

# 7. Funding of higher education institutions through the lens of agency theory

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## INTRODUCTION

Allocation methods of public funding of higher education institutions (HEIs) are one of the most important tools that can be utilised to steer higher education institutions towards policy objectives. Essentially, funding is assumed to create economic incentives for HEIs to pursue those actions and outcomes that allow them to gain higher levels of funding. One of the most incentivising allocation forms is believed to be performance-based funding (PBF), which has, over the past decades, become a common method of distributing public funds all over the world (Kivistö & Suprun, 2024). The main idea behind PBF is to incorporate policy objectives into a certain set of performance indicators (in higher education often the number of degrees, study credits, publications, volume of generated research funding) that are geared to achieve the desired policy outcomes (Jongbloed & Vossensteyn, 2001; Kivistö & Kohtamäki, 2016).

The rationale for using PBF is based on propositions of economic theories, mainly agency theory (e.g., Kivistö, 2007a; Kivistö & Zalyevska, 2015) but also resource dependency theory (Adam, 2020; Kohtamäki, 2023). Both theories hold the assumption that aligning the self-interest of HEIs with public goals through PBF will result in changes in HEI behaviour, which in turn translates into higher performance in terms of reaching the public goals. However, although logically valid, empirical proof of verifying this assumption has so far been rather mixed and inconclusive (see e.g., Dougherty & Natow, 2020; Ortagus et al., 2020; Shin et al., 2023).

This chapter delves into the dynamics of HEI funding through the lens of agency theory. It describes the structure of the theory, its assumptions, and its explanatory and predictive capabilities. The chapter also provides an assessment of agency theory's strengths and weaknesses in framing funding and

monitoring modalities associated with public funding of HEIs, with a particular focus on PBF.

## AGENCY THEORY

Agency theory analyses the relationship between two or more parties where one party (called the principal) engages another party (called the agent) to perform some task on its behalf. The theory assumes that once agents start working on the given task, principals often have problems controlling the accomplishment of the task (Ross, 1973; Jensen & Meckling, 1976; Moe, 1984). This is largely due to the self-serving behaviour of the agents (goal conflicts) and because agents often have better information about their efforts than their principal (informational asymmetries). Together, potential goal conflicts and informational asymmetries trigger conditions for opportunistic self-serving behaviour on the part of the agent, also known as the ‘moral hazard’ problem (Kivistö & Zalyevska, 2015; Kivistö et al., 2017; Kivistö & Mathies, 2023). This refers to the tendency of an agent to exercise too little effort, care, or diligence when accomplishing the task (Milgrom & Roberts, 1992). Concrete aspects of the opportunistic behaviour typical of moral hazard problems may include shirking or other forms of private utility-generating actions that are not in the best interests of the principal.

Agency theory proposes two alternative funding and controlling strategies for principals to resolve the challenge posed by the opportunistic behaviour of the agent. Traditionally, these are known as ‘behaviour-based contracts’ and ‘outcome-based contracts’, where the first is targeted primarily at tackling informational asymmetries and the second at neutralising goal conflicts (Eisenhardt, 1989). Concrete examples of these types of contractual arrangements and their combinations can be found almost everywhere: for instance, in families (child weekly allowance or an allowance tied to accomplishing pre-defined household duties), labour markets (working hours-based salary vs. provision-based salary), and contracts between businesses (invoicing based on work with fixed hourly rates vs. accomplishment of a project with a fixed price). Both contractual options involve costs, benefits, and risks that each agency theory offers detailed insights into (see Kivistö, 2007a). For instance, when desired outcomes are not easily measurable or uncertain in the sense that the principal has only a limited impact on observing them, outcome-based compensation becomes less attractive (and vice versa). Similarly, when the accomplishment of the assigned tasks of the agent is too complex to monitor effectively or when goal conflicts between the principal and agent are high, principals tend to rely on outcome-based compensation (and vice versa) (Eisenhardt, 1989; Kivistö, 2007a).

