The Imbalanced Scale: An Economic Analysis of the "Research-over-Teaching" Dilemma in Higher Education

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Abstract

This theoretical review examines the global dilemma of "research-over-teaching" in higher education. Although both are core missions of universities, a systemic institutional bias toward research threatens educational quality and the health of the academic ecosystem. Existing explanations from educational, sociological, and economic perspectives often separate structural incentives from individual choices. To bridge this gap, we propose an integrative dual-perspective model that synthesizes rational choice theory with behavioral economics. We contend that the prevailing pattern is not merely an ethical or managerial failure, but a co-evolutionary outcome: performance evaluation systems that privilege quantifiable research outputs generate a systemic bias, which is subsequently reinforced by faculty cognitive biases and social preferences, locking the system into a self-reinforcing "research-first" equilibrium. This mechanism-based explanation provides a robust theoretical foundation for designing interventions. Accordingly, we outline pathways for institutional reconstruction to achieve a dynamic balance, including reconfiguring incentives through diversified evaluation, embedding the Scholarship of Teaching and Learning (SoTL), optimizing resource allocation, and employing behavioral nudges.

Full Text

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Abstract

This theoretical review analyzes the global "research-over-teaching" dilemma in higher education. While both teaching and research constitute core university missions, a systemic institutional bias toward research threatens educational quality and the health of the academic ecosystem. Existing explanations from educational, sociological, and economic perspectives frequently fail to connect structural incentives with individual choices. To bridge this gap, we propose an integrative dual-perspective model that synthesizes rational choice theory with behavioral economics. We argue that the prevailing pattern is not merely an ethical or managerial failure but a co-evolutionary outcome: performance evaluation systems that privilege quantifiable research create a systemic bias, which is then reinforced by faculty cognitive biases and social preferences, locking the system into a self-reinforcing "research-first" equilibrium. This mechanism-based explanation provides a robust theoretical foundation for intervention. Accordingly, we outline pathways for institutional reconstruction to achieve dynamic balance, including reconfiguring incentives through diversified evaluation, embedding the Scholarship of Teaching and Learning (SoTL), optimizing resource allocation, and employing behavioral nudges.

Keywords: research-over-teaching; higher education policy; faculty behavior; institutional incentives; behavioral economics; evaluation systems

1.1 The Dual Missions of the University: A Growing Imbalance

Teaching and research are universally recognized as the twin pillars of the modern university, essential to its mission of knowledge creation and dissemination (Brew & Boud, 1995; Altbach, 2011). Ideally, their synergistic development signifies institutional health and academic vitality. However, a pervasive and systemic imbalance has entrenched itself across global higher education systems, with research consistently garnering institutional priority over teaching in critical domains such as resource allocation, performance evaluation, and reputation building (Brew, 2003; Kehm & Teichler, 2007). This bias has transformed research output into the de facto "currency" for academic advancement, where publications, grants, and citations serve as the primary metrics for promotion, tenure, and funding allocation (Shin & Cummings, 2010; Chen et al., 2015). In stark contrast, teaching—despite being fundamental to the educational mission—remains in an evaluative "blind spot," its contributions marginalized due to their intangible nature, long-term impact, and measurement complexity (Gibbs & Simpson, 2004; Kehm & Teichler, 2007). This structural privileging of research not only distorts faculty behavior but also fundamentally threatens the quality of talent cultivation and the long-term sustainability of the academic ecosystem.

1.2 Existing Explanatory Frameworks: Strengths and Gaps

Scholarship on the "research-over-teaching" dilemma spans multiple disciplines, each offering valuable but partial insights. Educational perspectives trace the erosion of teaching to the evolution of university functions and the distortion of performance indicators. Boyer famously expanded the concept of scholarship to include teaching (Boyer, 1990), yet institutional practices have largely failed to internalize this reconceptualization. Subsequent studies highlight how narrow metrics undermine pedagogical commitment (Jenkins, 2004; Clegg, 2008). Sociological analyses emphasize the role of academic communities and their internal reward systems, where the pursuit of peer recognition, publication in elite journals, and membership in prestigious networks constitute powerful social norms that shape faculty identity and behavior (Henkel, 2002; Henkel, 2005; Archer, 2008). In such a culture, research excellence becomes synonymous with academic legitimacy. Management and organizational studies point to the rise of managerialism in higher education, where performance-based funding and accountability regimes favor quantifiable outputs (Deem, 2001; Shore & Wright, 2015). Research metrics—being easily codified and benchmarked—are naturally privileged over the nuanced, context-dependent nature of teaching quality.

