

How to win the lecturer game: an agent-based, game-theoretic simulation of an Indonesian faculty

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Abstract. Indonesian university lecturers play a long game: they divide limited weekly hours between the *tridharma* duties (teaching, research, community service), supervision, administration, outside work and rest, under a cumulative credit system that decides promotion and a pay system that rewards different things. I built *dosen-sim*, an agent-based simulator in which rule-based lecturer agents allocate their time under configurable regulations, and an engine computes every credit, salary and promotion. The main scenario is my own faculty: 70 lecturers in 12 laboratories over 30 years, with recruitment, probation, a no-rank teaching-staff period, doctoral study leave, workload reporting in credit units (SKS) and the performance bonus that depends on it, imposed teaching, and power dynamics: supervisor grades with a quota on the top grade, standing, liking, lab ties, favouritism in access to grants and students, and seniors who pass their work to juniors while keeping the credit. The scenario is partly calibrated to public aggregate data (the faculty’s publications, one semester’s timetable, public pay rules), to my own payslips and to my own estimates. This paper describes the mechanisms, rules, parameters and calibration in detail. A first, descriptive comparison of new hires finds that the research maximiser wins on promotion, pay and burnout at once, while the archetype most devoted to teaching loses on all three; I discuss how this incentive structure aligns and misaligns with the *tridharma* purpose of higher education. A rigorous strategy comparison is left for future work. It is a personal, curiosity-driven experiment by a member of the Indonesian academic community. Many assumptions are mine and therefore subjective, and the model needs independent data validation before any result is taken seriously.

Keywords: agent-based modelling; game theory; academic careers; Indonesia; higher education policy; workload; power dynamics; ODD protocol

1 Introduction

Every lecturer in Indonesia is, whether they like it or not, a player in a game with written rules and unwritten ones. The written rules are national and institutional regulations: a ladder of academic ranks (Asisten Ahli, Lektor, Lektor Kepala, Profesor) climbed by accumulating credit points (*angka kredit*, here KUM) in fixed proportions across education, research and community service; a yearly workload report (*Beban Kerja Dosen*, BKD) in credit units (*satuan kredit semester*, SKS); a certification that unlocks a professional allowance; and, at autonomous state universities (PTNBH), a performance bonus. The unwritten rules are the ones every lecturer learns in the corridor: who assigns the courses, whose grade counts, who gets the grant and the good students, who does the committee work, and who can hand their teaching to a junior colleague and still claim it.

This project started as my own curiosity. As a junior lecturer at an Indonesian faculty I wanted to see, in a sandbox, how one “wins” in this environment: which allocation of time reaches professorship fastest, which earns most, which keeps a person healthy, and how the answer changes when the institution changes its rules. It is also, frankly, a critique: by writing the unwritten rules down as explicit mechanisms, the simulation makes them visible and open to argument. It is not a study commissioned by anyone, and it is not a prediction of any person’s career.

The simulator, *dosen-sim* (Nuhamunada, 2026), follows a few strict design rules. The engine owns the truth: agents only choose actions, and the engine computes every outcome. Rules are pure, unit-tested functions. Regulations live in configuration files, and every value either cites a source or is marked as a placeholder. Every

random draw comes from a seeded stream, so a run is reproducible to the byte. Every action, message and outcome is appended to an event log, from which all metrics and a 3D replay viewer are computed. The model is described following the ODD protocol (Grimm et al., 2006; Grimm et al., 2020).

This paper documents version 0.2.3 in detail: the mechanisms (Section 3), the agents (Section 4), the rules and their parameters (Section 5), the department and its power dynamics (Section 6), the faculty case and its calibration (Section 7), what the model shows so far (Section 8), who wins and whether the game serves higher education (Section 9), its caveats (Section 10) and what comes next (Section 11).

2 Background

2.1 The lecturer career game

The setting is a single faculty of a PTNBH university. The elements below are those the simulator encodes; values are given in Section 5.

