisis.

An essay on neoclassical versus evolutionary efficiency

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Abstract:

Structural reforms of labor markets as proposed by supply-side economists are a cause of the post-2005 productivity crisis in the Triad (USA, EU, Japan). Structural reforms removed labor market rigidities that were useful for innovation. Labor markets that work better (in a neoclassical view), are working worse from an evolutionary innovation perspective. Negative effects are worst if innovation requires a highly cumulative knowledge base. Low productivity growth leads to a labor-intensive growth path and hence to tighter labor markets. The latter can increase wage costs, which enhances the diffusion of process technology, supporting a return to higher productivity growth. Innovation and productivity would also be helped by more protective labor market institutions.

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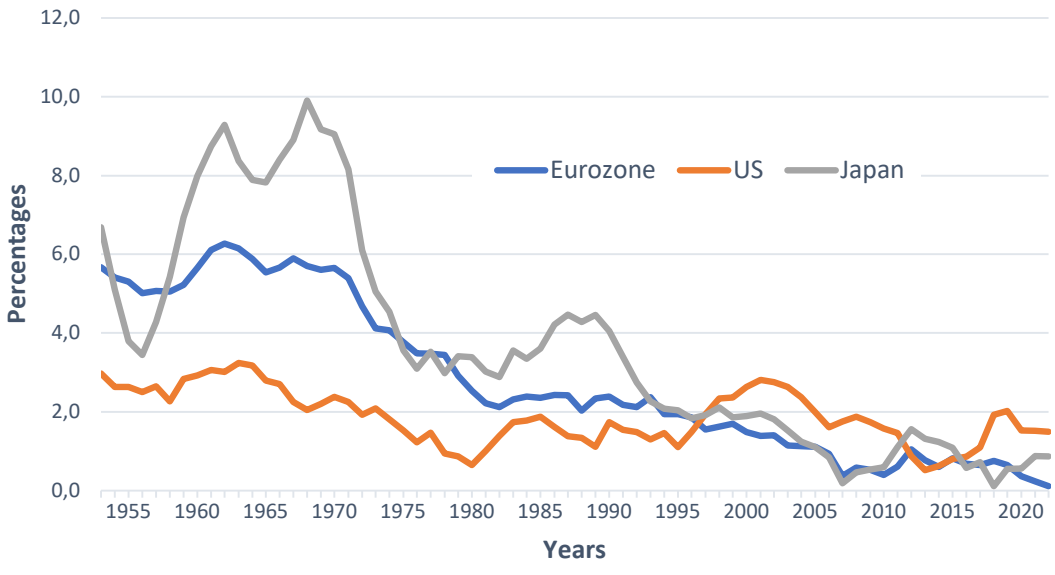
1. Introduction: A slowdown of productivity growth in the Triad

Stories about artificial intelligence suggest that we are currently living in the age of a new technological revolution, sometimes referred to as a *Second Machine Age* (Brynjolfsson & McAfee 2014). With self-learning systems, artificial intelligence creates new opportunities to replace humans by machines. In their highly cited 2017 study, Frey & Osborne estimate that 47% of all jobs in the US (and 53% in Europe) might be replaced by intelligent machines in the next two decades. The authors expect that this will primarily involve low-productive work in transport and logistics, but also in offices and in manufacturing.

So far, however, the new technological revolution is not visible in statistically representative productivity figures – on the contrary. Figure 1 shows the annual growth rates of GDP per working hour as a measure of labor productivity for the EU-15, Japan, and the US. After a major decline in the early 1970s, there is another decline in productivity growth around 2005. Labor productivity growth remained solid above 2% in Europe and Japan from the mid-1970s until the turn of the century. In the US it is persistently lower. The US experienced, however, a surge in productivity growth between 1994/95 and 2004/05. This can be attributed to the IT boom in regions like Silicon Valley (Gordon 2016). With a rapidly diminishing contribution of IT to aggregate productivity growth around 2004/05 (Cette 2015), growth rates of labor productivity are falling. Figures for multi-factor productivity show a similar pattern (Cardarelli & Lusinyan 2015).

Figure 1: Labor productivity growth (GDP per hour worked)

Source: The Conference Board, Total Economy Database
https://data-central.conference-board.org/



Summarizing, we observe, over the last 20 years, the lowest productivity growth since World War II. This is not only in contrast with stories about an ongoing AI-revolution; it also happens after more than 40 years of supply-side policies that aimed at structural reforms of (labor) markets. The latter were expected to have contributed to a more efficient working of markets and, at first glance, this is hard to reconcile with a productivity slowdown.