1.3 The Economic Lens: Rational Choice and Its Limits

An emerging body of literature applies economic theories to explain faculty behavior. From a human capital perspective, academics are viewed as rational agents who allocate their time and effort to maximize returns (Becker, 1993; Marginson, 2006). Research offers clear, measurable, and often immediate rewards—promotion, grants, international visibility—while teaching yields diffuse, delayed, and less visible benefits. Thus, investing in research is a utility-maximizing strategy. The principal-agent framework further clarifies this dynamic: universities (principals) face information asymmetry in assessing teaching quality, leading them to rely on easily observable research outputs as proxies for performance (Eisenhardt, 1989; Broucker & De Wit, 2015). This creates a misalignment of incentives, where agents (faculty) rationally respond to the metrics that matter most for career advancement. However, these models rest on a critical assumption: that faculty are fully rational, utility-maximizing actors. This assumption faces two major limitations. First, it neglects cognitive and emotional dimensions, as real-world decision-making is influenced by cognitive biases, emotional attachments, and identity commitments—factors largely absent in classical economic models. Second, it lacks multi-level integration, as most studies focus either on macro-level institutional structures or micro-level individual choices, but rarely integrate both in a coherent analytical framework.

1.4 Toward an Integrated Analytical Model: Bridging Structure and Behavior

This paper is positioned as a theoretical review and conceptual synthesis, aiming not merely to describe the "research-over-teaching" dilemma, but to integrate fragmented theoretical insights from economics, sociology, and management into a novel, dual-perspective analytical framework. At the structural level, we analyze how institutional arrangements—especially performance evaluation systems—distort the cost-benefit calculus of academic work, systematically privileging research over teaching. At the individual level, we incorporate insights from behavioral economics to examine how cognitive biases (e.g., short-termism, availability heuristic), social preferences (e.g., peer comparison, status seeking), and identity formation shape faculty behavior beyond pure rationality.

We argue that the "research-over-teaching" pattern is not merely the outcome of rational optimization, but rather the co-evolution of institutional incentives and behavioral tendencies. This coupling effect reinforces a self-sustaining cycle: structural biases induce behavioral shifts, which in turn legitimize and reproduce the very structures that caused them. The primary contribution of this study lies in bridging the structural-institutional and individual-behavioral divides that have long characterized the scholarship on this topic. By demonstrating how institutional incentives and behavioral biases co-evolve, we offer a mechanism-based explanation that transcends moralistic critiques and provides a robust theoretical foundation for systemic reform.

2. The Economic Drivers of Research-Over-Teaching: Rational Choice and Institutional Incentives

Academic behavior is not merely a matter of personal preference, but a response to the incentives embedded in the institutional environment (Clark, 1983). From the perspective of neoclassical economics, individual behavior is modeled as rational utility maximization under resource constraints. Within this framework, the prevalence of "research-over-teaching" among university faculty is not an aberration of professional ethics, but a systematic adaptation to institutional incentive structures. When performance evaluation systems disproportionately reward research output, faculty members—acting as rational agents—allocate their limited time and energy accordingly, even at the cost of pedagogical engagement.

2.1 The Allocation of Time and Effort: A Human Capital Perspective

From the standpoint of human capital theory (Becker, 1993), individuals make rational investments in education, training, and skill development to maximize long-term labor market returns. In the context of academic work, the most critical form of capital is not financial or technological, but time and cogni-

tive effort—resources that are inherently scarce and irrecoverable. Moore' s Ultimate Scarcity Model posits that when individuals face multiple, competing role demands, they must allocate their limited personal resources strategically to achieve optimal utility (Moore, 1963). For university faculty, teaching and research represent two primary, yet competing, domains of professional engagement. Each constitutes a distinct form of human capital investment, differing significantly in their input-output structures and career return profiles (Teelken, 2012).

As illustrated in Table 1 , research and teaching exhibit stark asymmetries across key dimensions. Research outputs—such as journal articles, patents, grants, and funding awards—are highly visible, quantifiable, and cumulative, making them ideal for performance evaluation. In contrast, teaching outcomes —such as knowledge transmission, skill development, and value cultivation—are largely invisible, context-dependent, and difficult to standardize. In the current performance-driven academic environment, these structural differences shape faculty behavior in predictable ways. Research functions as a high-yield investment: it offers rapid feedback, clear metrics, and strong alignment with institutional reward systems. Teaching, by contrast, resembles a public good —its benefits are widely shared, but the costs are borne individually, and its contributions are seldom formally acknowledged (Gibbs & Simpson, 2004; Musselin, 2007). Consequently, even faculty members who are intrinsically motivated to excel in teaching face substantial opportunity costs when dedicating time to course design, student mentoring, or pedagogical innovation. In the absence of robust mechanisms to recognize and reward teaching excellence, it becomes rational—though institutionally problematic—for academics to prioritize research over teaching (Musselin, 2007). It is crucial to emphasize that this behavioral tendency does not necessarily reflect a devaluation of teaching per se, but rather a rational response to institutional incentives. When teaching contributions remain "invisible" within formal evaluation systems, they are effectively disincentivized, regardless of their educational importance. Thus, the observed imbalance between research and teaching is less a failure of individual commitment and more a consequence of systemic misalignment between effort and reward. From a human capital perspective, the preference for research is not irrational—it is, in fact, perfectly rational under the prevailing institutional logic.