- **Ranks and credit.** A lecturer is promoted when they have spent a minimum time in rank, accumulated a cumulative credit total, earned a minimum share of their in-rank credit from research, kept community service below a cap, published at least one paper at a given journal tier, and hold the required degree (a doctorate for Profesor). The degree itself counts toward the credit total (Direktorat Jenderal Pembelajaran dan Kemahasiswaan, 2019).
- **Workload and the bonus.** Each semester a lecturer reports their workload in SKS (one SKS is taken as 2.5 hours a week; 16 SKS is the paid norm). The faculty’s performance bonus is paid only if teaching, supervision and research reach 12 SKS and there is at least one community service activity, counted on what can be claimed (assigned teaching, research with a funded project), not on hours actually worked. Work above 16 SKS is unpaid overtime.
- **Pay.** Monthly pay combines a base salary, a functional allowance by rank (Republik Indonesia, 2007), a professional allowance of one base salary once certified, an honorary allowance of two base salaries for professors (Republik Indonesia, 2005), two extra salary months a year, meal allowances, honoraria for teaching and examining, role allowances, and the semester bonus. Consulting income is outside the university pay system.
- **Entry and degrees.** New lecturers must hold a doctorate and are appointed as Lektor (Kementerian Pendidikan Tinggi, Sains, dan Teknologi, 2025), after a one-year probation at 80 % of base salary (Republik Indonesia, 1977; 2017) and, in practice, one to two years as “teaching staff” without a rank. Lecturers holding only a master’s degree must start doctoral study leave (*tugas belajar*) within three years of entry or resign; during the leave they receive the base salary only.
- **Retirement.** Lecturers retire at 65, professors at 70 (Republik Indonesia, 2005).

2.2 Related modelling work

Agent-based models grow social patterns from individual rules (Epstein & Axtell, 1996; Macal & North, 2010), and Python frameworks such as Mesa (Kazil et al., 2020) make them routine. *dosen-sim* borrows its interaction games from the game-theory canon: alternating-offers bargaining (Rubinstein, 1982) for teaching loads, the volunteer’s dilemma (Diekmann, 1985) for administrative roles, tit-for-tat reciprocity (Axelrod, 1984) for co-authorship, a contest (Tullock, 1980) for grants, and quantal-response choice (McKelvey & Palfrey, 1995) for bounded rationality. Cumulative advantage (Merton, 1968) and metric gaming (Strathern, 1997) are expected emergent effects. Language-model agents (Park et al., 2023) are planned as a later layer, but the version described here uses only rule-based agents and no language model.

3 Model overview

3.1 Entities and scales

The entities are lecturers, the department (its head, structural roles, committees and laboratories) and stochastic external processes (journals, grant agencies, a patent market). One tick is one semester; the faculty case runs 60 semesters (30 years). A lecturer has a weekly budget of 56 hours split across seven activities: teaching, research, supervision, community service, administration (duty activities), external work and rest.

3.2 The semester tick

Each semester runs six phases (Table 1). The engine validates every allocation against the workload rules and commitments and aborts the run on a violation, so no agent can break a rule.

Phase	What happens
1. Events	Grants and roles expire; retirement and burnout-driven departures; due hires join (probation, then teaching staff); journal decisions fall due; study leave starts or ends.
2. Negotiation	Probationers get mentors; unranked staff cannot supervise; the head fills roles and committees; teaching demand is assigned (imposed in the faculty case); co-authors pair.
3. Allocation	Each lecturer’s policy returns weekly hours, a journal tier and a grant decision. Senior “dumpers” then pass part of their claimed hours to juniors.
4. Resolution	Research and community output are drawn; manuscripts are submitted; grants are drawn; patents advance.
5. Evaluation	Supervisors grade everyone (quota on the top grade); credit is scored and scaled by the grade; certification, pay, burnout and promotion are computed; snapshots are logged.
6. Reflection	A hook for learning agents; a no-op for the rule-based agents used here.

Table 1: The six phases of a semester.

3.3 Design principles

The engine is the single source of truth; agents receive an observation (their own state, the rules, their promotion gaps, engine-computed forecasts) and return an action. Every stochastic draw uses a named stream derived from the run seed, so adding a mechanism does not shift other draws, and the same configuration and seed give an identical event log. Every run header records the configuration hash, seed, code commit and simulator version.

4 Agents and behaviour

4.1 Archetypes

Five archetypes describe what a lecturer values and how they spend a standard 40-hour week (Table 2). Their objective is a per-semester utility

$$u = w_{\text{pay}} \cdot \frac{I}{I_{\text{ref}}} + w_{\text{rank}} \cdot \frac{k}{3} + w_{\text{wb}} \cdot \left(\frac{R}{B} - b \right), \quad (1)$$

where I is semester income, I_{ref} a reference income, $k \in \{0, 1, 2, 3\}$ the rank index, R weekly rest, B the weekly budget and $b \in [0, 1]$ burnout. Shares are rescaled from the 40-hour calibration to the 56-hour budget so that each archetype works the same hours; rest takes the remainder.

