

INNOVATION SCIENCE AND TECHNOLOGY



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ISSUE 1



Acceptance of papers **January, 2026**



**Acceptance of
papers**

Published monthly



Topics

economics,
technology, social
sciences

ISSN 3060-5229



Digital
Object
Identifier



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THE SCIENTIFIC-POPULAR ELECTRONIC
JOURNAL **"INNOVATION SCIENCE AND
TECHNOLOGY"** HAS BEEN REGISTERED
UNDER THE NUMBER **C-5669633** BY THE
AGENCY FOR INFORMATION AND MASS
COMMUNICATIONS (AOKA) OF THE
REPUBLIC OF UZBEKISTAN, EFFECTIVE
FROM OCTOBER 9, 2024.

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THE ONTOLOGY OF WAGES: HUMAN CAPITAL, DIGITALISATION, AND INSTITUTIONAL MEDIATION IN A TRANSITIONAL ECONOMY



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Abstract: This article develops a conceptual and philosophical reassessment of wage determination in transitional labour markets. Rather than concentrating solely on empirical estimation or econometric modelling, it examines the ontological and epistemological foundations underlying dominant theories of wage formation—particularly human capital theory, skill-biased technological change, and institutional approaches to labour markets. The study seeks to clarify what wages represent as economic phenomena and how they should be understood within structurally transforming economies.

The analysis revisits the classical human capital framework, including the Mincer earnings function, alongside contemporary perspectives that emphasise digitalisation, artificial intelligence, labour market segmentation, and institutional mediation. However, instead of treating these frameworks merely as technical tools for regression analysis, the article interrogates their implicit assumptions about productivity, causality, equilibrium adjustment, and the role of institutions. It evaluates how concepts such as nonlinearity, structural heterogeneity, digital divides, and institutional rigidities challenge the view of wages as purely competitive market outcomes determined exclusively by individual productivity.

Special emphasis is placed on transitional and structurally volatile economies, where wage formation often reflects the coexistence of market mechanisms, institutional legacies, regulatory constraints, and uneven technological diffusion. In such contexts, wages emerge not simply as the price of labour in equilibrium but as institutionally embedded outcomes shaped by bargaining structures, sectoral composition, digital access, ownership patterns, and exposure to economic shocks. The article argues that wage determination must be conceptualised as a multi-layered process mediated by institutional design, structural transformation, and evolving technological regimes.

Methodologically, the study adopts a structured analytical and philosophical review approach. It contrasts theoretical propositions with micro-level empirical evidence from transitional economies while clarifying the ontological status of wages and the epistemological strategies used to study them. Within this framework, wages are conceptualised as observable monetary outcomes that reflect deeper structural and institutional mechanisms rather than as direct proxies for marginal productivity alone.

The contribution of the article lies in reframing wage determination within a coherent philosophical perspective that integrates human capital theory, digital transformation, and institutional economics. By synthesising theoretical debates and methodological considerations, the study establishes a rigorous conceptual foundation for future micro-level empirical modelling and policy-oriented research aimed at promoting equitable and productivity-enhancing wage structures in economies undergoing digital and structural transformation.

Key words: Human Capital Theory; Digital Labour Markets; Institutional Mediation; Microeconomic Foundations; Labour Market Structure; Transitional Economy; Wage Formation; Economic Inequality; Technological Change.

INTRODUCTION

Over the past several decades, wage determination has occupied a central position in labour economics because wages represent the primary mechanism through which productivity, institutional structures, and economic development translate into individual welfare. While human capital accumulation and economic growth are frequently emphasised as key drivers of earnings, wages cannot be fully understood as simple reflections of marginal productivity. Contemporary research increasingly recognises that wage outcomes emerge from a complex interaction between individual skills, technological change, institutional arrangements, bargaining structures, and structural transformation.

Traditional frameworks—most notably human capital theory and the Mincer earnings function—conceptualise wages as returns to education and experience, treating earnings differentials as equilibrium outcomes in competitive labour markets. These models provide a powerful analytical foundation for empirical estimation and policy analysis. However, accumulated evidence from transitional and structurally heterogeneous economies suggests that wage formation is neither purely competitive nor institutionally neutral. Digitalisation, labour market segmentation, regulatory frameworks, ownership structures, and uneven technological diffusion significantly mediate the translation of skills into earnings.

