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The AI Consumption Spiral: An Underestimated Systemic Risk for Economy and Society

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ABSTRACT

Artificial intelligence is transforming economies at a depth that surpasses previous waves of automation. This paper examines whether its application generates a self-reinforcing AI consumption spiral. At the core lies the hypothesis that declining incomes weaken purchasing power, reduce demand, and lead companies to respond to this demand weakness with further automation. This creates a downward spiral that may threaten economic stability and social cohesion. Methodologically, the study combines theoretical model-building with a comprehensive literature review and draws on official data from international organizations. The findings indicate falling real wages despite rising nominal wages, increasing income inequality, and diverging consumption patterns. Particularly problematic is the loss of purchasing power among low-income households with high consumption shares, while wealthier groups with lower consumption propensity benefit. As a result, the demand base of the economy erodes. The socio-political analysis highlights that this shift reinforces inequality, intensifies polarization, and may impair the capacity of democratic institutions to act. Recent theoretical approaches that emphasize demand declines and expectations confirm the risk of a self-sustaining AI consumption spiral. Classical instruments such as retraining or basic income are insufficient to break the cycle. The paper concludes with the thesis that new politico-economic strategies are required to safeguard purchasing power, stabilize expectations, and thereby contain the risk of a consumption spiral triggered by AI.

Keywords: Artificial Intelligence, Employment, Income Inequality, Consumption, Political Economy

INTRODUCTION

The use of artificial intelligence marks one of the most profound technological disruptions of the present era. Unlike earlier waves of automation, it affects not only routine tasks but increasingly also complex decision-making and communication processes. Numerous studies point to far-reaching employment effects, the scale and dynamics of which remain the subject of intense debate (Acemoglu & Restrepo, 2018, 2020; Frey & Osborne, 2013; Arntz et al., 2016). While efficiency gains and productivity increases are evident on the one hand, risks emerge on the other hand for incomes, demand, and social stability. This raises the question of whether the application of AI is merely a sectoral structural transformation or whether it triggers a self-reinforcing feedback loop that may fuel a macroeconomic downward spiral. Economic research has developed different perspectives on the consequences of automation. Keynes (1930), in his "Economic Possibilities for our

Grandchildren," predicted technological progress as a liberation from work, without underestimating the risks of distribution. More recent contributions emphasize both the creation of new tasks and the pressure on medium-skilled segments (Autor, 2015; Brynjolfsson & McAfee, 2014). At the same time, demand-side aspects have come increasingly into focus: if automation reduces incomes, purchasing power declines, leading to a reduction in consumption and demand. This spiral can, in turn, reinforce investment and automation decisions (Bessen, 2019; Moch, 2024).

Against this background, the study formulates a dual research question. First: To what extent does the use of artificial intelligence generate a feedback loop between labor, income, and consumption that leads to a systemic downward spiral? Second: Which economic and socio-political indicators are suitable to empirically demonstrate this dynamic? The economic dimension requires an analysis of employment trends, wage structures, and consumption ratios. The socio-political dimension directs attention to social tensions, institutional strains, and risks of political polarization. The hypothesis is that AI not only replaces jobs but also, through declining incomes, sets in motion a consumption spiral that simultaneously puts pressure on demand, employment, and political stability. Classical countermeasures such as retraining or basic income are, in this scenario, insufficient to break the cycle.

Methodologically, the study follows a qualitative-analytical approach. It combines theoretical model-building with a literature review of seminal works (Keynes, 1930; Autor, 2015; Frey & Osborne, 2013; Arntz et al., 2016). In addition, macro-data from international institutions such as the OECD (2023), ILO (2020), Eurostat (2024), World Bank (2023), and United Nations Statistics Division (2023) are evaluated. More recent impulses stem from demand-side research (Moch, 2024) and expectation-theoretical perspectives (Moch, 2025).

The study is divided into nine chapters. Following the introduction, the theoretical background discusses the foundations of automation and AI. This is followed by the methodology. The central analyses address the economic and socio-political dimensions of the AI consumption spiral. Building on this, more recent perspectives are integrated, followed by the discussion, limitations, and conclusion.