Behaviour-based compensation passes the risk to the principal as the agent gets compensated regardless of the produced outcomes. Outcome-based compensation passes the risk of non-performance to the agent: if the agent does not perform, they will not get compensated for their efforts. Therefore, agency theory assumes that agents who consider themselves to be high performers prefer outcome-based compensation, whereas low performers prefer not to be compensated (solely) on performance (Eisenhardt, 1989). Similarly, each of the contractual strategies is associated with costs; monitoring agent actions and measuring performance has a cost that the principal needs to bear and acknowledge when choosing the most effective contractual option (Jensen & Meckling, 1976; Kivistö, 2007a).

Applying agency theory in higher education studies requires that principals and agents as well as the characteristics of the agency relationship are defined. When agency theory first emerged in the higher education field in the early 2000s, the research focus was primarily on relationships between some public governing entity and universities (see Gornitzka et al., 2004; Kivistö, 2005; 2007a; Lane & Kivistö, 2008). The relationship between public authority and HEIs can be considered to be an agency relationship when the following three conditions are present: (a) tasks that a public authority delegates to the HEI; (b) resources allocated to the HEI for accomplishing the tasks; and (c) the interest of the public authority to follow the accomplishment of tasks. The form of the agency relationship between the authority and an HEI can be hierarchical, contractual, or some combination of these two. In the case of a purely hierarchical relationship (traditional governance by law and regulations), HEIs are viewed more as public agencies implementing government policies, whereas in relationships containing contractual elements (e.g., performance agreements) a stronger sense of reciprocity and negotiation is included in the relationship (Gornitzka et al., 2004; Kivistö, 2007a).

The public authority as a principal can be defined differently depending on the context and perspective. When understood in a narrower sense, the public authority can be viewed as a public bureau such as a ministry or department of education. Also, actors like funding councils operating under the auspices of ministries/departments can be considered as principals as far as they play a role in setting the tasks, allocating the resources, and monitoring the institutions. An HEI as an agent is an organisational actor that has legal and economic boundaries separating it from the body of public authority.

The logic of behaviour-based compensation can be found in funding arrangements where resources are allocated to cover distinct university costs such as staff salaries, material means, building maintenance costs, or investments. As with behaviour-based contracts, the verification of universities' actions takes place primarily through monitoring the resource use and production activities (i.e., monitoring the behaviour), and the amount of funding is connected to the

results identified by these observations (i.e., rewarding the behaviour/actions taken). On the other hand, the logic of outcome-based contracts is self-evident in PBF: part of the resource allocation is based on HEI performance as measured by performance indicators (Kivistö & Zalyevska, 2015).

## STRENGTHS OF AGENCY THEORY IN CONCEPTUALISING HEI FUNDING

Agency theory has been endorsed for its uniqueness, adaptability, simplicity, clarity, and usefulness (see e.g., Kivistö, 2007a, 2008). This is also evident when examining the economic characteristics of HEIs with respect to the behavioural implications and choice of funding-related governance mechanisms. This section summarises the most important of these.

### **Highlighting the Value of and Need for Incentive Alignment**

Agency theory suggests that the way funding is channelled to HEIs matters from the perspective of incentive alignment or lack thereof. PBF can be seen as an outcome-based compensation that aims to align the incentives for higher education institutions with the policy goals of the public authority. Typical education-related performance indicators utilised in PBF formulae are completed bachelor's and master's degrees, accumulated study credits, student feedback surveys, graduation rates, time-to-degree, and employability of graduates. On the research side, bibliometric indicators, accumulated competitive research funding, and the number of doctoral degrees granted are the most commonly used indicators (see e.g., Loukkola et al., 2020).