In the next section, I start with a brief overview of literature that aims at explaining weak productivity growth. In sections 3 and 4, I give a new explanation of why productivity growth is so low. Referring to recent empirical studies on the (negative) relationship of flexible labor and productivity growth, I argue that the slowdown happens not *despite* but *because* of supply-side structural reforms of labor markets. And this is particularly relevant in industries that show a high cumulativeness of knowledge. Section 5 outlines some broader implications of the findings.

2. Previous work on the productivity crisis

For supply-side economists who took over the economics faculties in 1980s and dominated economic policy advisory bodies, the productivity slowdown is hard to understand. Essentially, they believed that productivity thrives with better functioning markets. And supply-siders have achieved several things to deregulate labor markets to make them function as real markets. For example, in many countries, a degree of downward wage flexibility was realized with the creation of a low-wage sector. This was made possible by a mix of measures that have been realized at varying degrees across countries. The latter included sobering of social benefits, easier firing (or a larger fringe of flexible workers in insider-outsider labor markets), weakening trade unions, more decentralized bargaining, or weaker coverage by collective bargaining agreements. And, last but not least, supply-siders succeeded, for long periods, to realize a level of 'natural' (or NAIRU-)[1] unemployment that was high enough to keep workers disciplined, thus favoring redistribution of income from labor to capital.

And after so many years of struggling to improve supply-side conditions for business, is productivity growth now going down the drain? This would be pretty much against the basic believes of supply siders, but this is what the figures show. When theoretical expectation and empirical measurement conflict with one another, the first question that arises is: is the measurement correct? Or is productivity growth underestimated in the IT age? Painstaking research has been done on this in the US. The unequivocal answer is: The productivity slowdown is *not* due to measurement problems; it is real (Byrne et al. 2016; Syverson 2017). But how then to explain the productivity slowdown?

A convincing explanation of the slowdown was provided by Cette et al. (2015) and by Gordon (2016). Gordon describes in detail that, in IT hotspots like Silicon Valley, there are, after the turn of the century, strongly diminishing returns on technological improvements. For example, Moore's Law (i.e., doubling chip power every two years) no longer applies; or new venture investment has gone

[1] NAIRU stands for the *Non-Accelerating Inflation Rate of Unemployment*. In its textbook version, NAIRU unemployment should be high enough to prevent inflation-accelerating wage claims, i.e., it should guarantee a constant inflation rate (Shapiro & Stiglitz 1984). In practice, it has been an instrument for disciplining workers such that a redistribution of National Income in favor capital could be achieved. For a critical assessment of NAIRU theory, see Storm & Naastepad (2012).

down. Cette et al. (2015) show that the (high) contribution of IT to total economy productivity growth after 1994/95, has declined sharply since 2004/05 in major OECD countries, including the USA. The production of IT hardware is still the most dynamic sector within US manufacturing (Baily & Bosworth 2014); but IT no longer triggers high total economy productivity growth as it did during 1994/95 to 2004/05.

Concluding, the observed productivity slowdown since about 2004/05 does not mirror statistical measurement problems. It is real. An exhaustion of the IT boom appears to be a valid explanation. In the remainder of this essay, I shall argue that supply-side labor market reforms are another candidate for a (complementary) explanation. Taking 2004/05 as a turning point towards overall lower productivity growth is not only supported by a diminishing contribution of IT to productivity growth around that time; it is also supported by the timing of structural reforms of labor markets around the turn of the century (or short thereafter) in some larger OECD countries.

For example, the Hartz-reforms of the German labor market took place in various steps between 2002 and 2005. They brought a sobering of social benefits, easier firing, and creation of a low-wage sector.[2] A few years after 2005, we observe lower probabilities to innovate (Hoxha & Kleinknecht 2020) and lower productivity growth (Hoxha & Kleinknecht 2023) among those German firms that make most use of the new options for employing flexible workers.

Labor market reforms in the spirit of supply-side economics also took place in Italy in the later 1990s. Since the turn of the century, Italian labor productivity growth is quite close to the zero line. Moreover, using firm-level data, Lucidi & Kleinknecht (2010) show that those Italian firms that made most use of the new flexible options also had the lowest productivity gains.

