When Stabilizers Destabilize: AGI and the Structural Vulnerability of Contribution-Based Welfare States

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Abstract

Contribution-based welfare systems fund unemployment benefits through payroll taxes and employment-linked social insurance. This paper analyzes the structural fiscal vulnerability of such systems to AGI-induced labor market disruption. Using Germany as a case study, three White-Collar substitution scenarios (10%, 50%, 70%) are modeled and their fiscal consequences traced through the existing welfare architecture. Even conservative estimates double current unemployment spending; moderate scenarios would consume over 60% of the federal budget. The core finding is that automatic stabilizers, mechanisms designed to cushion cyclical downturns, become destabilizers when the underlying shock is structural: rising benefit expenditure compounds with shrinking contribution revenue into a fiscal double-bind. This paper introduces the concept of *stabilizer inversion* to describe this phenomenon. Three policy response categories are identified: alternative financing mechanisms, universal basic income complements, and adaptive fiscal triggers. The analysis does not predict AGI timelines; it maps structural vulnerability regardless of when such capabilities emerge.

1 Introduction

Advanced welfare states have built elaborate safety nets around employment. Unemployment insurance, social assistance, and active labor market programs absorb the costs of job loss and smooth the path back to work. In contribution-based systems like Germany's, these programs are financed primarily through payroll deductions, a structure that ties fiscal capacity directly to employment levels.

This paper analyzes the structural fiscal consequences of AGI-induced labor substitution for contribution-based welfare systems. Germany presents a paradigmatic case: as a Conservative/Corporatist welfare state (Esping-Andersen, 1990) with benefits tied to employment contributions, and a Coordinated Market Economy (Hall & Soskice, 2001) with institutional complementarities that amplify labor-market shocks. Using this case, the analysis models three substitution scenarios and traces their effects through the existing institutional architecture. The core finding is a fiscal double-bind: as employment falls, benefit expenditure rises while contribution revenue shrinks. The automatic stabilizers designed to cushion cyclical downturns become cost amplifiers under structural displacement. The IMF (International Monetary Fund, 2024) and OECD (OECD, 2023) have examined AI's effects on automatic stabilizers, yet neither models the structural fiscal breakdown that occurs when stabilizers themselves invert under high-substitution scenarios.

The paper contributes three findings. First, even conservative White-Collar substitution estimates (10%) would double Germany's unemployment-related spending. Second, the contribution-based financing mechanism, not merely the benefit structure, creates structural vulnerability to employment shocks. Third, policy responses must address the asymmetry between technological diffusion speed and fiscal adjustment capacity; the analysis identifies alternative financing, basic income complements, and adaptive fiscal triggers as relevant mechanisms.

2 Theoretical Framework

This paper examines the fiscal impact of AGI on Germany's welfare system, specifically Chapter 1101 of the federal budget. Three underlying theses guide the analysis: (1) AGI will emerge as a transformative technology; (2) AGI will constitute a technological shock to labor markets; (3) this shock will manifest primarily through White-Collar employment disruption.

AGI is defined as a system capable of performing most economically valuable cognitive tasks at or beyond human level. The analysis focuses on White-Collar workers (employees in knowledge-intensive, analytical, and coordination roles) who constitute the primary exposure group. Germany's service sector employs 75.9% of the workforce (34.8 million); approximately half of these are White-Collar positions (17.4 million), representing the AGI-exposed labor segment. This estimate is conservative: Eloundou et al. (2024) found that over 80% of US workers already have at least 10% task exposure to current large language models alone, systems far below AGI-level capabilities. This finding underscores both the substantial concentration of cognitive work in modern economies and the potential scale of AGI-induced displacement.

The concept of *stabilizer inversion* captures the core vulnerability: automatic fiscal mechanisms designed for cyclical downturns amplify rather than dampen structural shocks. When employment-linked stabilizers face permanent displacement rather than temporary recession, their countercyclical logic inverts.

Labor markets adjust to technological change through retraining, new task creation, and wage adaptation. However, AGI differs from previous automation waves in diffusion speed. Competitors adopting AGI create competitive pressure for rapid deployment; strong employment protection laws prevent gradual workforce adjustment; firms face cost pressure leading to concentrated layoffs or insolvency. If AGI capabilities diffuse faster than adjustment mechanisms operate, the shock becomes structural rather than cyclical.