Archetype	w_{rank}	w_{pay}	w_{wb}	Teach	Research	Admin	External	Preferred tier
research maximiser	0.6	0.2	0.2	0.15	0.40	0.05	0.00	international reputable
teaching loyalist	0.3	0.3	0.4	0.40	0.10	0.07	0.00	national
admin climber	0.5	0.4	0.1	0.20	0.10	0.30	0.00	national accredited
external earner	0.1	0.8	0.1	0.20	0.10	0.10	0.30	national
balanced strategist	0.4	0.4	0.2	0.20	0.25	0.08	0.05	international

Table 2: Archetypes: utility weights, base shares of a 40-hour week (supervision, community service and rest omitted) and preferred journal tier. All values are my assumptions.

4.2 Behaviour models

Each lecturer pairs an archetype with one of the behaviour models, all behind one Policy interface (decide_allocation, respond, reflect):

- **Career-stage machine (stage):** base shares per career stage (early, mid, pre-promotion push, post-promotion, senior) plus threshold rules that move time toward unmet promotion requirements and toward rest when burnout is high.

- **Myopic utility with logit noise (utility)**: evaluates about 400 candidate allocations with engine forecasts of credit, income and burnout, and picks one with probability $P(a) \propto \exp(U(a)/\lambda)$, a quantal response (McKelvey & Palfrey, 1995) with temperature $\lambda = 0.05$.
- **Optimiser (optimiser)**: an exact plan of one allocation per rank under certainty-equivalent dynamics, re-planned at each promotion; the rational benchmark.

The faculty case assigns the 70 founders evenly across the five archetypes and three behaviour models. Agents do not anticipate grades, workload dumping, study leave or the teaching-staff period: they plan as if ranked and credited in full.

5 Rules and parameters

Values are those of the faculty case. Each has a source in the repository’s docs/assumptions.md; “user-stated” means my own estimate, “placeholder” means an invented round number awaiting data.

5.1 Workload, SKS and the bonus

The weekly budget is 56 hours (a 40-hour norm plus room for overtime and rest). Reported SKS are claimable hours divided by 2.5: assigned teaching only, research capped at 6 SKS without a grant (placeholder), and supervision within the lecturer’s access cap. The bonus requires at least 12 SKS of teaching, supervision and research plus at least 0.1 SKS of community service (one activity); deans and vice deans are exempt. Overtime above 16 SKS is unpaid and causes strain.

5.2 Credit and promotion

Credit is scored per semester from outputs and accumulated by category (education, research, community service, support). Publications earn 10, 20, 30 and 40 points at the national, nationally accredited, international and reputable international tiers; co-authored papers give the first author 60 % (placeholders). The degree counts as education credit: 150 for a master’s degree and 200 for a doctorate (my recollection of the operational guideline (Direktorat Jenderal Pembelajaran dan Kemahasiswaan, 2019), to be checked). Table 3 gives the promotion requirements, which are placeholders except the degree rule. Probationers and teaching staff earn half credit for teaching.

Into rank	Min. semesters	Cumulative credit	Research share	Community cap	Publication	Degree
Lektor	4	200	≥ 0.3	≤ 0.2	1 national	master
Lektor Kepala	4	400	≥ 0.4	≤ 0.2	1 nationally accredited	master
Profesor	6	800	≥ 0.5	≤ 0.2	1 reputable international	doctorate

Table 3: Promotion requirements (shares are of credit earned in the current rank).

5.3 Pay

Monthly pay is the sum of the components in Table 4. The bonus (10 M IDR per semester for Asisten Ahli, 20 M for higher ranks, user-stated) is paid only when the BKD condition is met. On probation only 80 % of the base salary is paid; teaching staff get full pay without rank allowances; lecturers on study leave get the base salary only. Consulting is paid at a placeholder 100,000 IDR an hour and reported separately.