Indirectly comparable findings emerge in Japan. The country made important reforms around 2003/04, allowing for creation of 'non-regular' jobs that provide little training, easy firing, and poor career perspectives. Meanwhile, more than 20% of the Japanese labor force consists of non-regular workers. From Mincer-type wage equations, we see that, after the usual controls, the latter earn about 33% less than their 'regular' colleagues. As far as wages reflect productivity, this suggests a substantial reduction of the productivity of 'non-regular' workers (Ikeda et al. 2024). All this is consistent with the hypothesis that the productivity slowdown is not taking place *despite*, but *because* of deregulation of labor markets according to supply-side receipts.

Meanwhile, there is a range of studies at firm-level and at sector level, suggesting that more flexible labor relations correlate with four things: (1) with lower wages, (2) with lower productivity growth, (3) with a lower probability that an innovation will be realized or that R&D will be undertaken (see the survey in Kleinknecht 2020). A fourth observation is that flexible labor relations correlate with thicker management bureaucracies. For example, Naastepad & Storm (2006) find that shares of 'managers' in the total working population according to ILO definitions are substantially higher in what Hall & Soskice (2001) call *Liberalized Market Economies* other than in *Coordinated Market Economies*. Moreover, Kleinknecht et al. (2016) observe that organizations in the Netherlands that

[2] The effects of these structural reforms were supported by German wage moderation that started in the later 1990s (Dustman et al. 2014).

employ higher shares of flexible (or other non-standard) workers also have thicker management layers.

3. An alternative explanation: better functioning labor markets work worse (for innovation)

Supply-siders had one key mission: Make sure that markets work better! The promise was that, if markets work better, everything gets fine. But does this also hold for innovation and productivity? In the following, I shall argue that neoclassical theorists, due to their ignorance about innovation, are not aware of the negative impact on innovation and productivity of removing 'rigidities' in labor markets. I shall argue that there is a trade-off between neoclassical static efficiency ('how to allocate scarce resources efficiently?') and Schumpeterian dynamic efficiency ('how to make resources less scarce through innovation'?). And trade-offs between static and dynamic efficiency hold for various labor market rigidities that supply-siders were keen to eliminate.[3] Let us now look in more detail.

a) The useful rigidity of downwardly inflexible wages

In a neoclassical perspective, for fighting unemployment, you need to overcome the labor market rigidity of downwardly *in*flexible wages. Downwardly flexible prices allow for market clearing if there is more supply than demand. However, wage cuts are also a cause of low productivity growth. Vergeer & Kleinknecht (2010, 2014) show that a 1 percentage point lower real wage growth translates, over the medium term, into an 0.32 - 0.46 percentage points lower growth of GDP per working hour. Hence, downwardly flexible wages come at a price: a slower growth of value added that can be distributed between capital, labor, and government.

The theoretical rationale is that lower wage cost pressure delays the diffusion of new process technology. The latter effect is partly explained by Hicksian (1932) capital-labor substitution or by the 'induced innovation' argument (Samuelson 1964). But a more powerful explanation is captured in a Dutch vintage model (Hartog & Tjan 1974), which has the advantage of including technical change. This happens through the neoclassical mechanism of factor prices driving renewal of the capital stock. Hartog and Tjan's vintage model assumes that the replacement of old (and more labor-intensive) vintages of equipment by new and more productive vintages depends on wages. Stronger wage growth makes older machines (with lower productivity) unprofitable. And their replacement by new and more productive vintages raises productivity (Hartog & Tjan 1974).

Incidentally, during past periods of high unemployment, this model was used for convincing trade unionists to sacrifice wages: if old (and more labor-intensive) machines can be used longer due to modest wage rises, this is favorable for employment. Against the background of high unemployment, my objection that such a preservation of jobs is at the cost of problematic delays in modernization of equipment hardly got attention. While the above arguments are still quite neoclassical, the following arguments are inspired by neo-Schumpeterian research.

Besides delaying the diffusion of advanced process technology, downwardly flexible wages can be a survival aid for technological laggards and for poorly managed companies. If their workers are ready

[3] The quick reader can find a concise summary of the most important arguments in Box 1 (Appendix).

to sacrifice wages in exchange for keeping their jobs, such zombie-firms are less likely to be competed away in the Schumpeterian process of creative destruction. In the longer run, this will result in a weaker entrepreneur population.

Finally, recent research in Italy and in the Netherlands suggests that the availability of a low-wage sector has enabled a shift of employment from highly productive to low-productive industries. For example, Pariboni & Tridico (2019) observe a strong growth of the Italian 'cafeteria economy' as one of the causes of Italy's poor productivity performance. The 'cafeteria economy' symbolizes low-productive sectors with poor technological opportunities for future productivity growth. More recently, Erken (2024) showed that there is a similar pattern in the Netherlands: The ongoing slowdown of productivity growth is reinforced by jobs shifting from high-productivity to low-productivity industries.