Agency theory suggests that incentive alignment requires knowledge about performance metrics and feasibility aspects of measuring performance. Key factors here are 'outcome measurability' and 'outcome uncertainty', meaning how accurately and proportionally justified the selected indicators reflect the quality and quantity of HEIs' educational and research outcomes, and how feasible the attainment of these outcomes is for HEIs. For instance, as performance indicators, awarded degrees and graduation rates represent educational outcomes of HEIs fairly well in terms of quantity and volume, but less so as proxies of quality. Time to degree and obtained study credit indicators are valid throughput measures suggesting that quality has something to do with smooth progression in studies but then again they do not necessarily reflect educational quality as achieving the desired learning outcomes (e.g., Bound et al., 2010; Tandberg et al., 2014; Attewell & Monaghan, 2015). The employability indicator is a fairly good surrogate for the relevance and reputation of graduate skills and knowledge but is uncertain since HEIs have limited means to impact employability, particularly when it comes to regional differences

impacting the labour market dynamics or disciplinary differences in finding employment (see Tight, 2023).

### **Understanding the Role and Impact of Information Asymmetries in HEI Governance**

The need for funding bodies to put forth different types of monitoring efforts on HEIs is caused by the inherent informational asymmetries surrounding the HEIs. For instance, annual reporting on activities and finances can logically be explained by the informational asymmetries (and general mistrust). Without using means of verification decreasing the level of information asymmetries such as reporting and audit, public authorities would not be able to determine what has happened to the funds they allocated and whether these were used purposefully. This again is essential for accountability and the justification for HEIs receiving public funds. Similarly, the requirement to go through procedures of external quality assurance can be seen as a tool to overcome information asymmetry. The role of external quality assurance is to confirm that HEIs truly meet the required quality standards, and this is done by making a deep dive into the processes and practices of the HEI that determine the quality.

At the same time, agency theory underlines the importance of acknowledging the costs associated with actions aimed at decreasing informational asymmetries (Jensen & Meckling, 1976). The costs are mainly caused by increased bureaucracy on both sides, which costs both in money and effort. Therefore, monitoring should also be considered an opportunity cost, taking resources away from the academically productive activities at the price of securing accountability in the use of public funds (Kivistö, 2007a).

### **Addressing the Root Causes of Inefficiencies**

Due to its behavioural assumptions, agency theory offers a rational justification for monitoring and PBF. This justification is rooted in a belief that HEIs' interests are not automatically aligned with those of the funding bodies and that, without countermeasures, this mismatch is likely to cause inefficiencies and resource losses. Considering self-interest and opportunism as causes for HEI performance failures opens up a more precise way to assess the impact of accountability measures used by public authorities (Kivistö, 2007b). Seeing opportunistic behaviour as a real possibility raises essential questions that higher education communities and policy makers must deal with in concrete terms.

## Attention to More Cost-informed Governance

Agency theory is unique in the sense that it offers an analytical tool to assess the most appropriate methods of organising funding, monitoring, and performance measurement in a given context. It draws attention to the direct and indirect costs resulting from governing but, at the same time, it also acknowledges the possibility of financial losses due to the opportunistic behaviour of the HEIs. Although monetary costs and benefits are impossible to calculate exactly, insights offered by the theory enable a more systematic analysis of alternative governance choices and their feasibility when it comes to cost (Kivistö, 2007a).

## Exploration of Behavioural Responses of HEIs

Agency theory is also able to explain and predict the behavioural responses of HEIs vis-à-vis the used governance methods. For instance, the impacts of the PBF have been studied by using agency theory as a framework on organisational behaviour and decisions (e.g., Hanes, 2020) and HEI performance (e.g., Lahr et al., 2014; Kivistö et al., 2017). These studies implicate that PBF indeed triggers organisational behaviour in line with the used funding mechanisms (e.g., Dougherty & Reddy, 2011; 2013) but that this behaviour is not always improving HEI performance. However, the challenge for most of these studies is that investigating the causal chain behind incentives and actualised performance/non-performance is rather ambiguous (Rabovsky, 2012; Kivistö & Kohtamäki, 2016). Showing that the use of PBF causes managerial and administrative responses in HEIs, that then translate into changes in production processes, is far from being empirically established. Further, proving that these changes result in improvements in HEI performance has not been easy due to the unknown impact of other known and unknown extraneous variables.