Theoretical Background

The debate on the consequences of technological innovation for work and employment runs through the history of economics. Already in the early phases of industrial transformation, concerns arose that machines could permanently displace human labor. Keynes (1930) referred to this as "technological unemployment," meaning employment losses caused by the rapid progress of productive forces. His analysis, however, was not exclusively pessimistic. He expected that long-term gains in prosperity from productivity growth could compensate for these declines, provided that social distributional policies functioned effectively.

In the present, the contours of this debate have sharpened considerably. Works such as those of Frey and Osborne (2013) warned early on of a broad wave of automation that threatened nearly half of all jobs in advanced economies. This assessment ignited an intensive controversy. Arntz, Gregory, and Zierahn (2016) qualified the danger, pointing to the high heterogeneity within occupations. It is not entire occupations but rather bundles of specific tasks that are automatable. Their estimates show that the potentially endangered jobs in the OECD area are significantly fewer than in the projections of Frey and Osborne. Acemoglu and Restrepo (2018, 2020) extended the debate by adding another dimension. They argue that automation not only has a substitution effectreplacing human labor with machinesbut also a productivity and complementarity effect. Whether overall employment rises or falls

therefore depends on how strongly demand for complementary tasks grows. Their empirical studies of the United States show that the use of robots has produced job losses in certain sectors that have not been offset to the same extent by new tasks.

Bessen (2019) emphasizes the role of demand in this process. Automation can create short-term efficiency gains, but if these gains do not flow back into the economy in the form of rising incomes and consumer spending, demand weakness threatens. His argument highlights a feedback loop: declining incomes reduce purchasing power, which lowers aggregate demand and increases pressure on firms to cut costs through further automation.

Brynjolfsson and McAfee (2014) broaden this perspective in The Second Machine Age by asking whether digital technologies permanently alter the classical mechanisms of the labor market. They show that digital automation replaces activities previously considered safe and that the resulting inequality represents not only an economic but also a societal challenge. This makes it clear that the theoretical background is shaped by three central tensions. First, the balance between substitution and complementarity of labor and technology. Second, the question of whether productivity gains translate into rising demand or instead into rising inequality. Third, the uncertainty as to whether long-term adjustment mechanisms, as Keynes assumed, remain effective in the digital age.

In addition to Keynesian and institutional approaches, the Austrian School points to the adaptive capacity of free markets. It emphasizes entrepreneurship, competition, and decentralized expectations as forces that can dampen instability. Moch (2025) takes up this tradition and shows that in phases of technological disruption it is precisely expectations and market processes that make the decisive difference. Investments do not follow only current demand but also confidence in future consumption patterns. If this confidence is strengthened, markets can stabilize dynamics. If it breaks down, the same mechanisms intensify the downward spiral. This makes it clear that the AI consumption spiral lies in the tension between state intervention and market self-regulation. For analyzing a possible AI consumption spiral, these theoretical strands are of central importance. They demonstrate that automation is more than a technical substitution phenomenon. It penetrates demand processes, alters income distributions, and thereby affects the stability of markets and institutions. Korinek and Stiglitz (2017) emphasize that AI can, in the long run, shift income distribution and exacerbate structural unemployment if political responses are absent. The next section therefore explains how these theoretical insights are translated into a qualitative-analytical research design that captures both economic and socio-political dimensions.

METHODOLOGY

The study follows a qualitative-analytical research design, grounded in theoretical modeling and the systematic evaluation of existing literature. Given the complexity of the subjectthe potential feedback effects between automation, income, and consumptionthis approach proves appropriate, as it integrates different theoretical perspectives and critically situates empirical data.

The central starting point is theoretical model-building. Its purpose is to heuristically capture the logic of a potential AI consumption spiral. It examines how automation decisions affect income, how these income changes alter the consumption ratio and thus aggregate demand, and to what extent this, in turn, creates incentives for further automation. The model is not intended as a precise forecasting tool, but as an analytical structure that clarifies relationships and makes hypotheses testable.