Germany is a paradigmatic case of institutional vulnerability: its Conservative/Corporatist welfare state (Esping-Andersen, 1990) and Coordinated Market Economy (Hall & Soskice, 2001) link benefits and stability directly to long-term employment. These features create a fiscal double-bind: large-scale task substitution simultaneously increases benefit expenditure while reducing contribution revenue.

3 Scenario Analysis

The preceding framework establishes that AGI-induced task substitution would constitute a strategic shock to contribution-based welfare systems. To quantify the fiscal exposure, we present three scenarios as sensitivity tests under Knightian uncertainty. These are not predictions of AGI development timelines or adoption rates; they are structured what-if analyses that reveal the relationship between substitution magnitude and fiscal consequence. The baseline employment data is drawn from Destatis (Statistisches Bundesamt, 2025); fiscal expenditure figures are from the German federal budget, specifically chapter 1101 of the Bundeshaushalt (Bundesministerium der Finanzen, 2025), which covers unemployment benefits (Buergergeld, ALG I), short-time work compensation, and active labor market programs. To isolate the relevant fiscal mechanisms, this analysis focuses on wage tax revenues and unemployment-related transfers, abstracting from potential effects on other government revenue and expenditure channels.

Note on uncertainty: The following scenarios are educated estimates designed to illustrate the severity of potential fiscal exposure. Actual substitution rates remain deeply uncertain; these scenarios serve as sensitivity tests rather than predictions.

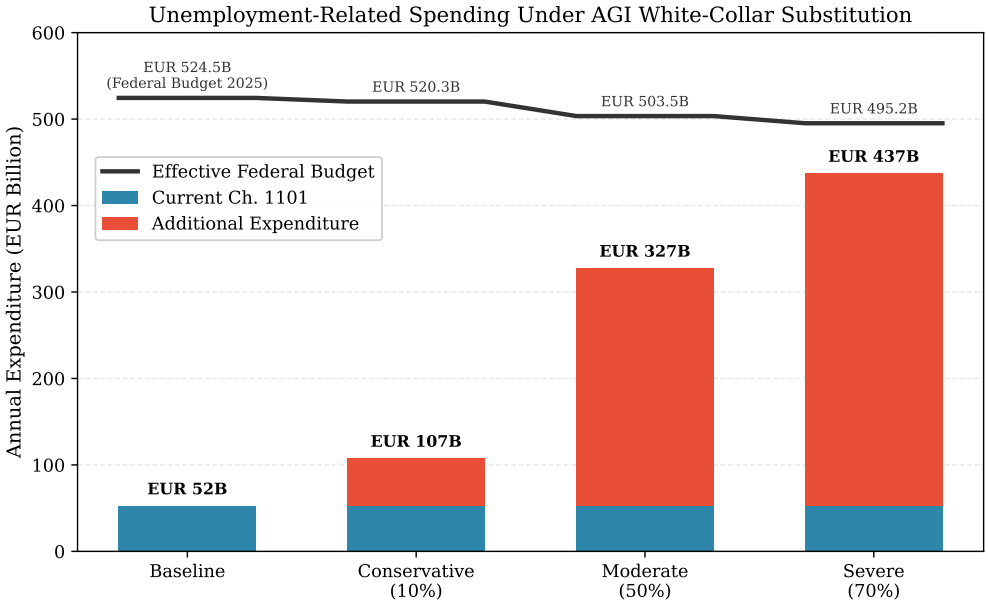

Figure 1: Unemployment-related spending under three AGI White-Collar substitution scenarios. The stepped line shows the effective federal budget decreasing as tax revenue shrinks with rising unemployment.

Baseline. Germany has 45.8 million employed persons and 1.65 million unemployed (2025). Annual expenditure under budget chapter 1101 totals EUR 52.2 billion, yielding an average fiscal cost of approximately EUR 31,600 per unemployed person per year. The White-Collar workforce identified in the preceding section (17.4 million workers in the service sector) constitutes the AGI-exposed employment base.

Scenario 1 (Conservative): 10% White-Collar substitution. This conservative baseline assumes gradual adoption with significant friction. If 10% of White-Collar positions become economically substitutable by AGI systems, Germany would face approximately 1.74 million additional unemployed persons. At EUR 31,600 per person per year, this corresponds to additional annual expenditure of approximately EUR 55 billion, more than doubling current chapter 1101 spending to approximately EUR 107 billion.