2.2 The "Commanding Stick" of Evaluation: A New Institutional Economics Perspective

From the perspective of new institutional economics, institutions—defined as "the rules of the game in society" (North, 1990)—play a central role in shaping individual behavior by establishing formal constraints and incentive structures. In the context of higher education, the faculty evaluation system, particularly the performance appraisal mechanisms tied to promotion, tenure, and financial rewards, functions as one of the most powerful institutional levers guiding academic con-

duct. This system not only reflects organizational priorities but also acts as a steering mechanism—a "commanding stick"—that determines how faculty allocate their scarce time and effort across competing tasks. In many national higher education systems, there is a growing trend toward quantification-driven management. Administrators favor easily measurable indicators such as the number of publications, journal impact factors, research project rankings, and funding amounts (Cadez et al., 2017). From a managerial standpoint, these metrics offer significant advantages: they reduce information asymmetry, lower assessment costs, and enhance comparability across individuals and institutions. As such, research outputs are treated as ideal contractual objects in performance-based governance—clear, verifiable, and transferable units of academic value (Demir, 2018). However, this reliance on quantifiable research indicators inevitably leads to incentive distortion (Marginson, 2006). By privileging what can be easily measured, the evaluation system systematically undervalues activities that are difficult to quantify—most notably, teaching. While research thrives under this regime, teaching becomes marginalized, not because it is unimportant, but because it does not conform to the logic of metric-based control.

Teaching quality, in contrast, faces a "high-cost–low-visibility" dilemma. Instructional effectiveness is inherently contextual, process-oriented, and long-term in its impact. Even widely used assessment tools—such as student evaluations of teaching (SETs) or peer reviews—are often criticized for their subjectivity, susceptibility to bias, and focus on short-term satisfaction rather than deep learning outcomes. Moreover, more robust forms of teaching assessment—such as value-added models or longitudinal tracking of graduate development—require substantial investment in data infrastructure and analytical capacity, making them impractical for widespread institutional adoption. This asymmetry in institutional support further entrenches the imbalance. Research activities are embedded in a well-developed ecosystem: peer-reviewed journals, grant agencies, academic conferences, and formalized review processes provide clear pathways for recognition and reward. In contrast, teaching—particularly undergraduate instruction—lacks equivalent institutional infrastructure. It remains largely an invisible labor, rarely acknowledged in formal reward systems and often excluded from the core criteria for career advancement. In sum, the preference for research among faculty is not a sign of professional neglect, but a rational response to institutional signals. The current evaluation regime establishes research as the high-visibility, high-return "main track" of academic success, while teaching is relegated to a secondary, under-recognized domain. When teaching falls into an incentive blind spot, it is not teachers who fail the system, but the system that fails teaching (Demir, 2018).

2.3 A Triadic Game Model: Strategic Interactions Among Government, Universities, and Faculty

The phenomenon of "research-over-teaching" can be systematically analyzed through a multi-actor game-theoretic model, in which the government, univer-

sities, and individual faculty members act as rational agents, each seeking to maximize their respective interests under distinct incentive and constraint structures. To illustrate this dynamic, Figure 1 [Figure 1: see original paper] presents a triadic game model of the "research-over-teaching" bias. The model maps the strategic interactions among the three key actors, highlighting how macro-level policy regimes (e.g., rankings, performance funding) are translated into meso-level institutional evaluation systems, which in turn shape micro-level faculty behavior. As Figure 1 demonstrates, individual faculty members are caught in a classic prisoner' s dilemma. The dominant strategy for each academic is to "defect" by prioritizing research, as this maximizes personal career rewards (e.g., promotion, funding). However, when all faculty adopt this strategy, the collective outcome is a significant underinvestment in teaching, which undermines the university' s core educational mission. This misalignment between individual rationality and collective welfare is the fundamental driver of the systemic bias. From the perspective of evolutionary game theory, this behavioral pattern exhibits path dependence and stability. Over time, the "research-over-teaching" approach can evolve into an Evolutionarily Stable Strategy (ESS) (Axelrod, 1984). Once established, any deviation from this dominant strategy places the individual at a competitive disadvantage. Therefore, the bias is not merely a transient equilibrium, but a co-evolutionary outcome shaped by institutional inertia and adaptive behavior. In sum, as schematized in Figure 1, breaking this cycle requires interventions that simultaneously reconfigure the incentives at the government, institutional, and individual levels.