The literature analysis forms the second pillar of the methodology. It draws on selected key works that describe the relationship between automation, labor, and demand. These include classical texts such

as Keynes (1930), who addressed the problem of technological unemployment, as well as contemporary works by Autor (2015), Brynjolfsson and McAfee (2014), Frey and Osborne (2013), and Arntz et al. (2016). These contributions provide different perspectives on the scope of automation and its consequences. In addition, demand-side perspectives (Bessen, 2019; Moch, 2024) as well as expectation-theoretical approaches (Moch, 2025) are incorporated into the analysis. Moreover, macro-data from international institutions are employed to examine the empirical plausibility of the theoretical assumptions. Relevant data sources include the OECD (2023), the ILO (2020), the World Bank (2023), Eurostat (2024), and the UN databases (United Nations Statistics Division, 2023). These institutions provide official, comparable, and methodologically validated statistics on employment, income, and consumption, which are central to the study of feedback dynamics.

To strengthen robustness, triangulation is applied. This refers to the cross-checking of different types of data and perspectives: theoretical models, empirical studies, and macroeconomic indicators. Through this comparison, biases of individual approaches can be reduced and systemic interconnections more effectively captured. Recent studies emphasize securing AI expertise and preventing skill shortages in order to strengthen the supply side of the labor market (Oberdieck & Moch, 2024). While such approaches address the availability of skilled workers, they do not capture demand-side dynamics and the risks of declining purchasing power.

Since the developments under investigation constitute a dynamic phenomenon that is only beginning to emerge empirically, an exploratory approach is chosen. This allows for the formulation and plausibility testing of hypotheses without claiming definitive quantification. The aim is to develop a heuristic analytical tool that can guide future empirical research. The methodology is thus designed to link theoretical assumptions with empirical indicators without exceeding the limits of the available database. It lays the foundation for the following chapters, which first examine the economic and then the socio-political dimension of the AI consumption spiral.

Economic Dimension of the AI Consumption Spiral

The economic dimension of the AI consumption spiral can be captured through three central indicators: employment development, wage structure, and the consumption ratio. These constitute the mechanisms through which feedback effects between automation, income, and demand unfold. First, employment development is decisive. Acemoglu and Restrepo (2020) demonstrate for the United States that additional industrial robots in affected regions reduce employment and dampen wages, without new tasks fully compensating for these losses. For Europe, Eurostat (2024) notes that while labor markets remain overall stable, sectoral shifts are increasing. Mid-level qualification segments are particularly affected. An analysis by Cedefop (Pouliakas, 2018) shows that around 14 percent of jobs in the EU are at very high risk from automation. These figures illustrate that automation is not a uniform phenomenon, but one that produces particularly severe disruptions in specific industries and regions. The feedback effects become even more evident in the wage structure. While nominal wages in the OECD area rose by just over 4 percent on average in 2023, inflation stood at 6.6 percent. The result was a decline in real wages in almost all member states (OECD, 2023). For Germany, the OECD (2025, Component 5) reports that real wages were back in positive territory at the beginning of 2025, but still remained slightly below their 2021 level. Despite nominal recovery, purchasing power thus remains constrained. At the same time, wage dispersion is intensifying. According to Eurostat (2024) and the ILO (2020), the top 20 percent of households in Germany

earn around 4.5 times as much income as the bottom 20 percent. Since low-income households consume a larger share of their income, this shift has a dampening effect on aggregate demand.

The household consumption ratio provides insight into the demand base of the economy. In Germany, it stood at 53.6 percent of GDP in mid-2025 (Eurostat, 2024). At the same time, Eurostat (2020) shows that the top 20 percent of households consume about 2.4 times as much per capita as the bottom 20 percent. Particularly striking is that households in the lowest income quintile received only 3.6 percent of total disposable income in 2020, yet accounted for 4.0 percent of total consumption expenditures. This underscores their high consumption ratio and the danger that income losses in this segment directly impact aggregate demand.