Component	Value	Source
Base salary	3.5 / 4.0 / 4.5 / 5.0 M IDR (AA / L / LK / Prof)	user-stated for Lektor; others placeholder
Functional allowance	0.375 / 0.70 / 0.90 / 1.35 M IDR	(Republik Indonesia, 2007)
Professional allowance	1 × base salary, once certified	(Republik Indonesia, 2005)
Honorary allowance	2 × base salary, Profesor only	(Republik Indonesia, 2005)
Extra salary months	2 a year (13th salary, THR) on base + functional	yearly regulation
Meal allowance	0.6 M IDR	user-stated
Honoraria	3 M IDR, every rank	user-stated for Lektor
Role allowance	dean 10 M, vice dean 7.5 M, head of department 4 M, programme head 3 M, lab head 1 M	placeholder
BKD bonus	10 M (AA) or 20 M IDR per semester	user-stated

Table 4: Monthly pay components in the faculty case.

5.4 Production, journals and grants

Research output in manuscript-equivalents per semester is

$$y = a \cdot h^\alpha \cdot \varepsilon \cdot m, \quad \varepsilon \sim \text{LogNormal}, E[\varepsilon] = 1, \quad (2)$$

with h research hours in the semester (16 weeks), $a = 0.05$, $\alpha = 0.7$ and noise $\sigma = 0.3$. The multiplier m combines research resources by rank (0.7, 0.9, 1.2, 1.7 for the four ranks: students, laboratory, network), a grant ($\times 1.5$), a co-author ($\times 1.3$), leadership networks for role holders, and burnout ($1 - 0.8b$). Finished manuscripts are submitted at the chosen tier and accepted with probability 0.7, 0.5, 0.3 and 0.3 (reputable, calibrated in Section 7) after one or two semesters; rejected manuscripts are resubmitted. A grant succeeds with probability $\min(0.5, 0.1 + 0.02n) \cdot \text{access} + \text{leadership bonus}$, where n is the publication count (Tullock, 1980).

5.5 Burnout

Burnout follows

$$b_{t+1} = \text{clip}_{[0,1]} \left(b_t + sk \frac{\max(0, W_t - S)}{S} - r \frac{R_t}{B} \right), \quad (3)$$

where W_t is real weekly work, R_t rest, $S = 40$ sustainable hours, $k = 0.3$ the strain rate, $r = 0.3$ the recovery rate, $B = 56$ and s the archetype's sensitivity. Real work differs from reported work for low-effort lecturers and under workload dumping (Section 6). Above $b = 0.8$ a lecturer leaves with probability 0.01 a semester; in the faculty case burnt-out lecturers rarely leave but produce less (user-stated).

5.6 Entry, probation, teaching staff and study leave

New hires hold a doctorate and enter as Lektor after a two-semester probation (80 % base salary, half teaching credit, no supervision, a senior co-teaching mentor) and a further 2–4 semesters (drawn) as teaching staff: full pay without rank allowances, the same credit limits, no roles, no certification or promotion, and no time in rank. Lecturers with a master's degree start study leave within six semesters of entry and stay away 8–10 semesters (drawn; user-stated 4–5 years) on base salary only, with no workload; colleagues cover their teaching. At the start, 12 of the 16 master's-holding founders are already part-way through it (user-stated). They return with a doctorate and 50 extra credit points.

6 The department and its power dynamics

6.1 Roles, committees and teaching

The faculty has a dean, three vice deans, a head of department, three programme heads and twelve laboratory heads, each with weekly hours, a five-year term, an allowance, a minimum rank, and leadership perks (a higher grant chance and a research network). Recurring committees (accreditation, anniversary, summer course, seminar, events) are staffed by the vice deans, junior staff first; seniors are often excused. Teaching is

imposed: the head assigns each lecturer the demand times their rank weight (0.8, 1.0, 1.0, 1.1 from Asisten Ahli to Profesor), up to 50 hours a week, and assigns any shortfall to the least-loaded lecturers.

6.2 Assessment with a quota

Each semester the lecturer’s supervisor (lab head, or the next role up the reporting chain) scores them:

$$\text{score} = 1.0 \cdot p + 0.5 \cdot a + 0.3 \cdot \ell + 0.5 \cdot f + 0.3z, \quad (4)$$

where $p \in [-1, 1]$ is credit relative to the department median, a the supervisor’s liking of the lecturer, $\ell = 1$ if they share a lab, f the lecturer’s standing and $z \sim N(0, 1)$. Grades translate the score into the share of that semester’s credit that counts for promotion: *very good* 100 %, *good* 80 %, *fair* 60 %, *poor* 40 %. In practice almost everyone is *good* or *very good*, but *very good* has a quota: the lecturers are ranked and at most 30 % (placeholder) receive it; the rest drop to *good*. Grades below *good* are rare (score below -1).