One should note that low-productivity industries also tend to suffer from Baumol's 'Cost-Disease' (Baumol & Bowen 1965); i.e., they have poor technological opportunities for raising productivity. Examples of sectors that, to varying degrees, suffer from Baumol's cost-disease are the hotel and restaurants industry, retail trade, personal services, e.g., hairdressing, massage salons, or nail studios) or, an extreme example (Baumol's & Bowen's favorite): performing arts. The productivity of musicians playing a Beethoven symphony has not improved since the time of Beethoven. High growth in such sectors is of course good for employment; but it retards aggregate productivity growth.

b) The useful rigidity of centralized bargaining

The latter arguments are also relevant with respect to a key policy objective of supply-siders: replace the labor market rigidity of centralized bargaining (at industry or at national level; often with government extending wage agreements to non-unionized workers) by decentralized bargaining at firm (or person) level. This can rescue jobs in weak firms. But if workers are ready to sacrifice wages, they offer their employers an alternative to modernization of products or processes. And if NAIRU-unemployment is high enough, workers may be ready to sacrifice wages.

c) Benefits of firing protection: Greater loyalty and trust

Removal of the labor market rigidity of firing protection leads to more frequent job changes. The latter are 'good' from a neoclassical perspective as they make it easier for employers to terminate inefficient job matches. This increases the chance that people end up with more efficient job matches that can raise productivity (Mortensen & Pissarides 1994). Unfortunately, easy firing and shorter job tenures also lead to lower commitment and loyalty of personnel. Investments in company-specific training are then less worthwhile. Or learning-by-doing effects are poorly used. Lower loyalty can also mean that technological knowledge and trade secrets are more easily leaked to competitors. Greater Pigouvian externalities discourage investment in new knowledge. Lower loyalty and trust can also force companies to invest in supervision and control, thus creating larger management bureaucracies as mentioned above. The latter can harm the professional autonomy of creative people, besides raising overhead costs.

d) Other benefits of firing protection: Better use of knowledge from the shopfloor

With easier firing, (top) management becomes more powerful. Possible consequences are: more autocratic management, more 'me-too' cases, and a culture of fear. Acharya et al. (2010) argue that easier firing enhances risk-aversion among the workforce. When looking for innovative solutions, staff then avoid riskier (but potentially more rewarding) options. Besides, people who fear for their jobs have motives for hiding information about how their work could be done more efficiently. This all implies that, once the labor market rigidity of protection against dismissals is removed, management is likely to make poor use of knowledge from the shop floor. This is at odds with the emphasis in handbooks on innovation management that, for successful innovation, you should mobilize knowledge from *all* corners of the organization (e.g., Tidd & Bessant 2020).

e) Benefits of insider positions: knowledge accumulation

Neo-Schumpeterian literature distinguishes two innovation regimes: regimes that require *'low*-cumulative' and regimes that require *'highly* cumulative' knowledge for the innovation process (Peneder 2010). Examples of innovators using *low* cumulative knowledge are start-ups, but also several traditional industries and services. In their innovation process, the latter use more frequently *general* knowledge that tends to be acquired externally.

In contrast, in innovation regimes that require *highly* cumulative knowledge, knowledge is mainly developed and accumulated internally. Such knowledge often comes from the experience when working on improvements of products, processes, or systems. This internal knowledge tends to be poorly documented and is often 'embodied' by workers. It is sometimes referred to as *tacit knowledge* (i.e., 'intangible' or ill-codified knowledge; Polanyi 1966). Firm-level regressions show that flexible labor relations have a significantly negative impact on productivity growth and innovation among innovators who depend on a *highly* cumulative knowledge base.

In *low* cumulative innovation regimes, however, such harmful effects are smaller and sometimes insignificant (e.g., Hoxha & Kleinknecht 2020, 2023; see also Cetrulo et al. 2019 for a sector-level study).[4] To conclude, a long-term commitment to the firm in a well-protected *insider* position is an awful labor market rigidity in neoclassical theory, but it appears to be useful for innovation. The latter conclusion comes close to Edith Penrose's (1959) insistence that a firm's success ultimately depends on a firm's capability to appropriate and keep superior (human or other) resources.

While the above points a) through e) deal with labor market rigidities, supply-side structural reforms of markets had a broader reach. In the following section, I discuss some of these reforms as far as they touch innovation and productivity.