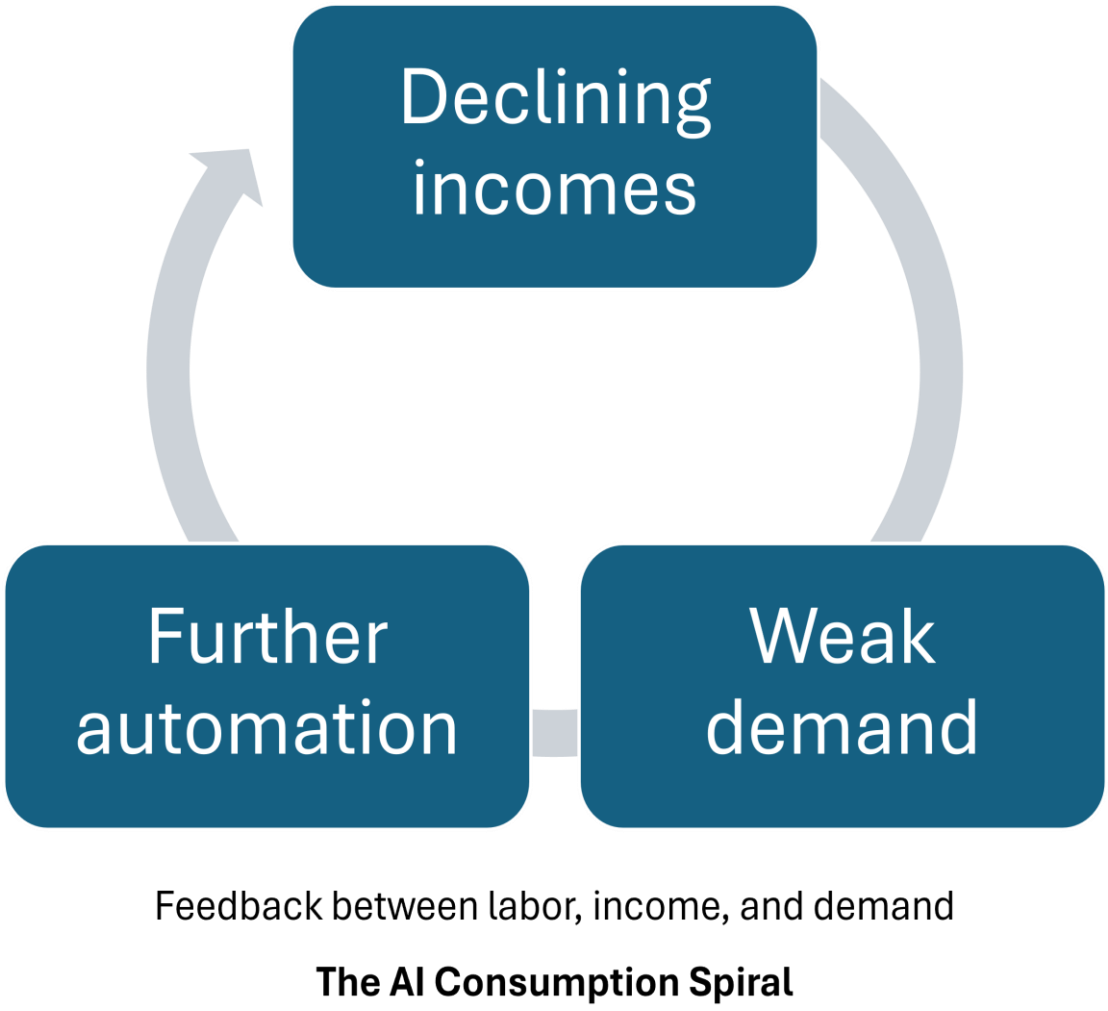

Figure 1. The AI Consumption Spiral - Feedback between labor, income, and demand. Own illustration based on Acemoglu & Restrepo (2020), Bessen (2019), Brynjolfsson & McAfee (2014), and Moch (2024, 2025).

The connection of these indicators illustrates the spiral dynamic. Employment losses concentrate on middle-income groups, while real wages stagnate or decline and inequality increases. Since poorer households consume a larger share of their income but simultaneously lose purchasing power, the aggregate consumption ratio falls. Firms respond to weak demand with cost-cutting, which increases the incentive for further automation. This cycle reinforces itself and can trigger a systemic downward spiral. At the macroeconomic level, productivity gains from automation do not

automatically translate into higher prosperity. The OECD (2023) warns that without redistribution policies; demand shortfalls threaten to limit long-term growth potential. The United Nations Statistics Division (2023) shows that countries with high inequality often experience weak demand growth despite technological progress. For Germany, current data on real wages, consumption ratios, and income inequality illustrate that the risk of a self-reinforcing AI consumption spiral is empirically plausible.