3. Deep-Seated Drivers: Behavioral Biases and Psychological Preferences

While the neoclassical economic model of the "rational actor" provides a logically rigorous framework for understanding individual decision-making under incentives and constraints, it falls short in fully explaining the complex psychological motivations underlying faculty behavior. Academics are not merely utility-maximizing agents; they are human beings whose choices are profoundly shaped by cognitive limitations, emotional dynamics, and social environments. This chapter draws on behavioral economics to move beyond the assumption of "perfect rationality" and reveal how a constellation of cognitive biases and social preferences interact with institutional structures to systematically tilt the balance toward research.

3.1 Bounded Rationality and Cognitive Biases

Human decision-making is not fully rational, but constrained by limitations in information processing, cognitive capacity, and time—what Herbert A. Simon termed "bounded rationality"(Simon, 1957). When allocating resources between teaching and research, faculty members often rely on heuristics—mental shortcuts—rather than fully rational calculations, leading to systematic deviations from rational choice. The availability heuristic, as demonstrated by Tversky

and Kahneman, describes how people judge the frequency or importance of an event based on how easily examples come to mind (Tversky & Kahneman, 1973). In the context of "research-over-teaching,"research outputs—such as publications, grants, and awards—are highly visible and frequently recalled in performance reviews, promotion committees, and institutional reports. These "high-exposure" achievements are more accessible in memory and thus assigned disproportionate weight in self-evaluation and peer comparison. In contrast, excellent teaching is often manifested through informal feedback, subtle student growth, or long-term impact—outcomes that are difficult to quantify and lack institutional channels for recognition. Consequently, teaching contributions are less "available" in the cognitive schema of academic value, leading to their undervaluation in resource allocation decisions.

Present bias and temporal discounting represent another critical cognitive mechanism. Behavioral economics has shown that individuals tend to overweight immediate rewards relative to delayed ones—a phenomenon known as temporal discounting (Frederick et al., 2002). Under the hyperbolic discounting model, the psychological value of future rewards diminishes sharply as they approach the present. Research activities often yield tangible outcomes within a short timeframe (e.g., paper acceptance, grant funding), while the benefits of teaching —such as student learning and development—are delayed and difficult to observe. Consequently, even when faculty members cognitively recognize the long-term value of teaching, the present bias leads them to prioritize research, which offers more immediate feedback and career rewards (O' Donoghue & Rabin, 1999). This cognitive mechanism reinforces the behavioral pattern established by institutional incentives.

The anchoring effect further exacerbates this bias. Tversky and Kahneman found that individuals rely heavily on initial reference points, or "anchors," when making judgments under uncertainty (Tversky & Kahneman, 1974). In the quantified evaluation systems of universities, metrics such as journal impact factors, publication counts, and grant amounts serve as powerful anchors. These numerical targets become the default benchmarks for career planning and self-assessment, shaping faculty perceptions of success and progress. Because teaching lacks clear, standardized metrics, it fails to provide a strong anchor. As a result, it is cognitively marginalized in decision-making, even when its intrinsic value is acknowledged. The anchoring effect thus amplifies the institutional bias toward research by embedding quantitative targets into the very fabric of academic identity.

3.2 Prospect Theory and Reference Point Dependence

Prospect Theory, developed by Daniel Kahneman and Amos Tversky, offers a pivotal psychological framework for understanding faculty behavior under research-oriented evaluation systems. The theory posits that individuals do not evaluate outcomes in absolute terms, but rather in relation to a reference point, weighing gains and losses asymmetrically (Kahneman & Tversky, 1979).

As discussed in the previous section on anchoring, faculty career goals are often anchored to research metrics. Reference point dependence further explains why academics become deeply entrenched in research-focused behavior and struggle to reorient toward teaching. Faculty members' decisions between research and teaching are typically influenced by two types of reference points: institutional reference points, such as explicit requirements for tenure (e.g., number of publications, project funding levels), and social reference points, including the average research output within their peer group or discipline (Heath et al., 1999; Johnson et al., 2019). These reference points not only establish external benchmarks for performance evaluation but also gradually become internalized as psychological expectations of professional identity.

A core mechanism of Prospect Theory is loss aversion: individuals are significantly more sensitive to losses than to equivalent gains (Kahneman & Tversky, 1984). For university faculty, failing to meet research targets not only jeopardizes structural benefits—such as promotion, funding, and status—but also triggers strong feelings of psychological loss, insecurity, and professional failure. In contrast, even positive teaching outcomes—such as high student satisfaction or improved learning—rarely generate comparable institutional rewards or emotional reinforcement. Consequently, to avoid the subjective experience of "research failure," faculty often prioritize research protection, thereby reducing investment in teaching (Figure 2 [Figure 2: see original paper]). Furthermore, Prospect Theory suggests that risk preferences are context-dependent. When in the "gain domain" —i.e., when research output exceeds the reference point —individuals tend to become risk-averse and may be more willing to allocate effort to stable, low-risk activities like teaching. However, when in the "loss domain," individuals often adopt risk-seeking behaviors to "recover" from perceived deficits (Tversky & Kahneman, 1992). Under the "up-or-out" tenure system, early-career faculty who fall short of research benchmarks often adopt aggressive resource reallocation strategies—such as reducing preparation time or minimizing student interaction—to maximize research output. While this behavior may appear rational at the individual level, it contributes to a systemic devaluation of teaching at the collective level.