These developments raise deeper philosophical questions about the nature of wages as economic phenomena. Are wages objective prices determined solely by productivity, or are they institutionally embedded outcomes shaped by bargaining power, structural constraints, and technological regimes? Can wage inequality be explained exclusively through measurable human capital characteristics, or must it be interpreted as the product of broader institutional and structural configurations? Addressing such questions requires moving beyond purely econometric modelling toward clarification of the ontological and epistemological foundations of wage analysis.

In transitional economies, these issues become particularly salient. Labour markets often operate within incomplete institutional frameworks, experience rapid technological adoption, and face persistent structural rigidities. In such contexts, identical levels of education may generate divergent wage outcomes depending on sectoral composition, digital access, firm characteristics, and regulatory environments. Digital transformation may increase wage premia for certain skill groups while simultaneously reinforcing structural exclusion for others. These dynamics challenge simplified interpretations of wages as direct indicators of productivity.

This article contributes to the conceptual clarification of wage determination by articulating the ontological and epistemological foundations of wage analysis in transitional labour markets. It examines how dominant theoretical frameworks conceptualise wages, interrogates their implicit assumptions about causality and equilibrium, and evaluates the methodological implications for micro-level empirical research.

The object of the study is wages as a socio-economic outcome emerging from the interaction of human capital, technological change, and institutional structures.

The subject of the study is the ontological assumptions and epistemological strategies underlying contemporary wage determination analysis.

The aim of the article is to develop a coherent philosophical framework for understanding wage formation in transitional economies, thereby strengthening the conceptual foundations of empirical research on human capital, digitalisation, and institutional mediation.

LITERATURE REVIEW

Research on wages has long been central to labour economics and development analysis. Yet beyond econometric estimation of earnings functions and decomposition of wage differentials, relatively limited attention has been devoted to the philosophical foundations underlying how wages themselves are conceptualised. Dominant analytical frameworks—most notably human capital theory and the Mincer earnings equation—have traditionally been treated as empirical tools linking education, experience, and productivity to earnings outcomes. However, the evolution of both theory and evidence raises deeper ontological and epistemological questions about the nature of wages and the mechanisms through which they are formed.

Early human capital models conceptualised wages as the market price of accumulated skills and productivity-enhancing investments. Within this paradigm, earnings differentials reflect rational educational choices and competitive labour market equilibria. The Mincer specification formalised this logic empirically by modelling wages as a function of schooling and work experience. Yet subsequent research has demonstrated that wage formation cannot be fully explained by measurable human capital characteristics alone. Institutional frameworks, bargaining structures, labour market segmentation, and sectoral composition significantly mediate the translation of skills into earnings.

The expansion of digitalisation and technological transformation has further complicated wage dynamics. Digital skills, access to information technologies, and firm-level productivity dispersion increasingly shape wage premia, while automation and sectoral reallocation alter labour demand patterns. Empirical findings suggest that digital transformation may increase returns to certain cognitive and technical skills while weakening wage growth for routine or low-skilled occupations. These developments challenge the assumption that wage determination is a stable and uniform function of human capital, instead pointing toward structurally differentiated and institutionally conditioned processes.

In transitional and structurally transforming economies, these complexities are intensified. Labour markets often operate under incomplete institutional frameworks, evolving regulatory regimes, and uneven technological diffusion. As a result, identical levels of education or experience may generate divergent wage outcomes depending on sector, ownership structure, regional context, and institutional quality. Episodes of wage stagnation alongside economic growth, or rising wage inequality during digital expansion, underscore that wages are not purely competitive prices but socially embedded and institutionally mediated outcomes.

A growing body of literature also emphasises nonlinearity and heterogeneity in wage determination. Returns to education may vary across income distributions, regions, and economic cycles. Structural breaks associated with crises, reforms, or technological shifts alter wage premia over time. These patterns question the adequacy of static linear models and invite reflection on whether wage equations capture stable economic “laws” or context-dependent regularities shaped by institutional transformation and historical contingency.