[4] Earlier studies, using a similar classification of industries (distinguishing a Schumpeter-I versus a Schumpeter-II innovation model), find comparable results, see Kleinknecht et al. (2014) or Wachsen & Blind (2016).

4. Some broader implications of supply-side reforms

As we all learnt in our micro-economics classes, *Perfect Competition* is the most ideal market. Realizing such a market, however, requires a few conditions to be fulfilled. Among these are large numbers of sellers and buyers; no entry barriers; zero transaction costs; adequate information for all market participants; strong property rights, etc. To the degree that these conditions are fulfilled, markets always clear and scarce resources are allocated efficiently. But how favorable is *Perfect Competition* for innovation?

It is a merit of Joseph A Schumpeter that, as early as 1943, he raised doubts about this; if markets work better from a neoclassical viewpoint, they work worse from an innovation perspective:

> *'Perfect competition ... is a condition for optimal allocation of resources ... But ... introduction of new methods of production and new commodities is hardly conceivable with perfect ... competition ... And this means that the bulk of ... economic progress is incompatible with it. As a matter of fact, perfect competition is and always has been temporarily suspended whenever anything new is being introduced …'*. Schumpeter (1943: 104-105).

At the time, only few people may have picked up the meaning of this quote: it is an attack on the basics of neoclassical theory. In the following, let me elaborate on it, making use of recent evolutionary research. In short, I argue that there is a trade-off between what is 'good' for the efficient allocation of scarce resources in a static neoclassical perspective and what is 'good' for dynamic evolutionary efficiency: innovation that makes resources less scarce. My key conclusion: innovation prospers in *im*perfect markets; to the degree that supply-siders succeeded making markets more efficient, bringing them closer to the ideal of *Perfect Competition*, they are likely to have frustrated innovation and productivity.

Let us consider some examples.

In real life, innovators need to have the expectation of entry barriers that allow them reaping monopoly profits. Without entry barriers they earn a 'normal' profit. Hence, they get no compensation for the high risks and uncertainties of innovation. In other words, (expected) market entry barriers for imitators are an important innovation incentive.

In addition, innovators have a typical cost structure that demands exploiting economies of scale and thereby conquering large market shares: Initially, innovators incur high fixed (and often sunk) costs for R&D, prototype development or preparation for production and market launch; but during the diffusion phase, they enjoy rapidly declining marginal costs. The innovation itself thus creates imperfect markets with large players – apart from the fact that innovation also thrives in such markets. Large companies also have the advantage that they can maintain a portfolio of innovation projects, thus diversifying risks. To conclude, an atomistic market structure under *Perfect Competition* is hardly conducive to innovation.

Or take the assumption of every market participant having adequate information. From a neoclassical perspective, incomplete information can lead to market failure. But a degree of information asymmetry between innovator and imitator is useful for the innovator, as it delays the erosion of

monopoly profits from innovation by imitators. This can enhance the willingness to bear the risks of innovation, besides making it easier to absorb losses from failed projects.

Finally, assuming efficient property rights is also problematic. Technological knowledge has strong properties of a public good, with property rights hard to protect. Copyrights, trademarks or patents help to some extent, but are far from perfect. Borrowing from efficiency wage theory, we could interpret the labor market rigidity of providing well-protected insider jobs as an investment by which companies 'buy' loyalty and commitment of workers and thereby limit the leaking of knowledge to competitors. An insider position might be interpreted as an implicit contract: you do your best for the company, and in return the company does its best securing your job. This implicit contract is breached with easier firing regulation, and that comes at a price.

5. Some broader implications of low productivity growth

As far as structural reforms of labor markets made labor markets work better from a neoclassical perspective, they made them work worse for innovation, and particularly for the innovation model that requires *highly* cumulative knowledge. A weak functioning of this innovation model will result in lower productivity gains and this means lower growth of income that can be distributed annually between capital, labor, and government; this makes it more difficult solving distributional conflicts, or financing a *Green Deal*, for example. An intensified battle for the division of the pie can increase inflationary pressure, but it may also support pleas for austerity.

The battle about income distribution can be exacerbated by a side-effect of low productivity growth: labor-intensive economic growth. Remember that an economy can only grow in two ways: either with *more* labor hours or with more *productive* hours. With disappointing productivity growth, one must rely more heavily on a higher labor input if economic growth is to be sustained. But sooner or later, labor-intensive growth will tighten the labor market, which increases the bargaining power of labor.