All in all, agency theory provides a robust economic framework for understanding the principal-agent relationship in higher education. Its strengths include many of those attributes that are associated with 'good' theories: it simplifies the complexity of funding relationships within a clear framework and highlights the challenges and potential solutions attached to different funding models. Further, it also offers explanations for why certain funding models like PBF are used and how they are likely to impact institutional behaviour. Lastly, the theory has some predictive capabilities by addressing potential issues arising from goal conflicts and information asymmetries, offering insights into designing funding strategies in a given context.

## WEAKNESSES OF AGENCY THEORY IN CONCEPTUALISING HEI FUNDING

As with other theories, agency theory has several obvious weaknesses, most of which are related to the foundational assumptions it makes. While its behavioural assumptions enable gaining unique and often overlooked insights, they also limit the scope of the theory. Agency theory also neglects forms of interaction other than through formal economic incentives and sanctions (Kivistö, 2008; Kivistö & Zalyevska, 2015). But in complex higher education settings, not just economic assumptions and rationales are important, and so agency theory is limited in this respect. In order to gain a comprehensive picture of the value of agency theory, this section now summarises the main limitations and weaknesses of the theory.

### **Negative and One-sided Behavioural Assumptions**

Agency theory has been criticised for having too simplistic and unwarranted assumptions concerning human motivation and behaviour. The focus on self-interested and opportunistic behaviour ignores a wider range of human motives including altruism, trust, respect, and the intrinsic motivation of humans to accomplish the tasks they are assigned to. Therefore, if HEIs are considered only as aggregates of self-interested and opportunistic pursuers of revenue and prestige, a high level of realism, objectivity, and tactfulness will undoubtedly be lost. While it is fair to assume that academics and administrators as individuals cannot be considered more efficient, honest, hard-working, and public-spirited than the members of any other profession or position, it is also fair to assume that they are not worse than others in these respects (Kivistö, 2007a).

### **Incomplete View on Performance Losses**

Even though agency theory does not suggest that self-interest and opportunism are the only motivators of human beings, the problem is that the theory fails to explain the principal's utility losses by any other factor than agent opportunism. Performance failures can result from a range of other factors that have nothing or very little to do with the self-serving behaviour of HEIs. When assessing the low or failing performance of HEIs, opportunistic behaviour is only one of the possible explanations. For instance, poor management or leadership behaviour, bad organising, or ineffective internal governance structures are likely to play a role as well. In fact, mismanagement is a factor that is often asserted as a primary cause of performance failures (cf. Andrews et al., 2006). Of course, intentional non-correction of mismanagement could also

be interpreted as opportunism but only if this is characterised as self-serving behaviour yielding some benefits for the parties involved (Kivistö, 2007a, 2007b).

Also, misfortune may explain the performance failures of universities. By definition, misfortune refers to circumstances beyond the control of the failing organisation (Andrews et al., 2006) and it is caused by a range of internal or external factors over which HEIs have little or no control. For instance, the differences between different geographical and economic environments can have crucial effects on HEIs' outputs. HEIs located close to central urban growth centres usually have significantly better opportunities to get research income, better graduate students, and more capable academics than the universities that are located in economically declining peripheral areas. In addition, the turbulent demand structures due to the shifting needs of students, research financiers, and society and existing competition among HEIs can impact significantly on the performance of HEIs (Mellahi & Wilkinson, 2004; Kivistö, 2007b).

### **Disregarding Unintended Consequences**

Even though agency theory acknowledges the difficulties of determining reasonable outcomes to be measured, it does not comprehensively address the problems that can result from controlling the agent. It has been suggested that performance measurement and organisational decisions involving them can themselves cause failing performance (see e.g., Havegral, 2015).