It is therefore clear that automation is not merely a question of technical efficiency. It fundamentally alters macroeconomic relationships by placing demand, income, and employment in a fragile balance. The economic indicators demonstrate that a cycle of declining purchasing power, weaker demand, and accelerated automation can emerge a cycle that does not return to equilibrium on its own but requires political intervention.

Socio-Political Dimension

The economic effects of automation do not remain without social and political consequences. When employment opportunities shrink, wages stagnate, and the consumption ratio declines, social inequalities intensify. These inequalities are not only a distributional issue but also feedback directly into social cohesion and the political system. Stiglitz (2015) emphasizes that rising inequality is not merely a matter of justice but threatens economic stability and democratic institutions. His analysis shows that income and wealth concentration create imbalances of political power, which in turn make reforms more difficult. In the context of AI-driven automation, this means: the more income shifts toward upper-income groups, the weaker the political majorities that could enforce compensatory redistribution policies.

Current data underscore the urgency of this development. In Germany, the income ratio between the top and bottom quintiles (S80/S20 ratio) stood at around 4.5 at the end of 2024, according to Eurostat. Eurostat data on consumption inequality further show that the richest 20 percent of households consume more than twice as much per capita as the poorest 20 percent. This makes clear: when middle- and lower-income groups stagnate, this not only weakens aggregate demand but also widens the social divide in consumption behavior. Standing (2017) describes in this context the emergence of a “precariat”a growing population group living under insecure working conditions, low wages, and limited social protection. This precariat is not only economically disadvantaged but also politically alienated. It thus provides the social breeding ground for polarization and populist movements. The OECD (2023) explicitly warns of the political tensions that may result from labor market risks due to automation.

Polarization is reinforced by the loss of economic participation. Empirical studies from the United States show that regions with particularly severe job losses due to automation disproportionately vote for populist and radical parties (Acemoglu & Restrepo, 2020). Applied to Europe, electoral behavior analyses indicate that economically weakened regions display a higher tendency to support parties at the political margins. The mechanism is similar: when parts of the population feel excluded from economic progress, they turn away from established institutions. Political polarization is also intensified by the perception that technological gains are unequally distributed. While highly qualified workers benefit from AI-supported tasks, medium- and low-skilled groups face increasing pressure. The ILO (2020) shows that young people in countries with high automation risk are disproportionately affected by unemployment. These age cohorts develop lasting mistrust toward institutions, which can weaken the legitimacy of political systems.

The institutional risks are considerable. When demand weakens, consumption

patterns diverge, and entire groups fall economically behind, social trust risks eroding. Summers (2013) speaks in this context of "secular stagnation," a prolonged phase of weak growth that is not only economically but also politically destabilizing. In such a constellation, feedback loops arise: economic inequality generates political polarization, polarization blocks effective economic policy responses, and this further exacerbates inequality. This dynamic demonstrates that the AI consumption spiral extends far beyond economic indicators. It threatens the foundations of social cohesion and increases the likelihood of institutional deadlock. The deeper the divide between winners and losers of automation, the lower the chances that democratic systems will remain capable of action.

The socio-political dimension of the AI consumption spiral shows that inequality and political polarization are closely linked. Automation and AI reinforce existing divides and create new fault lines. The combination of economic pressure, growing inequality, and political fragmentation carries the risk that feedback loops become entrenched not only in markets but also within institutions themselves.

Integration of New Perspectives

The preceding analyses have shown that automation and artificial intelligence not only trigger technological substitution processes but also intervene deeply in demand and distribution mechanisms. While the classical literature long focused on the interplay of substitution, complementarity, and productivity, more recent work increasingly emphasizes feedbacks on the demand side as well as the role of expectations. Moch (2024) highlights that the consequences of AI and automation cannot be understood solely through employment figures or production indicators. What is decisive is how changing incomes affect purchasing power and thus aggregate demand. His study of European labor markets shows that even with stable overall employment, the shift toward precarious and low-paid work weakens consumption. This confirms the hypothesis that demand shortfalls constitute a central dimension of AI-driven structural change. This approach expands traditional labor market research by stressing the endogeneity of demand: income and consumption are not only outcomes but also driving forces of economic development.