The trade-off between productivity growth on the one hand and the labor-intensity of economic growth on the other can be illustrated in a comparison between the US and Germany. After Reaganomics, the US is emblematic of what Hall & Soskice (2001) call a *Liberalized Market Economy (LME),* with deregulated and highly flexible labor markets; Germany (*before* its labor market reforms in 2002-5) is a good representative of Hall's & Soskice's category of *Coordinated Market Economies (CME)* with 'rigid' labor markets.

It has often been argued that LME are better in radical innovations while CME are better in incremental improvements. This argument has been questioned by Taylor (2004); and, more recently, by Akkermans et al. (2009). But independently of whether the argument about radical vs. incremental innovation holds, in Figures 1-3 we are dealing with labor productivity data; i.e., we have data on the ultimate economic benefits from innovation. And these data give a clear message.

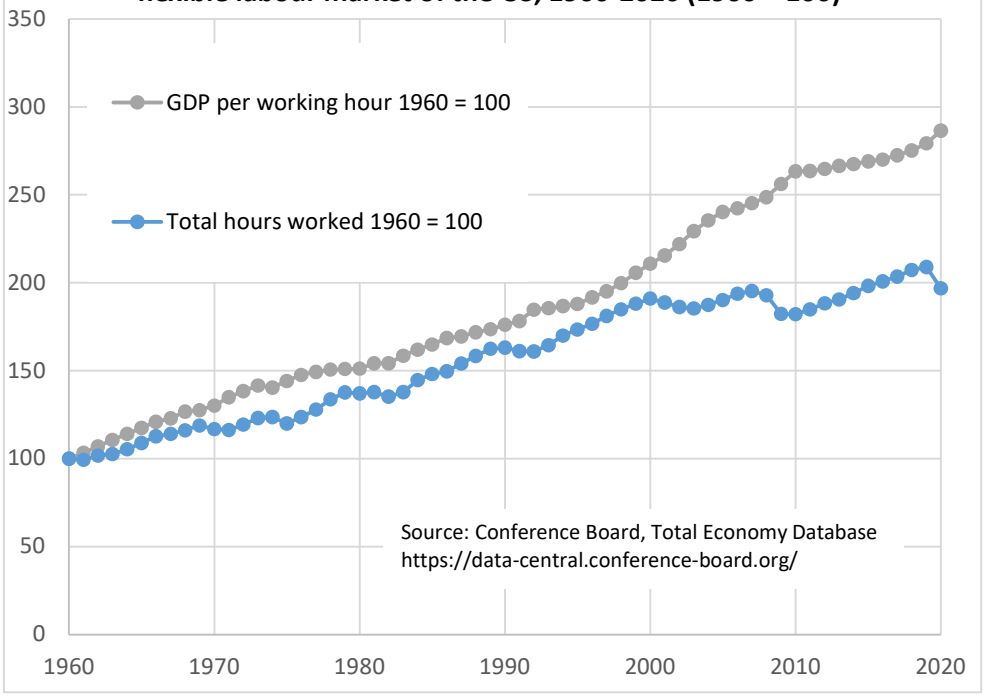
In Figures 2 and 3, all values are set to 1960 = 100. Labor productivity in Germany rises from 100 in 1960 to 450 in 2020, while US labor productivity remains below 300 in the same period. The mirror image of the productivity curves can be seen in labor hours: US economic growth required a doubling of hours between 1960 and 2020 (from 100 to 200). In Germany, labor hours even *declined*

from 100 to 78 (Figure 3), due to high productivity growth. The German pattern of high productivity versus low employment growth is gradually changing after the Hartz-Reforms, although the change is not clearly visible in Figure 3, as the Y-axis is quite compressed.[5]

No wonder the booming American 'job machine' has been used as a key selling point for structural reforms of labor markets. In other words: let us strive for flexible firing, for downwardly flexible wages, for lower minimum wages or for poor social benefits. At first sight, this is annoying for people, but in the end, it is precisely in the interest of the unemployed – it creates jobs!