Defining measurable outcomes that should represent the broader interests of the principal will almost always fall short of measuring performance (or goals) holistically and thus it is prone to unintentional incentivisation resulting in dysfunctional behaviour. Most of these dysfunctions can be related to 'goal displacement', a phenomenon where 'an instrumental value becomes a terminal value' (Merton, 1968, p. 253) where meaningful but intangible goals are displaced by the narrower tangible goals set forth by performance indicators ('you only get what is being measured'). Several forms of goal displacement are possible in the context of PBF. Many of the dysfunctional effects relate to 'gaming' the system (Baker, 1992; Smith, 1995) which emphasises outcome quantity directly at the expense of outcome quality. It is important to acknowledge that gaming can improve performance in a way that benefits both the individuals and institutions involved, but at the same time, it often violates academic values and integrity (Aboubichr & Conway, 2023). For instance, an HEI may 'produce' more teaching by lowering the course requirements and increasing the number of study credits without an equal increase in the student workload (Dougherty et al., 2014). Acting in these and other similar ways, HEIs are also able to secure a higher graduation rate and shorter graduation time, often used as a key performance indicator. The same logic applies to

the measurement of research outputs. The phenomenon of ‘salami publishing’, where an author is ‘slicing’ a single topic or a finding unnecessarily into many publications, and the unjustified segmentation of a coherent dataset into its smallest publishable units (i.e., the minimum amount of data that warrants publication) for the sake of boosting performance, are probably the most well-known and documented forms of dysfunctionality (e.g., Xie & Ali, 2023).

### **Disregarding ‘Wrong’ or ‘Bad’ Goals**

Agency theory examines relationships without questioning the legitimacy, ethics, or sensibility of the principal’s goals. In this sense, it is purely the ‘principal’s theory’ without moral evaluation of the principal. Sometimes, the principal’s goals and tasks submitted to agents can be unclear, pernicious, or even contradictory (Kivistö, 2007a). Also, PBF is grounded on an assumption that HEIs are willing to pursue PBF incentives regardless of their ‘goodness’. Unfortunately, there seems to be no research evidence on how the differences in acceptability of performance indicators impact HEIs’ motivation to comply with them.

### **Conflicting and Multiple Principals**

A major limitation is also that the agency theory is not able to incorporate other competing principals outside the examined agency relationship into its framework. In reality, in modern liberal societies, HEIs are expected to interact with various stakeholders (e.g., students, donors, other public authorities, public and private research financiers, etc.) who are also resource providers, some of them significant ones. This might create a goal conflict between the main principal (public authority) and other competing stakeholder-principals (Kivistö, 2007a). The problem can be mitigated by designing the performance indicators to incorporate various interests as much as possible, but it cannot be abolished. This connects to the question of institutional autonomy of HEIs. Sometimes it can be in the best interests of an HEI to ignore the goals of public authority if resource dependencies on some other stakeholder groups are stronger. Regarding the use of PBF, this is particularly evident in contexts where the share of PBF out of the total funding is not significant. For instance, studies synthesising the results of existing research on PBF impacts on performance have shown that in the US, where PBF often plays a relatively minor role in HEI total funding, PBF has not been effective in improving degree completion (Ortagus et al., 2020; Shin et al., 2023). According to Bell (2017), failures of PBF to impact performance are indeed related to the diversity of HEI priorities and accountability to other stakeholders and to the fact that most public universities no longer rely mainly on state appropriations for revenue.

## PBF AND AGENCY THEORY: EMPIRICAL PROOF

PBF and agency theory rely on the same basic assumptions about what motivates people and what behavioural implications result from this motivation when it comes to performing the assigned tasks. As agency theory suggests, the underlying assumption is that PBF is expected to promote incentives for internal changes in HEIs so that they may be in a better position to improve their (measured and rewarded) performance and compete for a greater amount of public funding. Internal changes require decisions by institutional management, incentivisation of units (faculties, departments) and individuals (careers, salaries), and development of processes and practices expected to lead to increases in overall institutional performance. All this requires that (1) HEIs are sensitive to financial incentives and that they find PBF incentives valuable enough to change their behaviour (= sufficient motivation); and that (2) HEIs have the necessary means to change their productive behaviour in line with the PBF incentives if they want to do so (= sufficient capability) (Kivistö & Mathies, 2023).

In line with the postulations of agency theory, using PBF assumes that institutions would not place enough emphasis on improving their performance (mismanagement) or would wilfully bypass their chances to improve their performance (prioritising other things). If either of these assumptions is invalid, then the expected causal chain behind triggering greater HEI performance orientation does not work as expected. Therefore, more empirical research is needed to clarify the following question: What are the impacts that PBF funding is causing on HEIs' internal processes related to teaching and research, and to what extent does this impact improve HEI teaching and research performance?

