

THE UNOBSERVED MIDDLE: ABSORPTION AND THE IDENTIFICATION OF TRANSFER EFFECTS

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ABSTRACT

Studies of intergovernmental transfers estimate the effect of money allocated on outcomes achieved. Between those two points sits a stage that is rarely observed: whether the money was spent, and how well. This study argues that the omission is not a data limitation but an identification problem, because an estimate that spans an unobserved stage cannot be attributed to the policy rather than to its implementation. The method is a structured conceptual review of research published between 2017 and 2024 on transfer effects, budget execution and budget credibility. Four propositions follow. The coefficient is a composite of a policy effect and an implementation effect, and the two have different policy implications: one calls for changing the instrument, the other for changing the administration. The composite is not stable across settings, since studies that do observe the administrative stage find it decisive, with one reassignment of tax administration raising collection by about forty-two per cent in the first year and roughly one hundred and nine per cent by year eight without any change in rate or base. Absorption failure is measurable and occurs at scale, with unspent balances documented alongside high fiscal dependency in the same jurisdiction. And budget credibility research shows that the execution stage is driven by political and capacity factors that are unrelated to the transfer being evaluated, which means the omitted variable is not conveniently uncorrelated with the treatment. Absorption should be reported as an intermediate outcome.

ABSTRAK

Studi tentang transfer antarpemerintah memperkirakan pengaruh uang yang dialokasikan terhadap hasil yang dicapai. Di antara kedua titik itu terdapat satu tahap yang jarang diamati: apakah uangnya terbelanjakan, dan seberapa baik. Kajian ini berargumen bahwa kelalaian tersebut bukan keterbatasan data melainkan persoalan identifikasi, sebab perkiraan yang melompati satu tahap tak teramati tidak dapat dinisbahkan kepada kebijakannya alih-alih kepada pelaksanaannya. Metodenya adalah telaah konseptual terstruktur atas riset terbitan 2017 hingga 2024 mengenai pengaruh transfer, pelaksanaan anggaran, dan kredibilitas anggaran. Empat proposisi mengikutinya. Koefisien yang diperkirakan merupakan gabungan pengaruh kebijakan dan pengaruh pelaksanaan, dan keduanya berimplikasi berbeda: yang satu menuntut perubahan instrumen, yang lain menuntut perubahan administrasi. Gabungan itu tidak stabil antarlatar, sebab studi yang memang mengamati tahap administratifnya menemukannya menentukan, dengan satu pengalihan administrasi pajak menaikkan pemungutan sekitar empat puluh dua persen pada tahun pertama dan sekitar seratus sembilan persen pada tahun kedelapan tanpa perubahan tarif maupun dasar pengenaan. Kegagalan penyerapan dapat diukur dan terjadi pada skala besar, dengan sisa lebih anggaran terdokumentasi berdampingan dengan ketergantungan fiskal yang tinggi pada daerah yang sama. Adapun riset kredibilitas anggaran menunjukkan tahap

	pelaksanaan didorong faktor politik dan kapasitas yang tidak berhubungan dengan transfer yang sedang dinilai, sehingga peubah yang dihilangkan itu tidak berkorelasi secara sederhana baik dengan perlakuannya maupun dengan galatnya. Penyerapan sepatutnya dilaporkan sebagai hasil antara. Kata kunci: transfer antarpemerintah; identifikasi kausal; pelaksanaan anggaran; kapasitas penyerapan; analisis mekanisme
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I. INTRODUCTION

A transfer is allocated. Some years later an outcome is measured. A coefficient is estimated linking the two, and a conclusion is drawn about whether the transfer works. The procedure is standard and the conclusion is not available from it, because between allocation and outcome lies a stage that determines whether the money became anything at all.

That stage is absorption: whether the allocation was spent, on what, and with what administrative competence. It is observable in principle — execution rates, unspent balances and procurement records exist — and it is almost never included in the estimating equation. The consequence is an identification problem rather than a measurement inconvenience. A coefficient that spans allocation and outcome combines the effect of the policy with the effect of its implementation, and no amount of precision in estimating that coefficient separates the two.