Despite extensive empirical research on wage inequality, skill premia, and digital returns, much of the literature remains focused on coefficient estimation and functional form specification without explicitly interrogating the underlying philosophical assumptions. Wages are frequently treated as observable market outcomes directly reflecting productivity, while less attention is devoted to their ontological status as socially constructed prices embedded within institutional and technological regimes. Similarly, epistemological strategies—whether positivist, structural, or institutional—are rarely made explicit in wage modelling.

Overall, existing research suggests that wage formation emerges from the interaction of human capital, technological change, institutional structures, bargaining mechanisms, and structural transformation. However, the deeper question remains whether wages should be understood as equilibrium prices governed by universal market laws or as historically contingent outcomes mediated by institutions and power relations.

The present study addresses this gap by rethinking wages through an explicit articulation of their ontological and epistemological foundations. By synthesising theoretical developments in human capital theory, digital labour economics, and institutional analysis within a coherent philosophical framework, the article clarifies how digitalisation and institutional mediation shape wage dynamics in transitional economies. This conceptual reassessment strengthens the foundations for more rigorous micro-level empirical modelling of wage determination under conditions of structural change.

RESEARCH METHODOLOGY

This article adopts a qualitative and conceptually oriented research design grounded in a structured and systematic review of theoretical and empirical literature on wage determination. Rather than concentrating exclusively on econometric estimation of earnings functions, the methodological approach seeks to identify, organise, and critically evaluate the ontological assumptions and epistemological strategies that underpin dominant frameworks in wage analysis—particularly human capital theory, Mincer-type earnings models, and institutional approaches to wage formation.

A literature-based analytical design is especially appropriate in this context because wages in transitional economies are shaped by complex interactions between human capital accumulation, digital transformation, institutional regulation, firm-level heterogeneity, and structural change, rather than by isolated individual productivity characteristics. Consequently, understanding wage dynamics requires not only statistical modelling but also reflection on how wages are conceptualised—as market-clearing prices, as returns to skills, or as institutionally mediated outcomes embedded in broader socio-economic structures.

The primary methodological instrument employed is a structured analytical review. Academic contributions were selected from leading peer-reviewed journals, working paper series, and institutional research reports in labour economics, development economics, and institutional political economy. The reviewed literature was organised around key conceptual and methodological themes, including:

- (i) human capital theory and Mincer earnings specifications;
- (ii) skill-biased technological change and digital wage premia;
- (iii) wage inequality and distributional heterogeneity;
- (iv) institutional and bargaining-based models of wage setting; and
- (v) structural and transitional economy perspectives on labour market transformation.

A comparative analytical perspective was applied to evaluate how different theoretical traditions conceptualise wage formation and how these conceptualisations vary across advanced, developing, and transitional economies. This comparative lens enables the study to assess how institutional maturity, regulatory design, technological diffusion, and sectoral composition influence both empirical wage patterns and the philosophical interpretation of earnings differentials. Particular emphasis is placed on transitional and post-socialist contexts, where institutional legacies, uneven digitalisation, and structural rigidities may weaken the assumption that wages purely reflect marginal productivity.

The analysis also incorporates an institutional and technological perspective, drawing on insights from institutional economics and digital labour studies to interpret wages not as purely competitive outcomes but as mediated by regulatory frameworks, firm structures, and technological regimes. Within this framework, labour market institutions, collective bargaining structures, ownership patterns, and digital infrastructure condition the translation of education and skills into earnings. Evidence from structural reforms, technological shifts, and external shocks demonstrates that wage elasticities and returns to education may vary across time and regimes, reinforcing the context-dependent and historically embedded character of wage determination.

In addition, elements of analytical synthesis are employed to consolidate fragmented strands of wage research. Rather than treating human capital, digitalisation, and institutional analysis as separate explanatory domains, the study reinterprets them within a unified conceptual framework and interrogates the ontological status of wages—whether they should be understood as stable market prices governed by universal economic laws or as historically contingent and institutionally mediated outcomes. Particular emphasis is placed on heterogeneity, nonlinearity, and structural breaks in wage returns, which challenge static and universal interpretations of earnings equations.