Empirical evidence on the impacts of PBF on teaching and research seems to be mixed and could depend greatly on differences in policy contexts and research designs. For instance, in US policy contexts, most studies found that PBF has not been associated with increased educational performance (degree completion) but instead has created several types of unintended impacts (access and equity). According to Dougherty and Natow (2020), there is a lack of conclusive evidence that performance funding results in significant improvements in any student outcomes related to performance. This resonates with the findings of Ortagus et al. (2020) who analysed 52 empirical studies conducted between 1998 and 2020 on the intended and unintended consequences of PBF policies in the US. Their synthesis showed null or modest effects of PBF on the institutional outcomes primarily targeted by the policies. Similarly, Shin et al. (2023) analysed 36 empirical studies conducted between 1979 and 2021 in the US. Similar to other meta-analyses, their synthesis showed that PBF has not

been effective in improving degree completion and equity in higher education institutions in the US.

In Europe, PBF is still an under-investigated area of study despite the higher potential to do empirical research than in the US, since the share of PBF allocations is generally more significant than in the US. Most of the studies are conducted for policy-driven purposes and are less than six years old, often applying qualitative methodology and utilising expert opinions as their primary data (see e.g., Jongbloed et al., 2023). Most of the studies conclude that PBF has improved performance but unlike US studies (quantitative multivariate studies as quasi-experimental research design difference-in-differences analysis), these findings are not methodologically rigorous enough to be reliable and are prone to present only anecdotal evidence.

Some more rigorous European studies have been focusing on PBF and research performance so far with mixed findings. For instance, Pinar (2023) found that the financial incentives of the Research Excellence Framework in the UK have led to an increase in the performance of the universities. Mathies et al. (2020) found that PBF has impacted to some extent publication patterns of Finnish academics from 2012 to 2016 favouring publications rewarded by the performance indicators of the national funding model. On the other hand, Himanen and Puuska (2022) found that PBF has not significantly impacted university research productivity between the years 2009 and 2019 in Finnish universities. Lastly, Aagaard et al. (2015) found no indication that Norwegian citation impact in general has fallen or risen during the PBF implementation between 2004 and 2012.

From the perspective of presented causality assumptions, it remains unclear whether the share of PBF funding for total institutional budgets could play a role here: when the amount of resources allocated via PBF is smaller, HEIs seem to respond strategically by prioritising other sources of revenue. If this is true, then it supports the assumption that HEIs are sensitive to financial incentives and if PBF offers weaker incentives than other sources of income, it is unable to trigger changes leading to improved performance.

Research evidence supporting the assumptions that HEIs have the necessary means and motivation to change their productive behaviour in line with the PBF incentives is inconclusive at best; several authors have pointed out the research gap in this area (e.g., Aagaard et al., 2015; Kivistö & Kohtamäki, 2016; Krog Lind, 2019). According to Dougherty and Natow (2020), several studies in the US have found that performance funding has resulted in institutions making changes to their policies and programmes in order to improve student outcomes. There is also evidence that HEIs replicate or modify the system-level PBF indicators internally and, in this way, pass the incentives forward to the units which are actually responsible for performance (e.g., Hammarfelt et al., 2016; Woelert & McKenzie, 2018; Kivistö et al., 2021). This would suggest

that HEIs are motivated to follow PBF incentives. However, what is not known is under what conditions changes in HEI production processes are likely to be associated with positive changes in HEI performance.

What does all this mean from the perspective of agency theory? PBF clearly seems to follow the logic set by agency theory when it comes to believing that economic incentives are needed to align the interests between public authorities and HEIs by using economic incentives to achieve desired outcomes. Public authorities most often do not conduct an explicit analysis of which funding option is optimal given the agency costs and agency variables, but PBF is introduced because it is believed to increase performance in terms of productivity and efficiency through incentive alignment. So far, we do not have solid empirical proof that using PBF increases the performance of HEIs. This is due to the fact that the causal links between setting forth incentives and performance impacts are largely unknown due to the information asymmetries. However, agency theory suggests that outcome uncertainty could play a key role in assessing the causes of potential non-impact. Concretely, this means the identification of the most crucial intervening factors beyond HEIs' control influencing the potential non-impact and correcting them if possible. Testing agency theory in the context of PBF would require more knowledge on the use and results of PBF in different contexts. This would require quasi-experimental or other rigorous research designs which could provide an explanation of to what extent and why certain HEIs perform differently than others.