3.3 Social Preferences and Identity Formation

Human behavior is not solely driven by self-interest but is profoundly shaped by social context and the actions of others. Theories of social preferences and identity formation reveal the deep-seated socio-psychological mechanisms underlying the "research-over-teaching" bias. Academic identity and prestige orientation play a central role in modern higher education, where a faculty member' s professional identity is often anchored in the role of the "scholar." This identity is established and reinforced through recognition and prestige within the academic community (Akerlof & Kranton, 2000). The current system of academic prestige is heavily skewed toward quantifiable, original research outputs (Merton, 1968). A paper published in a top-tier journal typically garners far more peer

recognition than a high-quality course. As a result, the pursuit of research is not merely a rational response to performance pressure, but also a crucial pathway for maintaining and enhancing one' s academic identity.

Conformity and peer pressure further reinforce this dynamic. When a majority of members in an organization or academic community adopt a particular behavior, individuals often face implicit social pressure to conform (Fehr & Gächter, 2002). In a research-dominant academic environment, faculty members who prioritize teaching may be perceived as lacking ambition or commitment, and risk being marginalized from scholarly networks and collaborative opportunities. To gain a sense of belonging and avoid negative evaluation, many academics adjust their behavior—actively or passively—toward the prevailing norm of research prioritization. Research also suggests that faculty preferences for research are not entirely innate, but are instead an adaptive outcome shaped by institutional incentives and cultural norms (Deci & Ryan, 2000; Bénabou & Tirole, 2003). Initially, faculty may prioritize research due to instrumental motives—such as career advancement or job security. However, as research efforts yield positive feedback—such as publication success, peer recognition, and personal satisfaction —these extrinsic motivations can gradually internalize into intrinsic preferences. Conversely, teaching engagement is often undermined by institutional neglect and social marginalization, leading to the erosion of its value in the academic psyche. Over time, these dynamics foster a self-reinforcing behavioral inertia, solidifying the "research-over-teaching" pattern.

4. Consequences of the "Research-over-Teaching" Bias

The systemic bias toward research functions as an "invisible hand" that profoundly reshapes higher education. Its negative consequences extend far beyond the classroom, eroding the health of the research ecosystem and undermining the long-term development of academic staff.

4.1 Direct Damage to Talent Cultivation Quality

The most immediate and significant consequence of the "research-over-teaching" bias is the erosion of undergraduate education quality. When faculty members divert substantial time and effort from teaching to research, the academic vitality and educational mission of undergraduate programs are inevitably compromised. When research and teaching are disconnected, scholarly advances rarely inform classroom content, leading to a highly static curriculum (Healey, 2005). Teaching innovation and student-centered pedagogical reforms are often perceived as additional burdens rather than core career assets, weakening the adoption of inquiry-based and active learning methods (Prince, 2004). This directly undermines the university' s core function of cultivating students' critical thinking and innovative capabilities (Freeman et al., 2014). Moreover, student-faculty interaction is significantly reduced. Under intense research pressure, faculty often cut back on office hours, academic advising, and informal mentor-

ing, depriving students of personalized support and weakening the formation of academic communities. Empirical studies consistently show that frequent, high-quality interactions between students and faculty are key drivers of student satisfaction and academic success (Umbach & Wawrzynski, 2005; Daumiller et al., 2021). Yet, faculty under heavy research loads are less likely to sustain such engagement.

4.2 Long-Term Distortion of the Research Ecosystem

At first glance, the "research-over-teaching" bias appears to boost scientific output in universities. However, beneath this surface-level productivity lies a deepening crisis within the academic ecosystem. First, the quantification-driven evaluation system fosters an instrumental orientation focused primarily on measurable outputs. Empirical evidence shows that an overreliance on metrics such as publication count and journal impact factor incentivizes scholars to pursue short-term, low-risk, and highly publishable topics, while groundbreaking, long-term, and high-risk research is systematically marginalized (Geschwind & Broström, 2015; Daumiller & Dickhäuser, 2019). This distorted incentive structure leads to a phenomenon of "quantity over quality" and "illusory prosperity" —a surge in output volume with limited genuine innovation or societal impact (Fanelli, 2012). Second, the decoupling of research and teaching undermines the efficient circulation of knowledge. When faculty effort is predominantly directed toward research, scholarly advances often fail to be integrated into classroom instruction. Accordingly, cutting-edge knowledge is not effectively transmitted to students, creating a critical gap between knowledge production and dissemination. This disconnection not only weakens students' exposure to frontier scholarship but also reduces the overall efficiency of knowledge innovation and diffusion in higher education.