Overall, the chosen methodology is appropriate for the objectives of this philosophical inquiry, as it enables a conceptually grounded reassessment of wage determination without relying on new microeconomic estimation. By systematically synthesising theoretical developments, empirical findings, and methodological debates, the study provides a robust conceptual foundation for future quantitative research and clarifies the ontological and epistemological premises that should guide empirical modelling of wages in digitally transforming and structurally volatile transitional economies.

ANALYSIS AND RESULTS

Wages have traditionally occupied a central position in economic analysis because they shape income distribution, social mobility, productivity incentives, and long-term development outcomes. Yet beyond their empirical determinants, wages raise a deeper philosophical question: what is the ontological status of wages within economic theory? Are wages simply market-clearing prices reflecting marginal productivity, or are they institutionally mediated, socially embedded outcomes shaped by power relations, technological change, and structural transformation? Contemporary research increasingly suggests that wage formation cannot be understood as a purely mechanical function of individual productivity. Rather, wages emerge from the interaction of human capital characteristics, digital transformation, institutional configurations, firm-level strategies, and broader structural conditions.

Classical human capital theory conceptualised wages as returns to education, skills, and work experience, grounding wage differentials in productivity differences. Within this framework, labour markets are assumed to reward individual investment in human capital through competitive price mechanisms. However, subsequent empirical evidence—particularly in transitional and post-socialist economies—has demonstrated that wage determination often deviates from purely competitive predictions. Institutional rigidities, legacy sectoral structures, and uneven market development frequently mediate or distort the translation of productivity into earnings.

The digitalisation of economic activity further complicates this picture. Technological transformation alters the composition of labour demand, shifts the skill premium, and increases productivity dispersion across firms and sectors. Automation and digital adoption may amplify wage inequality by disproportionately rewarding high-skill and digitally intensive occupations while compressing wages in routine or low-skill segments. In transitional economies, uneven digital diffusion and infrastructural disparities may generate segmented wage trajectories, where returns to digital skills vary across regions and institutional contexts. These patterns challenge simplistic interpretations of wage determination as a stable and universal productivity-based relationship.

Institutional frameworks play a decisive role in shaping wage outcomes. Labour market regulation, collective bargaining structures, minimum wage policies, public sector wage-setting, and informal sector dynamics mediate the relationship between human capital and earnings. In environments characterised by institutional transformation, regulatory incompleteness, or policy volatility, wage formation becomes contingent upon governance structures and credibility of enforcement mechanisms. From an ontological perspective,

wages thus appear not as purely economic prices but as institutionally conditioned outcomes embedded within broader socio-political arrangements.

Structural heterogeneity further reinforces this interpretation. Regional disparities, sectoral imbalances, and firm-level productivity differences influence wage dispersion and returns to education. In transitional economies, occupational legacies and inherited industrial structures may sustain wage patterns that persist independently of current productivity fundamentals. Moreover, external shocks—financial crises, geopolitical tensions, or global pandemics—can disrupt wage dynamics, altering bargaining power and reallocating labour demand across sectors. These developments reveal the historically contingent nature of wage formation.

Taken together, the literature indicates that wages cannot be reduced to a single explanatory mechanism. Human capital remains a central determinant, yet its influence is mediated by digital transformation, institutional design, and structural conditions. Wage formation emerges as a layered and context-dependent process rather than a frictionless market outcome. By integrating human capital theory with insights on digitalisation and institutional mediation, this article advances an ontological reinterpretation of wages in transitional economies. It conceptualises wages as structurally embedded and institutionally mediated economic outcomes, thereby strengthening the philosophical and analytical foundations of wage determination research in contexts of ongoing economic transformation.

CONCLUSION AND SUGGESTIONS

The reviewed body of research indicates that wage formation cannot be reduced to a mechanical return to individual productivity or a simple market-clearing outcome. Instead, wages are embedded within deeper ontological and institutional structures that shape how human capital, digitalisation, and economic transformation interact. Particularly in transitional and structurally volatile economies, wage dynamics are conditioned by institutional design, technological diffusion, sectoral composition, policy credibility, and exposure to external shocks. From this perspective, wages do not emerge solely from marginal productivity equilibria but from institutionally mediated and historically situated processes.