6.3 Standing, liking and access

Liking between two lecturers has a mutual part drawn once per pair ($N(0, 0.5)$), plus 0.3 for the same archetype) and one-sided shifts. Standing decays by 20 % a semester, rises with willing committee service (+0.2) and falls with consulting. Access to grants, students and courses is

$$\text{access} = \text{clip}(\text{base}_{\text{rank}} + 0.25(f + a_{\text{sup}})), \quad (5)$$

with base 0.5, 0.8, 1.0, 1.0 by rank (0.4 on probation), and the dean adding 0.2 for their own lab and 0.1 for lecturers like themselves. Weekly supervision is capped at $10 \cdot \text{access}$ hours. Structural roles go to the eligible lecturer with the highest appointment score $0.5 \cdot \text{rank} + 0.5f + 0.5a + 0.3\ell + 0.3z$; the dean is elected by mean liking and lab size.

6.4 Workload dumping

From observation, many seniors pass part of their work to juniors, still claim the hours and therefore work overtime on paper without burning out. In the model, 45 % of lecturers carry this habit (drawn once; user-stated 40–50 % of seniors) and, once Lektor Kepala or Profesor, every semester hand 3–8 hours a week of any work (drawn) to a junior (Asisten Ahli, Lektor or teaching staff) in their lab if possible: the most junior with probability 0.6, otherwise their favourite. A junior absorbs at most 8 extra hours a week, and 5 % refuse (user-stated), losing the senior’s liking. The senior keeps the credit, the SKS and the pay. The junior works the hours with no credit, taking them from rest and then from research. The junior’s liking of the senior falls by 0.2; the senior’s liking of the junior and the junior’s standing rise by 0.1, which helps their grades, access and appointments. All three sizes are placeholders.

6.5 Low effort

About 10 % of lecturers (drawn once) put in only 30–35 hours a week through minimal preparation rather than outside work (user-stated). Their reported SKS, credit and pay are unchanged; their real teaching time is 0.4 of the reported time (calibrated), and the rest counts as rest for burnout.

7 The faculty case and its calibration

The case has 70 founders (16 professors, as in the faculty’s public staff directory; the non-professor split is a placeholder) in 12 laboratories, with ages, years of service, credits and publication histories seeded by rank. The calibration targets come from four kinds of evidence, each used only in aggregate: (i) the faculty’s journal articles 2015–2025 in OpenAlex (Priem et al., 2022), with each journal’s Scopus status from Wikidata; (ii) the scheduled SKS of one semester’s public timetable; (iii) public pay rules and my own payslips, which stay private and enter the model only as rounded estimates; and (iv) my estimates as a lecturer at the faculty. Table 5 compares five seeds with these targets.

Pattern	Model (seeds 1–5)	Target
Journal tiers: national / international / reputable	40–44 / 10–11 / 45–49 %	33–40 / 6 / 50–59 % (record)
Accepted papers a year	297–315	300–450 (inferred)
Scheduled teaching SKS: all / Profesor	10.4–10.6 / 10.5–10.8	10.4 / 12 (timetable)
Weekly hours worked, median (incl. consulting)	48–49	48–56 (mine)
Low-effort lecturers, weekly hours	30–35	30–35 (mine)
Share burnt out ($b \geq 0.5$)	12–16 %	10–20 % (mine)
Burnout departures in 30 years	0–6	rare (mine)
Grades: very good / good / lower	29 / 67–68 / 3–4 %	quota / most / rare (mine)
Monthly pay: certified Lektor / teaching staff	16.8 / 11.8 M IDR	15.7 / 10.5 M (payslips)
Monthly pay: professor vice dean	38 M IDR	40–60 M (hearsay)
Years in rank: AA→L / L→LK / LK→Prof, median	2 / 3.5 / 5	plausible (mine)

Table 5: Calibration results. Most targets were used to tune parameters, so this is a calibration, not an independent validation.

The tier mix was matched by raising the acceptance rate of reputable international journals from 0.15 to 0.3. Paper volume needed no change: the model counts a paper once per lecturer-author, whereas the bibliographic record counts it once, and the faculty’s articles have about 2.5 faculty-affiliated authors each. Teaching demand (23.5 hours a week per lecturer at the initial headcount) reproduces the timetable’s 657 scheduled SKS. The burnout parameters (strain 0.3, productivity penalty 0.8, departure probability 0.01) were tuned to my estimates of hours and burnout.