Scenario 2 (Moderate): 50% White-Collar substitution. Anthropic CEO Dario Amodei has warned that AI could eliminate 50% of entry-level White-Collar jobs within five years, potentially causing unemployment to spike to 10-20% (Amodei, 2025). If this substitution rate applies to Germany's White-Collar workforce, additional unemployment rises to approximately 8.7 million persons. Additional annual expenditure reaches approximately EUR 275 billion. Total chapter 1101 expenditure would approach EUR 327 billion, roughly 62% of the entire current federal budget.

Scenario 3 (Severe): 70% White-Collar substitution. Cognizant's "New Work, New World 2026" report finds that 93% of jobs are potentially affected by AI, with average task exposure scores reaching 39% (Cognizant, 2026). Under a severe scenario where 70% of White-Collar positions become substitutable, additional unemployment rises to approximately 12.2 million persons. Additional annual expenditure reaches approximately EUR 385 billion. Total chapter 1101 expenditure would approach EUR 437 billion. For reference, the entire German federal budget for 2025 is EUR 524.5 billion. Under this scenario, unemployment-related spending alone would consume over 83% of current federal expenditure.

The fiscal double-bind. Rising expenditure is only half the problem. As employment falls, the contribution base (payroll taxes and social insurance contributions that fund the system) shrinks proportionally. Germany's wage tax revenue totals EUR 110.5 billion annually, approximately EUR 2,400 per employed person. Each displaced worker thus represents both increased expenditure (EUR 31,600) and lost tax revenue. Under Scenario 1, tax revenue loss reaches EUR 4.2 billion; under Scenario 2, EUR 21 billion; under Scenario 3, EUR 29 billion. This reduces the effective federal

budget to EUR 495 billion in the severe scenario, meaning unemployment spending would consume 88% of available resources rather than 83% of the nominal budget.

Germany's welfare architecture is contribution-based: benefits are financed primarily through deductions from wages and employer contributions, not general taxation. Fewer employed workers means less contribution revenue, which means either higher per-capita contributions on remaining workers, benefit reductions, or deficit financing. This creates a self-reinforcing cycle where the system faces rising costs and falling revenue simultaneously, the *stabilizer inversion* identified in the theoretical framework (Figure 2).

Even the conservative scenario produces expenditure that rivals the entire current chapter 1101 budget. The moderate and severe scenarios reveal a threshold effect: once substitution crosses certain levels, the fiscal burden enters territory that no incremental policy adjustment can address within existing institutional frameworks.

4 Policy Proposals

The structural vulnerabilities identified above call for policy responses that address the fiscal double-bind at its source rather than treating its symptoms. As the contribution base erodes with declining employment, alternative revenue streams become structurally necessary. A robot tax or AI value-added tax on firms deploying AGI systems could partially offset this erosion (Brookings Institution, 2026; International Monetary Fund, 2024). The challenge lies in enforcement: unlike industrial robots, AGI systems are non-physical and their deployment difficult to meter.

Universal basic income elements (partial citizen dividends, negative income taxes, or minimum income guarantees) could serve as structural complements to the contribution system, not replacements for it. Preliminary estimates suggest that if AI productivity reaches 3-5 times human labor output, a 33% tax on AI-generated profits could fund transfers equivalent to 11% of GDP (Nayebi, 2025). The analytical point is decoupling: a portion of income support must be delinked from employment history if that history becomes structurally unavailable.

The threshold effect observed in the scenario analysis makes adaptive mechanisms particularly relevant. Automatic fiscal triggers (expenditure adjustments activated when unemployment exceeds defined thresholds) would convert passive stabilizers into active rebalancing mechanisms (International Monetary Fund, 2024). Such triggers address the core asymmetry this paper identifies: technological diffusion operates at market speed while fiscal adjustment operates at legislative speed. These mechanisms are complementary; detailed implementation design lies beyond this paper's scope.

5 Conclusion

Germany's contribution-based welfare system faces a fiscal double-bind under AGI-induced White-Collar substitution: rising benefit expenditure compounds with shrinking contribution revenue into structural fiscal stress. Even conservative substitution estimates (10%) produce expenditure rivaling current unemployment spending; moderate scenarios (50%) would consume over 60% of federal resources. The core finding is that automatic stabilizers, designed to cushion cyclical downturns, become destabilizers when the underlying shock is structural and the contribution base itself is diminished. This paper introduces stabilizer inversion as the conceptual frame for this phenomenon.