4.3 The Systemic Distortion of Faculty Development

The "research-over-teaching" bias also exerts a systemic distortion on academic career development, particularly affecting early-career faculty. In institutions governed by "up-or-out" tenure systems, the overwhelming emphasis on research output compels young academics to prioritize publications and grants, often at the expense of teaching. This institutional logic marginalizes teaching as a core academic responsibility and undermines the ideal of "learning through teaching." The resulting imbalance contributes to heightened stress and burnout. The relentless pressure to produce research under tight deadlines erodes well-being and job satisfaction (Leisyte, 2016). When teaching is neither rewarded nor recognized, the intrinsic motivation to engage in high-quality instruction diminishes, further exacerbating psychological strain. Moreover, the overvaluation of research compresses the diversity of academic roles. A system that equates scholarly value solely with research output marginalizes those who excel in teaching, public engagement, or knowledge translation. This homogenization contradicts the university' s pluralistic mission and fosters a monoculture of research-centric

careers (Marginson, 2007). Over time, this undermines institutional innovation and weakens the alignment between academic work and broader societal needs.

5. Institutional Reconstruction: Economic-Based Pathways to Correct the "Research-Over-Teaching" Imbalance

To effectively address the "research-over-teaching" phenomenon in higher education, this chapter leverages the analytical frameworks of traditional and behavioral economics, introducing a teacher utility function model as the theoretical foundation. It systematically explores how policy adjustments can optimize faculty time allocation, resource distribution, and behavioral incentives to achieve a dynamic balance between teaching and research. The proposed strategies adhere to the principle of incentive compatibility (North, 1990), aiming to reshape the institutional environment and guide faculty' s bounded rational behavior toward an equitable emphasis on teaching and research (Altbach, 2011). The approach emphasizes multidimensional synergy: innovating evaluation systems to restructure incentives, embedding the Scholarship of Teaching and Learning (SoTL) alongside resource optimization to strengthen intrinsic support, and integrating implementation mechanisms with behavioral interventions to ensure operational feasibility and sustainability.

5.1 Teacher Utility Function Model: Theoretical Foundation and Incentive Optimization

From an economic perspective, the "research-over-teaching" phenomenon stems from an imbalance in incentive structures. Faculty face conflicting incentives between research output and teaching quality under current evaluation systems, resulting in a bias toward research in resource allocation. To rigorously analyze and address this issue, this study constructs a teacher utility function model as the cornerstone of institutional reconstruction:

$$U = \alpha \cdot r_r + \beta \cdot r_t - C(\alpha, \beta)$$

where α represents the proportion of time allocated to research ($0 \leq \alpha \leq 1$); β denotes the proportion allocated to teaching ($\beta = 1 - \alpha$); r_r is the expected return rate from research, encompassing career advancement and external recognition from publications and grants; r_t is the expected return rate from teaching, including student satisfaction, teaching quality evaluations, and intrinsic fulfillment; and $C(\alpha, \beta)$ is the time opportunity cost function, assuming costs increase with greater investment in either activity.

Grounded in human capital theory (Becker, 1993), the model assumes faculty maximize professional utility by rationally allocating time between research and teaching. However, prevailing evaluation systems overemphasize research outcomes, rendering teaching returns comparatively lower and distorting time allocation, thus fostering the "research-over-teaching" bias. Empirical evidence

supports this view; for instance, researchers found, within a behavioral economics framework, that low teaching loads strongly correlate with high research output, with gender differences amplifying the crowding-out effect on teaching investment, particularly in precarious contract environments (Krakovich & Coates, 2023). In typical institutional settings, the teaching time proportion β is often below 0.3, yielding a Nash equilibrium favoring research prioritization. Faculty maximize short-term utility through research, but this compromises overall teaching quality, creating a prisoner' s dilemma (Axelrod, 1984). Cadez et al. (2017) empirically examined the relationship between research performance and teaching quality but did not specify numerical thresholds. At this point, teacher utility is maximized, with increased teaching investment and only marginal adjustments to research output. This shift avoids the "incentive crowding-out" paradox, as intrinsic motivations, such as teaching fulfillment, are reinforced at higher β levels (Bénabou & Tirole, 2003; Vansteenkiste et al., 2006). Real-world examples, such as the tiered evaluation system of Australia' s Group of Eight universities, illustrate that dynamic weight adjustments reduce opportunity costs and enhance overall utility (Group of Eight [Go8], 2024). Recent large-scale surveys indicate substantial burnout among higher-education employees. O' Meara and Culpepper (2023) discuss workload equity as a structural response rather than providing burnout prevalence data. This model enables targeted adjustments to return rates and cost functions, optimizing incentives for balanced faculty behavior.