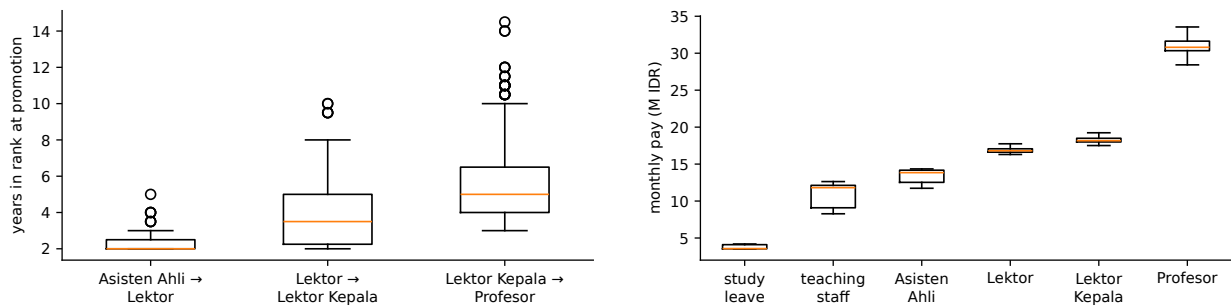


Figure 1: Left: years in rank at promotion (five seeds). Right: monthly university pay by status, consulting and royalties excluded.

8 Preliminary observations

These are observations of what the model does under my assumptions, not findings about any real faculty.

Imposed teaching produces chronic overtime. With the real teaching load, nearly every lecturer works past 40 hours (Figure 2, right), the bonus condition is met by most, and research time shrinks: accepted papers fall from about 420 to about 300 a year compared with negotiated teaching.

Dumping lets seniors overwork on paper. Senior dumpers average a burnout of 0.07–0.13 against 0.18–0.26 for other seniors with the same claimed duty of about 45 hours (Figure 2), and juniors carry the difference. Non-dumping seniors end up more burnt out than seniors in runs without dumping, plausibly because many were dumped on as juniors; this is not yet verified.

The dumping trap. Low-research juniors (teaching loyalists, external earners) who are dumped on almost every semester stay burnt out, earn a third of a typical junior’s credit, and can remain Lektor for 10–20 years. I believe this happens in reality, if less often than the model shows.

The master’s-degree ceiling. Before study leave was modelled, most of the long-stuck Lektor Kepala were master’s holders who could never become Profesor and waited until retirement. Study leave and degree credit remove that ceiling (median time still in rank at the end of a run falls from 14–18 years to about 3.5).

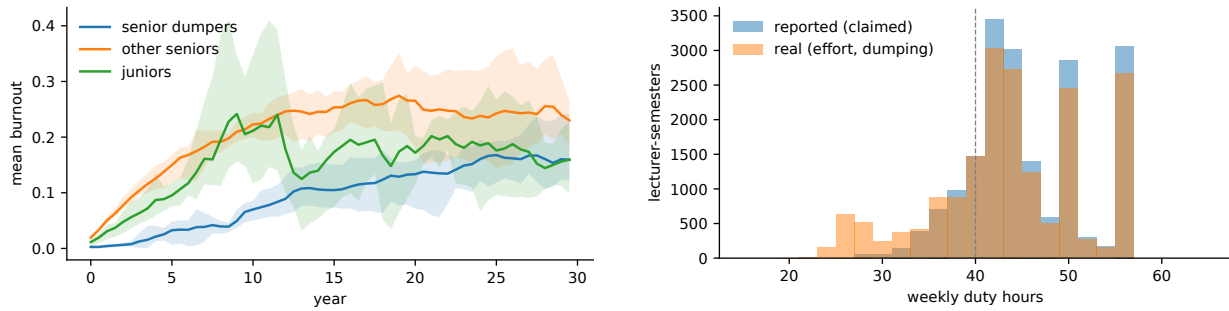


Figure 2: Left: mean burnout over time for senior dumpers, other seniors and juniors (band: range over five seeds). Right: weekly duty hours as reported and as really worked (low effort, dumping), consulting excluded.