Beyond immediate fiscal implications, AGI-induced labor displacement raises fundamental questions about the organization of society. If cognitive work becomes largely substitutable, how will capitalist power relations be negotiated in a society where employment is no longer central? Work may evolve toward domains where AGI faces limitations: physical labor, creative expression, interpersonal care. Alternatively, mass unemployment without adequate policy response poses risks to democratic stability, as economic insecurity historically correlates with political polarization.

The central argument is that labor markets represent the primary transmission mechanism through which AGI will affect social and political systems. Policy responses must address the asymmetry between technological diffusion speed and fiscal adjustment capacity. Implementation design, comparative analysis across welfare state types, and the broader societal implications of work transformation remain priorities for future research.

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A Fiscal Model Derivations

This appendix presents the derivations underlying the scenario calculations in Section 3.

A.1 Baseline Parameters

- Total employed persons (Germany, 2025): $E = 45.83$ million (Statistisches Bundesamt, 2025)
- Total unemployed persons: $U_0 = 1.65$ million
- Service sector share: $\sigma = 0.759$ (75.9%)
- Service sector employment: $E_{service} = E \times \sigma = 34.79$ million
- White-Collar share of service sector: $\omega = 0.50$ (conservative estimate)
- White-Collar employment (AGI-exposed): $E_{WC} = E_{service} \times \omega = 17.39$ million
- Chapter 1101 expenditure: $C_0 =$ EUR 52.2 billion (Bundesministerium der Finanzen, 2025)
- Average fiscal cost per unemployed: $c = C_0/U_0 =$ EUR $31,600$/year
- Wage tax revenue: $T_0 =$ EUR 110.5 billion
- Average wage tax per employed: $t = T_0/E =$ EUR $2,411$/year

A.2 Scenario Calculations

For substitution rate $s \in \{0.10, 0.50, 0.70\}$:

$$\Delta U(s) = s \cdot E_{WC} = s \times 17.39\text{M} \tag{1}$$
$$\Delta C(s) = c \cdot \Delta U(s) \tag{2}$$
$$\Delta T(s) = t \cdot \Delta U(s) \quad \text{(tax revenue loss)} \tag{3}$$
$$C_{total}(s) = C_0 + \Delta C(s) \tag{4}$$

Scenario 1 ($s = 0.10$):

$$\Delta U = 0.10 \times 17.39\text{M} = 1.74\text{M}$$
$$\Delta C = 31,600 \times 1.74\text{M} = \text{EUR } 55.0\text{B}$$
$$\Delta T = 2,411 \times 1.74\text{M} = \text{EUR } 4.2\text{B}$$

Scenario 2 ($s = 0.50$):

$$\Delta U = 0.50 \times 17.39\text{M} = 8.70\text{M}$$
$$\Delta C = 31,600 \times 8.70\text{M} = \text{EUR } 274.9\text{B}$$
$$\Delta T = 2,411 \times 8.70\text{M} = \text{EUR } 21.0\text{B}$$

Scenario 3 ($s = 0.70$):

$$\Delta U = 0.70 \times 17.39\text{M} = 12.17\text{M}$$
$$\Delta C = 31,600 \times 12.17\text{M} = \text{EUR } 384.6\text{B}$$
$$\Delta T = 2,411 \times 12.17\text{M} = \text{EUR } 29.3\text{B}$$

A.3 Fiscal Double-Bind: Net Impact

The net fiscal impact combines increased expenditure with reduced tax revenue:

$$\text{Net Impact}(s) = \Delta C(s) + \Delta T(s) \tag{5}$$

The effective budget after tax revenue loss:

$$B_{eff}(s) = B_0 - \Delta T(s) = 524.5 - \Delta T(s) \text{ billion EUR} \tag{6}$$

This means the proportion of budget consumed by unemployment spending is:

$$\rho(s) = \frac{C_{total}(s)}{B_{eff}(s)} \tag{7}$$

Under Scenario 3: $\rho = 436.8/495.2 = 88.2\%$ of the effective budget.