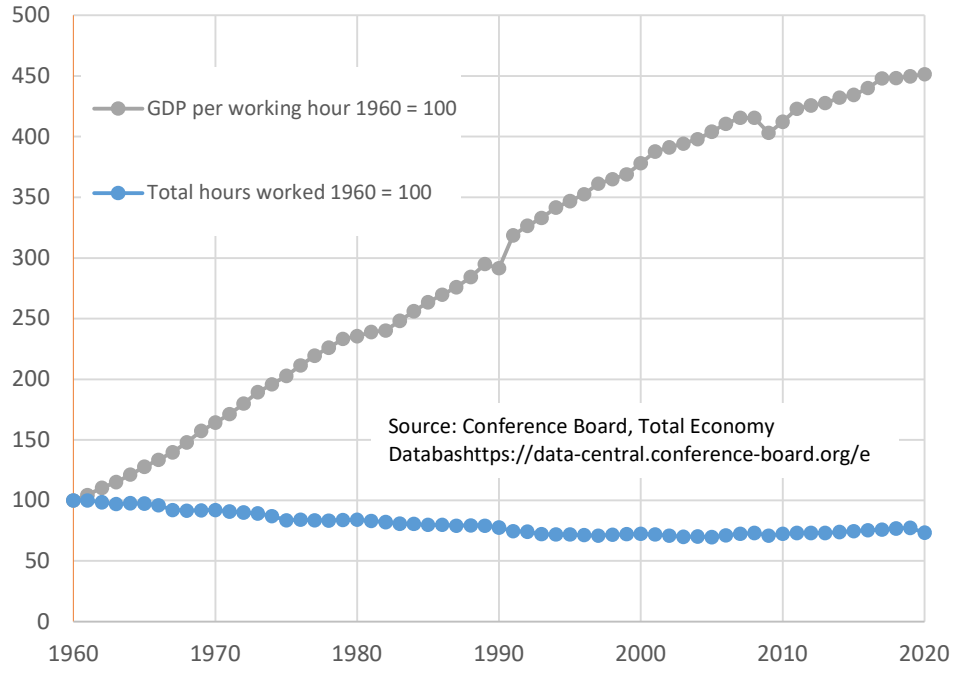
In this context, supply-side economists have repeatedly referred to *Euro-sclerosis*: Old Europe, with its rigid labor markets, high wages, and strong unions, is unable creating jobs. Remarkably, in their discourse on *Euro-sclerosis*, they have always carefully avoided mentioning productivity figures. Still, the productivity-driven German growth model (from before 2005) is preferable: Germans produced more with fewer hours, while Americans had to sacrifice lots of leisure time to achieve growth.

Figure 2: Labor-intensive and low-productive growth in the flexible labour market of the US, 1960-2020 (1960 = 100)



[5] Going back to the original data source, we can calculate the following growth rates: German labor productivity growth 1960-2007: 6.50%, 2007-2024: 0.58%; German growth of labor hours 1960-2007: -0.59%, 2007-2024: +0.35% (Source: https://data-central.conference-board.org/; values for 2023 and 2024 are estimates).

Figure 3: Productivity-driven and labour-extensive growth in the rigid labour market in Germany, *1960-2020* (1960 = 100)



How is it that Germany did not have exorbitant unemployment, even though the total number of hours worked *fell* from 100 to 78 over the 1960-2020 period, while many women and immigrant workers entered the German labor market? The answer lies in the reduction of working hours. The average number of working hours per employee per year in 1975 both in Germany and in the US was (coincidentally) equal to 1,813 hours. In 1995 this number had fallen to 1,531 hours in Germany, but grew modestly in the US: 1,817 hours. In 2020, the ratio is 1,751 hours in the US versus 1,324 hours in Germany (The Conference Board; https://data-central.conference-board.org/).

Perhaps, it is one of the most important victories of supply-siders that governments and trade unions in Europe, since the 1980s, have been discussing about the beneficial effects on employment of wage moderation and labor market reforms rather than about a productivity-driven (and thus labor-*ex*tensive) growth, accompanied by a stepwise, but timely and adequate reduction of standard working times. The latter growth model would also have been better from an ecological viewpoint. Instead, Germany, under the influence of supply-side economists, abandoned the (intelligent) model of productivity-driven growth in favor of a more labor-input driven growth. This low-productive but labor-intensive growth leaves two things to expect:

First, with lower productivity growth, there is less to be (extra) distributed annually between capital, labor, and government; hence, somebody will have to sacrifice income claims. The most plausible outcome is poor income growth for workers and greater austerity pressure for government.

Second, labor-intensive growth and an increasingly tight labor market improve the bargaining power of labor. If a tight labor market results in higher wage cost pressures, this can increase inflation (certainly under low productivity growth), but, following our above arguments, it can also accelerate the diffusion of advanced process technology. The latter can enable the country to switch back to a more productivity-driven economic growth. But there is still an important 'unless': Switching to faster productivity growth *can* happen, *unless* neoclassical economists succeed in time convincing the Central Bank to raise interest rates, with the aim of depressing wages through higher unemployment. In this case, the country will continue a low-productive and labor-intensive growth path.