Moch (2025) goes a step further by advancing the theoretical debate from neoclassical theory toward the Austrian School. He shows that expectations and uncertainties play a far greater role in an automation-driven economy than is assumed in classical equilibrium models. From the perspective of the Austrian School, it is precisely free market processes, entrepreneurial initiative, and competition that enable adjustment and generate stability. Investment decisions by firms are not only a response to current demand but are strongly shaped by expectations about future consumption patterns. If the prospect of weak purchasing power colors these expectations negatively, investments are withheld and employment weakens a dynamic that can further reinforce the AI consumption spiral.

This perspective clarifies why a downward spiral can become self-perpetuating. While Keynesian approaches emphasize the multiplier effect, the Austrian perspective highlights that expectations and market processes can trigger self-fulfilling dynamics both negative and positive. In the context of AI, this means: if firms expect demand to remain permanently weak, automation strategies intensify the downturn. If, however, confidence in market adaptability and investment willingness is strengthened, the same dynamic can be steered in a stabilizing direction. The integration of these more recent approaches sharpens the view of the systemic dimension of the AI consumption spiral. First, it becomes evident that a purely supply-side perspective is inadequate. Productivity gains only unfold their effect if they are translated

into demand via rising incomes. Second, macroeconomic stability is shown to depend significantly on expectations shaped by technological change. Third, the combination of Keynesian and Austrian perspectives makes clear that political steering and market self-regulation cannot be considered in isolation, but together determine whether the AI consumption spiral is curbed or amplified.

DISCUSSION

The preceding analyses suggest that the intensified use of artificial intelligence can set in motion a feedback loop between labor, income, and consumption that generates a systemic downward spiral. This spiral arises when declining employment and stagnating wages reduce purchasing power, weaken the consumption ratio, and thereby undermine the demand base of the economy. Firms respond to this weak demand with further automation strategies, which reinforces the feedback. Empirical data support this assumption. The OECD (2023) reports that real wages have fallen in nearly all member states, as nominal wages rose more slowly than inflation. For Germany, the OECD (2025) shows that real wages at the beginning of 2025 were slightly above the previous year's quarter, yet still had not reached the 2021 level. At the same time, income inequality remains high: the ratio of the top 20 percent to the bottom 20 percent is around 4.5 (Eurostat, 2024). Eurostat data also show that the consumption expenditures of the top 20 percent are more than twice as high as those of the bottom 20 percent, even though the latter consume a larger share of their income. This constellation leads to a structurally weaker demand base. The theoretical considerations of Bessen (2019) and Moch (2024) confirm that demand weakness can be an independent driver of economic instability. As Korinek and Stiglitz (2017) also emphasize, AI could, without flanking measures, deepen inequality and undermine economic stability.

Nevertheless, there are significant counterarguments. Technological innovation also creates new fields of activity, particularly in AI-supported services, platform work, and digital infrastructure. Acemoglu and Restrepo (2018) point out that complementarity effects can arise when machines complement rather than substitute human labor. Historical experience further shows that labor markets can develop adjustment mechanisms. Autor (2015) argues that new tasks, previously nonexistent, can in the long run compensate for automated activities. Policy measures such as minimum wage increases or qualification initiatives also exert a dampening effect. In Germany, the OECD shows that statutory minimum wages relative to the median wage (Kaitz ratio) have risen noticeably since 2019. This has partly stabilized the purchasing power of low-income households (OECD, n.d.). Nonetheless, the findings show that these mitigating factors are insufficient to fundamentally break the spiral dynamic. While retraining can qualify workers for new activities, it does not alter the underlying distribution of demand. A universal basic income could temporarily secure purchasing power, but it does not resolve the problem of structural inequality and negative expectations. Moch (2025) emphasizes that expectations are central: if firms and households anticipate persistently weak demand, this expectation shapes their behavior and reinforces the spiral. In such a situation, classical instruments fall short.