B GERMANY'S CONSERVATIVE/CORPORATIST WELFARE ARCHITECTURE

Germany exemplifies the Conservative/Corporatist welfare state type identified by Esping-Andersen (1990). This classification remains analytically relevant: subsequent scholarship has refined but not overturned the core insight that welfare states cluster into distinct institutional configurations with path-dependent dynamics.

Defining characteristics (Germany, 2025):

- *Contribution-based financing*: Unemployment insurance (Arbeitslosenversicherung) is funded through mandatory payroll deductions split between employers and employees, not general taxation.
- *Earnings-related benefits*: Arbeitslosengeld I replaces approximately 60-67% of prior net earnings for up to 24 months, creating strong income-employment linkage.
- *Status preservation*: The system is designed to maintain social stratification by linking benefits to prior employment status rather than providing flat-rate universal coverage.
- *Familialist assumptions*: Benefits assume male breadwinner households, though this has been partially reformed.

Structural vulnerability: These features create fiscal exposure to employment shocks. When employment falls, the system faces simultaneous pressure from two directions: (1) rising benefit claims from newly unemployed workers, and (2) shrinking contribution revenue from the reduced employed workforce. This is the fiscal double-bind analyzed in this paper.

Contrast with other welfare types: Liberal welfare states (US, UK) rely more heavily on means-tested benefits and general taxation, creating different fiscal dynamics under employment shocks. Social-democratic welfare states (Nordic countries) combine universal benefits with high general taxation, also producing distinct vulnerability profiles. The analysis in this paper is specific to the Conservative/Corporatist configuration.

C Additional Figures

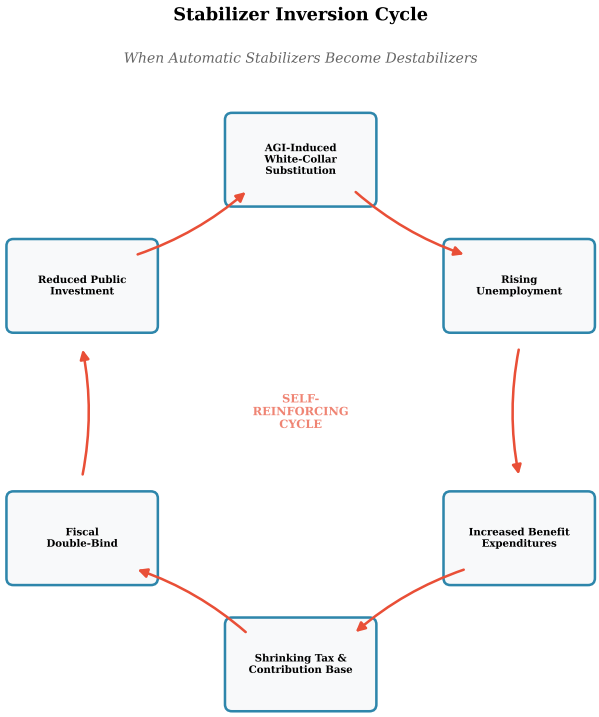

Figure 2: The stabilizer inversion cycle. AGI-induced White-Collar substitution triggers a self-reinforcing loop: rising unemployment increases benefit expenditure while simultaneously shrinking the tax and contribution base that finances those benefits.

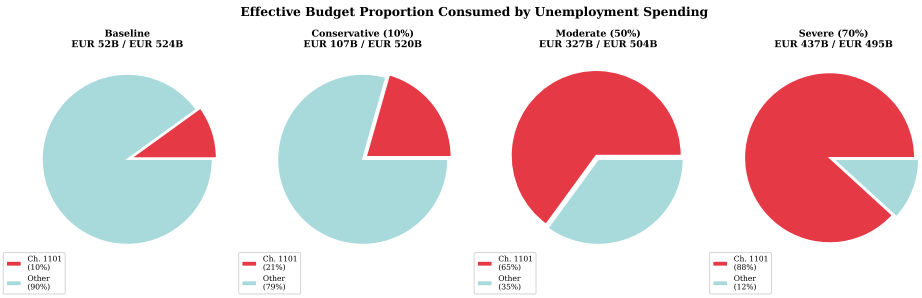

Figure 3: Effective budget proportion consumed by chapter 1101 spending under each scenario. Percentages reflect spending relative to the reduced effective budget after tax revenue loss: Baseline (10%), Conservative (21%), Moderate (65%), Severe (88%).