## CONCLUSIONS

Agency theory, as described in this chapter, can illuminate the underlying logic of PBF, its assumptions, and limitations in a clear and logically consistent manner. The theory provides a robust framework for understanding the principal–agent relationship in the context of public funding of higher education. By focusing on the dynamics of goal conflicts and information asymmetries, agency theory offers valuable insights into the key challenges of funding and accountability in higher education. Agency theory is a helpful framework for understanding the alignment and misalignment of interests and incentives and what potential impact these have on HEI performance.

Agency theory, like all other theories, has its limitations that need to be acknowledged in empirical research and therefore its application requires a nuanced understanding of the complex relationships and motivations within higher education and research. For instance, behavioural assumptions suggested by agency theory are not more than assumptions until they are proven by way of empirical research and limitations in scope mean that real-life complexities may be lost in the analysis if relying only on the perspectives framed by the theory.

When it comes to PBF, validating the causal chain linking performance incentives, HEI behaviour, and changes in HEI teaching and research performance is still to a large extent unresearched. This calls for further, more rigorous research on the impacts of PBF. This is particularly important for designing new PBF policies and for adjusting the existing ones.

For instance, further research could employ longitudinal and cross-cultural approaches to examine PBF's impacts on HEIs, especially to assess whether and how these funding models influence institutional behaviours, teaching quality, and research productivity over extended periods. Comparative studies across different countries with varying PBF intensities could provide insights into the role of national context in the effectiveness of these models. Since empirical evidence suggests mixed results for PBF effectiveness, further studies could investigate the specific mechanisms within institutions that lead to changes in behaviour under PBF models. This could include examining how units within institutions respond differently to funding incentives, potentially leading to varied levels of effectiveness and unintended outcomes. For the latter, since unintended consequences like 'goal displacement' and 'gaming the system' can undermine PBF effectiveness, research should focus on developing and testing strategies that reduce these behaviours. Experimenting with PBF models that include checks against gaming or encourage holistic outcomes might yield frameworks that minimise perverse incentives while maintaining institutional accountability.

Also, given HEIs' diverse stakeholder relationships, future studies could investigate how competing principal-agent dynamics impact institutional responses to PBF. This could include examining conflicts between HEI priorities for public authority and other stakeholders, such as industry partners or international funders, and how such conflicts shape institutional strategy and resource allocation.

At the same time, HEIs should learn from their own behavioural responses to PBF incentives. Even though decision-making in HEIs is often less economically rational than the agency theory would lead one to assume, most HEIs seem to be responsive to economic incentives. At the same time, HEIs seldom analyse in detail the implications of their own choices. Connecting all the dots between external financial stimulus and possible changes in performance would be important if we want to know more and assume less about the dynamics related to PBF.

In practice, this could mean the following: HEIs could establish internal systems to regularly assess and respond to PBF outcomes. This would include creating feedback loops that help units within the institution identify both positive and negative effects of PBF-related behaviour. Through such mechanisms, HEIs could fine-tune their approaches to meet performance metrics without compromising educational or research quality. At the same time, this would

mean that the institutions should invest in their data analytics capabilities. Enhanced data analysis should help HEIs to monitor performance indicators more effectively, identifying trends, bottlenecks, and areas for improvement. Training personnel in data interpretation related to performance funding would also support strategic decision-making. This should, however, take place by prioritising ethical considerations in responses to PBF. Institutional policies that reward academic integrity, quality, and long-term student success, as well as measures to prevent manipulation of metrics, are needed to promote a culture that aligns with the HEI's core values rather than solely pursuing funding incentives.

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