Policy debates often highlight training, reskilling, and the expansion of AI expertise as key strategies to mitigate automation risks (Oberdieck & Moch, 2024). While these measures are relevant for preventing skill shortages, they leave unresolved the structural erosion of aggregate demand that characterizes the AI consumption spiral.

The hypothesis that AI can trigger a self-reinforcing consumption spiral is thus plausibly substantiated by empirical and theoretical evidence. At the same time, it is not deterministic: there are adjustment and

countervailing forces that can mitigate its course. The decisive factor is whether political and institutional measures stabilize the demand side and safeguard confidence in future purchasing power. Without such measures, however, the positive productivity gains of AI risk not being translated into prosperity for broad segments of the population but instead deepening inequality and polarization. The discussion therefore shows that the hypothesis is confirmed in its essentials, but must be qualified by the possibility of compensation and political design. The danger of an AI consumption spiral is real, but it is not an unavoidable automatism. Whether it unfolds depends decisively on the political responses that can break the cycle of declining incomes, weak demand, and growing inequality.

LIMITATIONS

The present study is subject to several limitations that must be considered when interpreting the results. A central problem lies in the data situation. Since the use of artificial intelligence in many sectors is still at an early stage, only limited long-term data are available. Many of the figures used here, such as those on real wages, consumption ratios, or automation risks, refer to short periods and do not allow reliable statements about long-term trends. This increases uncertainty in assessing whether the observed effects are temporary or permanent. In addition, the delineation of automation effects in the statistics is methodologically challenging. Shifts in employment may be attributable to technological changes as well as to cyclical or institutional factors. Even official data from the OECD, Eurostat, or the ILO can therefore only partially isolate the extent to which AI and automation have actually caused the developments observed. Another methodological issue concerns theoretical model-building. The developed model of the AI consumption spiral is deliberately designed as heuristic and exploratory. It does not claim to provide precise forecasts but serves as an analytical instrument to make feedback loops visible and to formulate hypotheses. The results should therefore be understood as preliminary indications that require further empirical validation.

Limitations also arise from international comparability. While the study draws on data from international institutions, national labor markets, institutions, and social policies differ significantly. What is observed empirically in the United States cannot be readily transferred to Europe or other world regions. Finally, the socio-political dimension is difficult to measure. Indicators such as polarization, trust in institutions, or the degree of political fragmentation cannot be captured with the same precision as employment or wage figures. Statements in this area are therefore more strongly based on qualitative findings and theoretical interpretations.

Overall, the study is deliberately exploratory in nature. Its aim is to develop a heuristic analytical tool that makes interconnections visible, highlights hypotheses, and stimulates future empirical research. The results are to be understood as a contribution to the debate, not as definitive empirical confirmation.

CONCLUSION

Artificial intelligence generates significant efficiency gains while simultaneously transforming the fundamental dynamics of labor, income, and consumption. The results of this study show that such gains do not automatically translate into broad-based prosperity. There is a risk of a feedback loop in which declining real wages, rising inequality, and a shrinking consumption ratio undermine the demand base of the economy. When productivity gains are used primarily for cost reduction, a cycle emerges in which short-term efficiency produces long-term instability.

The hypothesis of an AI consumption spiral is supported by the findings. Countervailing forces exist, such as new fields of employment or policy measures, but they

are insufficient to break the cycle on their own. Particularly critical is the expectation dimension. If firms and households anticipate persistently weak demand, this shapes their behavior and amplifies the spiral. This underscores the necessity of incorporating demand-side and expectation-driven perspectives more strongly into economic analysis.

The political implications are clear. Without targeted interventions, technological development risks deepening inequality, weakening social cohesion, and undermining democratic capacity for action. Classical instruments such as retraining or basic income have only limited effect. Alongside new state strategies, market mechanisms in the sense of the Austrian School may also play a role. A free-market economy that strengthens entrepreneurship, decentralized decision-making, and competition can stabilize expectations and accelerate adjustment processes.

In conjunction with demand-side stabilization measures, this creates the opportunity to slow the spiral dynamic and harness the positive potential of AI for broad-based prosperity. The analysis therefore confirms the thesis that the AI consumption spiral has so far been underestimated, even though it has the potential to draw the economy and society into a systemic downward spiral.

Declaration by Authors

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