5.2 Innovations in Teaching Evaluation Systems: Diversified Indicators and Dynamic Adjustments

Current faculty evaluation systems heavily prioritize research output, sidelining teaching' s core role and exacerbating incentive imbalances (Shin & Cummings, 2010). To address this, a diversified evaluation system centered on talent cultivation should be established, incorporating innovative indicators and dynamic weight adjustments to restructure the cost–benefit framework and achieve teaching–research equilibrium. First, adopting evidence-based teaching evaluation methods can quantify teaching effectiveness, mitigating the subjectivity and uncertainty of traditional approaches. This method integrates multisource data, such as student interaction logs, course feedback, and learning outcomes, to provide objective assessment criteria (Gibbs & Simpson, 2004). For example, the UK' s Teaching Excellence Framework (TEF) has heightened institutional attention to teaching quality and student outcomes (Office for Students [OfS], 2024). Whether it has led to measurable increases in overall teaching expenditure remains uncertain and warrants further financial-impact evaluation. Building on this, learning analytics can further emphasize active learning outcomes as core indicators of teaching excellence, shifting evaluations from teacher performance to student engagement and achievement (Prince, 2004). Recent studies, such as the US Department of Education' s annual assessment plans, advocate integrating evidence-based methods into student proficiency evaluations and data synthesis to enhance systemic reform (U.S. Department of Education, 2025).

Additionally, the DORA research assessment reform initiative proposes a three-year strategic framework to promote diversified indicators, avoiding singular quantitative biases (San Francisco Declaration on Research Assessment [DORA], 2023).

To enhance evaluation flexibility, a "representative works" system should be implemented, allowing faculty to submit exemplary course designs or student outcomes as assessment materials. MIT's Open Learning and J-WEL initiatives have enhanced the visibility of teaching innovation through portfolio practices and dedicated grants (MIT Office of Open Learning, 2024). Quantitative evidence of increased career-return or promotion rates has not yet been systematically evaluated. In the post-pandemic era, such data-driven models are particularly crucial, as digital transformations (e.g., MOOCs) offer opportunities to address gaps in traditional classroom observations. This system's dynamic adjustments directly align with the utility function model's focus on optimizing return rates, ensuring teaching achieves equitable status in the incentive structure.

5.3 Embedding Scholarship of Teaching and Learning, Resource Optimization, and Implementation Mechanisms: Synergistic Support and Behavioral Guidance

Embedding the SoTL concept can foster deep integration of teaching and research, and help address the diminished status of teaching within the "research-over-teaching" culture while positioning teaching as a scholarly activity worthy of investigation, thus enhancing its prestige and appeal. Specifically, institutional designs can integrate teaching outcomes into research evaluation systems and encourage problem-oriented curricula to achieve bidirectional synergy. For instance, the UK's Advance HE National Teaching Fellowship Scheme has significantly increased teaching output among awardees by rewarding innovations (Advance HE, 2024). Similarly, Utrecht University's teaching community model in the Netherlands fosters interdisciplinary collaboration and strengthens faculty identification with teaching (Utrecht University, 2024). Stanford University's Course Innovation Awards further demonstrate that targeted funding enhances faculty satisfaction and transforms classroom practices into research inspirations (Stanford University, 2024). This "teaching-oriented research" mechanism balances workloads and restores teaching's professional dignity, ensuring faculty receive recognition commensurate with their contributions. The European University Association (EUA) emphasizes that institutions should embed SoTL through structured frameworks, student engagement, and leadership to elevate its strategic importance (EUA, 2025).

On the resource optimization front, drawing from public goods theory, teaching —as a shared-benefit activity—requires dedicated subsidies to ensure equitable allocation (Musselin, 2007). Current resource distribution often over-relies on research output, intensifying imbalances (Hazelkorn, 2015; Musselin, 2018). Ac-

cording to Higher Education Statistics Agency [HESA], approximately 43% of UK academic staff hold contracts that combine both teaching and research responsibilities (HESA, 2023, 2024). This statistic reflects prevailing employment structures but does not constitute a policy recommendation on teaching-time allocation. Additionally, introducing "teaching quality funds" with integrated feedback and peer reviews can incentivize teaching team formation, as evidenced by similar initiatives (Brew, 2003). The National University of Singapore' s Teaching Enhancement Grants illustrate how reducing teaching costs boosts faculty motivation (National University of Singapore [NUS], 2024). These measures collectively tilt resource allocation toward teaching, supporting long-term teaching–research equilibrium. Recent US Department of Education plans further advocate evidence-building and resource reallocation to improve teacher preparation programs (U.S. Department of Education, 2023, 2025).