9 Discussion: who wins, and is it the right game?

9.1 Which archetype wins

The proper test (twin runs, Section 11) is still to come, but a first, descriptive answer is possible by comparing like with like. New hires all start alike (a doctorate, probation, teaching staff, then Lektor), so their outcomes by archetype are the cleanest comparison the current runs allow (Table 6; founders grouped by starting rank show the same ordering for promotion and papers).

Archetype	n	Ranks per decade	Pay (M IDR/yr)	+ consulting	Papers/yr	Burnout	Real duty h/wk	Dumped on / yr
research maximiser	41	1.49	226	2	2.9	0.08	42.2	1.7
balanced strategist	38	1.29	216	12	2.4	0.23	43.5	1.8
admin climber	34	0.99	210	14	2.3	0.22	46.5	2.3
teaching loyalist	38	0.93	198	2	1.9	0.26	45.3	2.4
external earner	29	0.87	192	21	2.1	0.20	40.9	2.0

Table 6: Outcomes of new hires by archetype, pooled over five seeds (means per lecturer; pay is university pay, consulting shown separately; real hours include low effort and dumping).

Under the encoded rules the research maximiser wins on every axis at once: it is promoted fastest, publishes most, earns the most university pay, works the fewest real hours and burns out least. The teaching loyalist, who spends the most real hours in the classroom, is promoted slowest, earns least from the university, burns out most and is dumped on most often. The external earner trades promotion for consulting income and disengagement; among founders who are already senior it has almost no burnout (0.02–0.05) and is among the most frequent dumpers. At the top of the ladder, pay goes to those who take structural roles (admin climbers and dutiful teaching loyalists), not to those who teach or publish more. Among behaviour models, plain rules of thumb (the stage machine) beat myopic utility maximisation: utility agents burn out (mean 0.36 among new hires) chasing short-term gains. The winning strategy is therefore not to work harder but to publish in the right tier, protect research time, claim what can be claimed and, once senior, hand work down.

This ranking is not a law of nature. It follows from the rules I encoded and the archetypes I defined: a publication is worth 10–40 credit points while an hour of teaching is worth 0.01, so any agent that shifts hours from teaching to research climbs faster. That is exactly the point of the exercise: the model makes the incentive structure explicit, and the incentive structure picks the winner.

9.2 Alignment with the purpose of higher education

Indonesian higher education states its purpose as the *tridharma*: education, research and community service. Judged against it, the simulated system rewards some of the right things and many of the wrong ones.

- **Research is rewarded, but as counts.** Credit and promotion depend on the number of papers at each journal tier. The model's lecturers respond as the real record suggests: about half of the faculty's articles are in reputable international journals, many of them indexed outlets that publish quickly. The incentive is to reach a tier, not to answer a question; a measure that becomes a target stops measuring (Strathern, 1997).
- **Teaching is the core activity and the least rewarded.** Teaching fills a quarter or more of every lecturer's week, yet it earns almost no promotion credit, and its quality is invisible: the bonus counts claimed SKS, so a lecturer who prepares minimally is paid exactly like one who prepares well. The archetype most devoted to students loses on every career measure.
- **Community service is a checkbox.** One activity of any size satisfies the bonus condition, and credit for community service is capped. The third dharma is satisfied on paper.
- **Reported work, not real work, is what counts.** Because promotion, the bonus and pay read the workload report, two behaviours become free: low effort (the same SKS for fewer hours) and workload dumping (the same SKS while a junior does the work). Both are invisible to the institution and both pay. The system cannot tell its most committed staff from its best reporters.
- **Seniority converts into extraction.** Dumping turns what should be mentorship into a transfer of labour from juniors to seniors. Juniors gain standing, which the model rewards with better grades and access, so the arrangement is self-reinforcing; those who never escape it, typically juniors whose interests lie in teaching, can stay burnt out and unpromoted for a decade or two. Cumulative advantage (Merton, 1968) operates through workload, not only through citations.
- **Grades are a tournament.** A quota on "very good" makes assessment a rank-order contest for a fixed number of top grades, in which liking, lab ties and standing matter alongside merit. It rewards being visible to the right supervisor as much as doing the work.
- **Overtime is structural.** With real teaching loads, nearly every lecturer works beyond the paid norm; the excess is unpaid, crowds out research and produces burnout, yet the system's own reports show it as "meeting the BKD".
- **Some rules do align.** Requiring a doctorate and funding doctoral study leave raise the faculty's capacity; once modelled, they removed a ceiling that otherwise trapped the master's-degree holders among the senior staff. Seniority-based pay and allowances give security. The problem is less any single rule than the gap between what is measured (claims, counts, grades) and what the institution exists for (students who learn, knowledge that matters, communities that benefit).