Finally, it is a problem in this context that economists are used, for more than 150 years, to assuming innovation and productivity as 'exogenous'. This is now untenable. But, of course, this assumption has also been comfortable. Given the ignorance about innovation, it is not realized that highly cumulative innovation regimes suffer from structural reforms of labor markets (e.g., Cetrulo et al. 2019; Hoxha & Kleinknecht 2020, 2023). This leads to lower productivity growth, which increases the pressure for austerity, but also creates a tighter labor market in which wage demands can easily exceed (low) productivity growth, thus enhancing inflation.

If the latter happens, our mainstream economists will probably know nothing better than to revert to primitive methods such as the Volcker Shock of 1979: strangling the economy through high interest rates (preferably supplemented with tight austerity measures), hoping that higher unemployment will ultimately depress wages. And this should make inflation manageable. There is, however, an extra problem to this: after the interest hikes, a weak wage growth reduces again productivity growth (Vergeer & Kleinknecht 2014), which makes the growth of the cake to be distributed even smaller. This, in turn, can create additional inflationary impulses. But it can also increase public budget deficits that then require extra austerity measures. Thus, controlling inflation and government deficits by the anti-inflation hawks may become a lengthy and painful process. It is to be hoped that social-democratic parties in Europe will not (again) take responsibility for such policies. Electoral consequences may be tough.

Fortunately, there are intelligent alternatives. For example, reversing supply-side labor market reforms and re-introducing good insider jobs can enhance innovation and learning. Moreover, gradually tightening labor markets in the OECD improve the bargaining position of labor. Higher wage cost pressure enhances a switch towards higher productivity growth through a quicker adoption of process innovations. Higher productivity gains, in turn, can reduce the tightness in the labor market, but, above all, they also make the cake to be distributed larger. A larger cake can reduce inflationary pressure and creates more fiscal space for government. Such extra fiscal space is more than welcome: projects such as a Green Deal, demographic change, defense, or, more generally, the rebuilding of the public sector after 40 years of supply-side policies simply cost some money.

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Box 1: Summary of main points discussed in paragraph 3

Why do supply-side reforms of labor markets harm innovation and productivity?

1. Structural reforms of labor markets change the balance of power between labor and capital and thus lead to sacrificing wages; the consequences:
   - Less substitution of capital for labor and thus lower productivity.
   - Less 'induced' innovation
   - Slower replacement of older vintages of equipment by new and more productive vintages
   - Less 'creative destruction' of technological laggards by innovative companies
2. Flexible 'hire & fire' shortens job durations in a company → less identification with the company; less trust and loyalty; consequences:
   - Trade secrets and technological knowledge leak more easily to competitors → investments in knowledge are less worthwhile;
   - Low loyalty increases the costs of supervision and control → thicker management bureaucracies that impair the professional autonomy of people;
   - Investments in company-specific training are less worthwhile;
   - Lower returns from learning by doing;
   - Weaker organizational 'memory → old mistakes are repeated;
   - More power for (top) management → more autocratic management and more me-too cases; culture of fear leads to risk-avoidance.
3. Centralized collective bargaining (with government imposing bargained wage rises on everyone in the industry) enhances the diffusion of innovations. In decentralized negotiations (at company level), technological laggards have the option of demanding wage concessions in exchange for maintaining jobs, rather than modernizing equipment or product offerings.
4. For successful automation, technicians often need the experience of the people who are currently doing the work manually. If dismissal is easy, employees do not want to collaborate. People who are afraid of losing their jobs are also less likely to make suggestions to improve inefficient working methods.

Counterarguments by supply-siders:

1. Strong dismissal protection makes it more difficult to transfer workers from old and declining industries to emerging innovative industries.
2. Strong dismissal protection can frustrate labor-saving innovations.
3. Well-protected labor market insiders can appropriate (parts of) the pioneer profits from innovation with their wage demands; this weakens the incentive to take innovative risks.
4. Companies are more likely to engage in risky innovative projects if they know that they can more easily dismiss their employees in the event of failure.
5. Within job-matching theory, it can be argued that easier dismissal means that less productive 'job matches' can be ended more quickly. People therefore also have more chances to find a more productive 'job match'. There will also be fewer 'stuck' or entrenched workers and a greater influx of 'fresh blood': people with new ideas, new networks etc. are good for innovation.
6. In the Fordist tradition, one can argue that people work harder when they fear the threat of being laid off.

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