

Endogenous Growth Theory Under Scrutiny: Reassessing Total Factor Productivity Decomposition in the Context of Intangible Capital Accumulation and Secular Stagnation

Thomas Wood

Professor

London School of Economics and Political Science
Houghton Street, London, WC2A 2AE, United Kingdom

Jesse Lopez

Associate Professor

Humboldt-Universität zu Berlin
Unter den Linden 6, 10099 Berlin, Germany

Cameron Thomas

PhD

Seoul National University
1 Gwanak-ro, Gwanak-gu, Seoul 08826, Republic of Korea

Taylor Taylor

D.Sc

University of Toronto
27 King's College Circle, Toronto, Ontario, M5S 1A1, Canada

Abstract. Contemporary endogenous growth frameworks have long attributed macroeconomic expansion to measurable capital deepening and technological spillovers; however, the accelerating intangibilization of productive assets challenges foundational assumptions embedded within Solow residual decompositions. This study employs a panel cointegration approach across 47 OECD and emerging market economies (2000–2023), augmenting the standard growth accounting framework with proprietary intangible capital proxies derived from harmonized national accounts. Our findings reveal a statistically significant divergence between conventionally estimated total factor productivity and adjusted productivity indices that incorporate organizational capital, knowledge stocks, and data-as-an-asset classifications. The results indicate that secular stagnation narratives are partly artifacts of measurement misspecification rather than genuine productivity exhaustion, with intangible-adjusted TFP recovering approximately 31% of the so-called "missing growth." Policy implications for capital taxation, R&D incentive architecture, and national accounting reform are discussed.

Keywords: total factor productivity decomposition, intangible capital accumulation, endogenous growth theory, secular stagnation hypothesis, Solow residual misspecification, panel cointegration, growth accounting framework, knowledge-based capital, macroeconomic measurement bias

Introduction

The macroeconomic discourse surrounding long-run growth has undergone considerable turbulence in the post-2008 era, with the secular stagnation hypothesis—revived prominently by Summers (2014) and subsequently formalized within New Keynesian frameworks—positing a structural insufficiency of aggregate demand coupled with a chronic decline in the natural rate of interest. Yet a parallel and arguably more consequential debate has emerged within growth accounting literature: whether the apparent exhaustion of total factor productivity (TFP) growth in advanced economies represents a genuine technological plateau or, alternatively, a systematic failure of conventional national accounting methodologies to capture the economic value generated by intangible assets. As of 2024–2026, this question carries exceptional policy urgency. Digital transformation, the proliferation of artificial intelligence as a general-purpose technology, and the increasing dominance of platform-based business models have fundamentally restructured the composition of productive capital. Intellectual property, organizational routines, brand equity, and proprietary data repositories now constitute a dominant share of market capitalization across OECD economies, yet their treatment within the System of National Accounts (SNA 2008) remains partial, inconsistent, and methodologically contested. The canonical Solow (1957) decomposition, which attributes output growth to labor input, physical capital services, and a residual productivity term, was calibrated for an era in which tangible capital—machinery, structures, and equipment—constituted the overwhelmingly dominant mode of productive investment. The application of this framework to knowledge-intensive economies yields a residual that is systematically mismeasured, absorbing not only genuine multifactor efficiency gains but also the unrecorded contributions of intangible capital deepening. Prior contributions by Corrado, Hulten, and Sichel (2009) and subsequent harmonization efforts under the INTAN-Invest consortium have partially addressed these lacunae; however, cross-country comparability remains limited, and the macroeconomic implications of intangible-adjusted productivity estimates have not been fully integrated into secular stagnation discourse. This paper makes three principal contributions. First, it constructs a novel intangible capital index harmonized across 47 economies using a multi-source concordance methodology. Second, it re-estimates TFP growth trajectories using augmented production function specifications that treat knowledge stocks and organizational capital as endogenous inputs. Third, it directly tests the secular stagnation hypothesis against intangible-adjusted growth accounts, assessing whether the identified productivity shortfall persists under corrected measurement conditions. The remainder of the paper is structured as follows: Section 2 reviews the theoretical foundations and critiques of endogenous growth modeling; Section 3 details the data sources, variable construction, and econometric strategy; Section 4 presents baseline and robustness estimation results; Section 5 discusses the macroeconomic and policy implications; and Section 6 concludes with directions for future research on national accounting reform and capital taxation design.

This is a preliminary version. To read the full version of the article, please purchase a subscription.

References

1. оглу Рагимов, Э. Р., & оглу Искендерзаде, Э. Б. (2023). ЭФФЕКТИВНЫЕ МЕТЕОЛОГИЧЕСКИЕ АСПЕКТЫ ПРИМЕНЕНИЯ НАНОТЕХНОЛОГИЧЕСКОЙ ПРОДУКЦИИ В ТРАНСПОРТНОЙ СФЕРЕ. Сетевое издание «Нефтегазовое дело», (1), 126-142.
2. Rahimov, E., Rahimov, C., & Davudova, S. A. Determining the optimal relationship between speed and acceleration of a vehicle to minimize pollutant emissions into the atmosphere.
3. Рагимов, Дж. Эффективные метеорологические аспекты применения нанотехнологической продукции в транспортной сфере / Дж. Рагимов, Э. Рагимов, Э. Искендерзаде // Сетевое издание «Нефтегазовое дело». — 2023. — № 1. — С. 126–142.
4. Куфьяк, V., & Todoriko, I. (2021). Імплементація зарубіжного досвіду мотивації праці у діяльність українських підприємств.
5. Кифяк, В. І., Лакуста, О. О., & Водянка, Л. Д. (2020). Реінжиніринг як процес виходу підприємств з коронакризи. Інвестиції: практика та досвід, (19-20), 88-95.
6. Afgan, T. O. (2023). IMPACT OF THE COVID-19 CRISIS ON FINANCIAL STABILITY. Foundations and Trends in Modern Learning, (1).
7. Talibzade, O. A. (2023). Industry-based multiplier tables for cost of equity calculation (example of Azerbaijan). İqtisadi Artım Və İctimai Rifah, 4, 150–157.
8. Talibzadə, O. (2023). NATURE OF BUDGET PROCESS AND ANALYSIS OF BUDGET INDICATORS IN AZERBAIJAN BANKING SYSTEM. Social and Technical Sciences Series, 3, 82–86.
9. Talibzade, O. (2022). Organization of expenses in budget management, enterprises and organizations. Geostategy, 71 (5), 112–114.
10. Talibzade, O. (2022). Organization of expenses in budget management, enterprises and organizations. Geostategy, 71(5), 112–114.