If the simulation is even roughly right, an institution that wants its staff to serve the *tridharma* would measure real work rather than reported work, give teaching and mentoring real weight in promotion, cap or audit the transfer of workload to juniors, and grade against standards rather than quotas. These are hypotheses for the policy experiments in Section 11, not conclusions.

10 Caveats and limitations

- **Subjective assumptions.** Many parameters are my own estimates as one lecturer at one faculty: hours, burnout, effort, dumping, the assessment quota, honoraria, study-leave timing. Others are placeholders. A single informant is not a sample, and my position (junior, at the receiving end of some of these dynamics) shapes what I see.
- **Calibration is not validation.** Nearly every target in Table 5 was used to tune a parameter. The model reproduces what it was fitted to; it has not been tested on data it did not see (time-in-rank records, promotion ages, attrition, grant success).
- **Data gaps.** The tier classification uses "ever indexed in Scopus" and misses national journals without DOIs; the timetable covers one semester and only scheduled classes; pay rests on one person's payslips and on hearsay for senior roles; the credit and promotion values are mostly placeholders, as are the degree credit values.
- **Behaviour.** Agents are rule-based archetypes, not people. They do not learn, do not anticipate grades, dumping or study leave, and cannot refuse imposed teaching. Real lecturers adapt, form alliances and resist.
- **Structure.** The model has no students as agents, no teaching quality, no family or health shocks, no outside job market and no change of regulations over 30 years. Liking and standing are single numbers.

- **Measurement.** Logs and metrics record reported hours; real hours can be reconstructed but are not yet reported by the standard metrics or the viewer.
- **Scope and ethics.** Results describe a stylised faculty under stated assumptions. They are not predictions or advice for any individual and must not be read as claims about named people. Lecturer identifiers are pseudonyms and all data are used in aggregate.

11 Future outlook

- **The strategy race.** Because lecturers start from different ranks, ages, labs and degrees, raw outcomes mostly reflect starting points. The planned method is twin runs: the same seed and initial state with one lecturer's archetype and behaviour changed, comparing that lecturer's outcomes, which measures a best response in the given environment. It will be cross-checked on the new-hire cohort, which starts alike, and reported on several outcomes (years to each rank, pay per year, papers per year, burnout) rather than one score.
- **Policy experiments.** Counterfactuals with ≥ 30 seeds each: no power dynamics, an unconditional bonus, no dumping, a different quota, negotiated instead of imposed teaching.
- **Robustness.** ± 20 % perturbations of the parameters that drive results (the quota, dumping sizes, the effort factor, liking and standing sizes).
- **Data validation.** Faculty-level human-resources aggregates (time in rank, promotion ages, attrition), SINTA journal ranks, grant records, and elicitation from more lecturers at different ranks and faculties to replace my single perspective.
- **Learning and language-model agents.** Reinforcement learning (Roth & Erev, 1995) and peer imitation, then local and frontier language-model agents, compared with the rule-based and optimiser baselines; a check that agents reproduce a known game-theory result such as declining contributions in public goods games (Fehr & Gächter, 2000).
- **A teaching tool.** The 3D replay viewer already lets anyone follow a lecturer through 30 years; with real-hours reporting it could support discussion of workload policy.

12 Statements

Author contribution. M.N. conceived the project, supplied the domain knowledge, all user-stated assumptions and the private pay data, directed the design and analysis, and is responsible for the content.

AI-use statement. The simulator code, tests, documentation, calibration analyses, figures and a first draft of this manuscript were produced with Claude (Anthropic), an AI assistant, working under the author's direction in Claude Code. The author reviewed the design decisions and is accountable for the text. Claude is not an author.

Code and data availability. `dosen-sim` is released under the MIT License (Nuhamunada, 2026); the repository is currently private and will be opened with the preprint. Every number in this paper can be recomputed from the event logs of `configs/scenarios/faculty_case.yaml` (seeds 1–5) with `paper/make_figures.py` and the repository's validation scripts. The payslips are private and not included. Bibliographic and timetable data were used only in aggregate.

Conflict of interest. The author is a lecturer at the faculty that inspired the case and writes partly as a critic of its working environment.

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