A central ontological implication emerging from the literature is that wages are not merely price signals in competitive labour markets but socially and institutionally structured outcomes. Human capital remains a fundamental determinant, yet its returns depend on digital infrastructure, labour market regulation, bargaining frameworks, and firm heterogeneity. Wage dispersion reflects not only skill differentials but also institutional constraints, power asymmetries, and structural segmentation. Consequently, wage inequality and wage rigidity cannot be interpreted exclusively through productivity-based explanations.

Epistemologically, the literature demonstrates the limitations of relying solely on linear human capital models. While Mincer-type earnings equations provide important empirical structure, they often assume stable returns to education and experience. However, evidence from transitional economies reveals that returns to skills may be nonlinear, time-varying, and sensitive to institutional and technological regimes. Digital transformation further complicates this relationship by increasing skill-biased wage dispersion and amplifying productivity differentials across firms. Static specifications may therefore obscure regime dependence, structural breaks, and technological shocks influencing wage formation.

Institutional mediation plays a decisive role in shaping wage outcomes. In liberalised labour markets, wages may respond more flexibly to productivity shocks, but also exhibit higher volatility and inequality. In more regulated or state-coordinated systems, wage adjustment may be moderated by minimum wage policies, collective bargaining, public sector wage-setting, or informal labour practices. These alternative adjustment pathways illustrate that wage determination operates through institutional filters rather than through universally stable market laws.

Digitalisation intensifies structural differentiation. Automation, platform economies, and uneven technological diffusion reshape labour demand and alter the skill premium. High-skilled workers integrated into digitally intensive sectors may experience rising wage trajectories, while routine occupations face stagnation or displacement. In transitional economies, digital divides across regions and sectors may reinforce wage segmentation. Thus, aggregate wage growth may mask divergent micro-level trajectories driven by technological asymmetries.

External shocks—financial crises, geopolitical disruptions, global pandemics—further expose the structural character of wage formation. Such disturbances often reallocate income across sectors rather than uniformly compressing wages. Adjustment may occur through wage freezes, informalisation, selective public sector protection, or labour reallocation. These patterns demonstrate that wage dynamics are embedded in institutional resilience and structural capacity rather than determined purely by cyclical recovery mechanisms.

Across the literature, several foundational propositions emerge:

- wages are institutionally mediated returns to human capital rather than purely competitive prices;

- returns to education and skills are nonlinear and regime-dependent;
- digitalisation reshapes wage structures and amplifies productivity dispersion;
- institutional frameworks condition wage flexibility, inequality, and resilience;
- aggregate wage indicators may conceal structural heterogeneity across sectors and regions.

Policy implications

First, strengthening institutional transparency and credibility in labour market governance is essential for stabilising wage formation. Predictable regulatory frameworks, consistent enforcement, and coherent wage-setting institutions enhance the reliability of returns to human capital and reduce uncertainty-driven wage compression.

Second, investment in digital infrastructure and inclusive skill development policies is crucial to prevent widening wage gaps. Lifelong learning systems, regionally balanced digital expansion, and support for technological adoption in small and medium enterprises can improve the alignment between human capital accumulation and wage outcomes.

Third, labour market institutions should balance flexibility with protection. Carefully designed minimum wage systems, collective bargaining coordination, and employment protection frameworks can mitigate excessive wage volatility while preserving incentives for productivity growth.

Fourth, policymakers should recognise that wage dynamics reflect structural transformation rather than short-term macroeconomic movements alone. Coordinated strategies integrating education policy, industrial diversification, innovation support, and regional development are necessary to ensure that digitalisation translates into broad-based wage growth rather than segmented income trajectories.

Overall, the synthesis supports an ontological reinterpretation of wages as structurally embedded and institutionally mediated outcomes shaped by human capital, digital transformation, and policy regimes. By moving beyond purely mechanistic models of wage determination, this perspective provides a stronger conceptual foundation for empirical modelling and for policy design aimed at fostering equitable and sustainable wage development in transitional economies undergoing rapid technological and structural change.

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Proofreader: Zokir ALIBEKOV

Layout and Designer: Oloviddin Sobir ugli

2026. № 1

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