Does public governance shape the socioeconomic payoffs of artificial intelligence? A global panel study

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Abstract: There is a demonstrated positive relationship between the quality of public governance and socioeconomic development. In parallel, artificial intelligence (AI) is conceptualised as a key driver of the fourth industrial revolution. As a general-purpose technology, AI is pervasive and already supports productivity and growth, raising returns to innovation and adoption. Building on institutional economics, which examines how institutions shape economic development, we position public governance as a potential complement that can raise the marginal product of AI innovation by stabilising expectations (political stability), protecting rights and limiting expropriation (rule of law, control of corruption), and improving regulatory quality and policy implementation (government effectiveness). Accordingly, the net association of AI with socioeconomic welfare (SEW) is theoretically contingent on public governance quality and may unfold with lags as diffusion and absorption occur.

While these links have been well studied separately, cross-national empirical evidence that explicitly tests whether public governance moderates the association between AI and multidimensional socioeconomic welfare remains limited. Prior work often (i) centres only on growth or single social outcomes, (ii) focuses on regional or advanced-economy subsamples, or (iii) omits AI×governance interactions. We address these gaps by assembling a global panel of 81 countries over 2010–2023 (N=1,134) and estimating two-way fixed-effects models with country and year effects, with standard errors clustered by country. AI activity is measured as AI patents per million inhabitants (asinh-transformed). SEW is a 0–100 composite of within-year normalised GDP per capita, life expectancy, expected years of schooling, and unemployment (reverse-coded). Public governance is derived from the Worldwide Governance Indicators using principal components to obtain an Overall Governance index and three clusters: Political (voice and accountability; political stability), Institutional (rule of law; control of corruption), and Economic (government effectiveness; regulatory quality). Models include gross capital formation, foreign direct investment, and inflation as controls, and examine both contemporaneous and one-year-lagged AI to capture timing.

The AI×governance interaction is positive and statistically significant across all four governance dimensions. The moderation is strongest for economic governance (government effectiveness and regulatory quality) and persists when AI is lagged by one year. Component-level decomposition reveals that GDP per capita drives the composite result, while health and education outcomes do not respond to AI intensity over the 14-year panel. Falsification tests in which governance is replaced by population, urbanisation, or trade openness confirm that the moderation is specific to governance quality rather than reflecting general country characteristics. The marginal association between AI and welfare is positive and significant in well-governed environments and indistinguishable from zero in poorly governed ones. The findings indicate that AI innovation and institutional capacity function as complements in producing socioeconomic gains, and that strengthening regulatory quality and government effectiveness appear to matter for amplifying AI's contribution to socioeconomic welfare.