To ensure operational feasibility, multi-stakeholder implementation mechanisms are essential. Governments, universities, and faculty must form integrated frameworks to align incentives with practical needs, as exemplified by the European Commission' s Modernisation Agenda through dynamic evaluations (European, 2025). At the behavioral level, nudge theory enables low-cost tools to guide faculty behavior without restricting autonomy (Thaler & Sunstein, 2008). For example, the University of Maryland' s teaching development workshops, set as a default for new faculty, have significantly increased participation rates (O' Meara et al., 2017). TU Delft' s teaching impact dashboard provides real-time feedback, helping faculty visualize teaching value and shape new norms (Leisyte, 2016). Furthermore, Patterson (2023) underscores that nudge interventions in online classrooms enhance student engagement, indirectly strengthening teacher motivation. These mechanisms align with the utility model by fine-tuning opportunity costs and intrinsic motivations, creating a cohesive framework for institutional reconstruction.

6. Towards a Development Agenda: Future Directions for Advancing the Teaching-Research Balance

This study employs a dual perspective from traditional and behavioral economics to systematically analyze the "research-over-teaching" phenomenon in higher education. The findings reveal that this issue is not merely a result of faculty moral shortcomings or isolated management failures but rather the product of complex interactions between rational individual behaviors and irrational psychological mechanisms within specific institutional contexts. The current evaluation and incentive systems disproportionately prioritize easily quantifiable research metrics, enhancing the visibility and expected returns of research activities. Consequently, faculty, in their rational career calculations, tend to allocate limited time and energy preferentially to research. Cognitive biases, such as the availability heuristic, loss aversion, and social identity, further reinforce this behavioral preference, culminating in a path-dependent, self-reinforcing "research-first" equilibrium that is resistant to automatic correction.

As demonstrated through a bibliometric analysis of literature from 2000 to 2023, the research-teaching nexus (RTN) has evolved into multiple "collaborative clusters," focusing on key themes such as undergraduate research experiences, teaching cognition, and active learning technologies (Tight, 2016; Xiong et al., 2025). This knowledge map underscores the highly complex, multidimensional nature of the teaching-research relationship, indicating that addressing the "research-over-teaching" issue through singular policies—such as merely adjusting evaluation weights—is like trying to solve a dynamic problem with static tools, ineffective in tackling the root causes. Therefore, institutional interventions to rectify this imbalance must transcend single-dimensional approaches. Moral exhortations or marginal salary adjustments, while supportive, fall short of addressing the underlying issues. Effective reform hinges on a systemic restructuring of institutional frameworks, with the core objective of "repositioning teaching at the heart of university functions." This requires granting teaching academic status and predictable returns equivalent to those of research across critical domains, including evaluation criteria, resource allocation, and academic prestige systems. Such restructuring fundamentally reshapes the cost-benefit framework faced by faculty, guiding them to rebalance their academic efforts. Specifically, the utility function model and incentive-compatible pathways proposed earlier provide a guiding framework for fostering diversified evaluation innovations, embedding SoTL, and optimizing resource allocation to achieve a dynamic teaching-research equilibrium.

It should be noted that this study primarily relies on theoretical construction and literature synthesis, lacking large-scale empirical data validation, which presents certain limitations. In particular, the parameters and effect sizes of the proposed game-theoretic and behavioral frameworks require further testing and quantification through empirical data. Future research can advance in three key directions to deepen understanding and inform policy practice. First, discipline-specific analysis is needed because the tension between teaching and research manifests differently across disciplines. For instance, humanities disciplines often involve long research cycles and subjective outcome assessments, whereas engineering fields tightly integrate teaching with experimental practice. Future studies should investigate the specific mechanisms and influencing factors within each discipline to inform targeted policy designs. Second, research should integrate new variables in the context of digital transformation. Emerging technologies, such as artificial intelligence, massive open online courses (MOOCs), and virtual teaching systems, are reshaping knowledge production and dissemination. Future research should explore how technological advancements influence faculty' s opportunity cost assessments between teaching and research. For example, can AI assistants alleviate repetitive teaching burdens? Can data from teaching platforms provide more objective evaluation metrics? These new variables offer fresh dimensions for institutional optimization. Third, policy experiments and impact evaluation are crucial. Recent trials of differentiated evaluation systems and "representative works" mechanisms in some institutions provide valuable cases. Future research should conduct quasi-experimental or

field studies in real-world reform contexts to systematically evaluate the effectiveness and adaptability of various reform pathways. Such studies will not only validate the theoretical assumptions proposed herein but also provide empirical foundations for national-level educational policy adjustments and broader implementation.

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Note: Figure translations are in progress. See original paper for figures.