The separation matters because the two components carry opposite policy prescriptions. If a weak estimated effect reflects a poorly designed instrument, the remedy is to redesign the instrument. If it reflects an administration that could not convert the money, the remedy is to build administrative capacity and leave the instrument alone. A study that cannot distinguish them supports both recommendations equally, which is to say it supports neither.

The evidence that the middle stage is decisive is already in the literature, produced incidentally by studies that happened to observe it. Caldeira et al. (2023) find that transferring administration of a land tax from central to municipal control raised collection by about forty-two per cent in the first year and roughly one hundred and nine per cent by year eight, attributing the gain to rigorous implementation rather than to rate or base changes. An administrative reassignment moved collection by an order of magnitude larger than most estimated incentive effects, with the fiscal instrument held constant.

Three questions organise the analysis. First, what exactly does an allocation-to-outcome estimate identify? Second, what does the evidence say about the size of the absorption stage? Third, what would reporting absorption as an intermediate outcome require?

2. LITERATURE REVIEW

What transfer studies estimate

Lago et al. (2024), surveying the effects of intergovernmental grants, report unconditional grants stimulating subnational spending well above the income-effect benchmark, evidence on

crowding-out inconclusive in high-income countries and more negative in developing ones, and an asymmetric ratchet by which spending rises with grants more readily than it falls. Every one of these is an allocation-to-outcome relationship in which the execution stage is inside the estimated coefficient.

Masaki (2018) finds grants improving rather than crowding out local revenue mobilisation, most pronounced in rural districts, and proposes that where tax administration is weak the transfer finances the collection apparatus. Adanu (2024) finds transfers raising own revenues and identifies service delivery quality as a determinant. Saptono and Mahmud (2023) find crowding in from unconditional grants with contemporaneous effects exceeding lagged effects, reading the timing as evidence that administration rather than spending stimulus drives the result.

The last of these is instructive about method. The authors infer a mechanism from the timing of an effect because the mechanism itself was not observed. That inference is careful and defensible, and it would have been unnecessary had execution data been in the model.

Cruz and Silva (2020) find a minimum-spending rule raising spending only for units below the minimum. Samal (2020) finds flypaper effects stronger in lower-income jurisdictions. Rios et al. (2022), across 2,451 municipalities over thirteen years, find the flypaper effect lower where tax-collection efficiency is higher and where local government is politically stronger — a result that brings an administrative variable into the model explicitly, and finds it moderating the coefficient of interest.

What the execution stage does

Vidyattama et al. (2022) identify local government capacity, bargaining and political factors as determinants of budget delay, which is the mechanism through which an allocation fails to become expenditure within the year it was allocated. Chakraborty et al. (2020) document systematic deviation between approved and executed subnational budgets. ElBerry and Goeminne (2021) connect fiscal transparency and forecasting quality to budget credibility.

Boukari and Veiga (2018) find political determinants of budget forecast error substantial relative to institutional ones. Cangiano and Pathak (2019) document forecasting bias in low-income and developing settings. Bachleitner and Prammer (2024) find debt forecast errors directional; Cronin and McQuinn (2023) find an expenditure rule's operation depending on forecast quality.

Basri and Gusnardi (2021) examine subnational financial management under acute conditions and document execution behaviour departing from plan. Budiman and Amyar (2021) examine audit opinions and the implementation of audit recommendations, locating a compliance stage between finding and correction. Bonollo (2019) finds the outcome measurement of supreme audit institutions itself underdeveloped, and Elston and Zhang (2023) find audit recommendations implemented partially and at executive discretion.

Together these establish that execution is neither automatic nor random. It is systematically related to capacity, politics and audit follow-through, all of which vary across the jurisdictions that appear as observations in transfer studies.

Studies that did observe the middle

A small number of studies in the corpus observe an administrative stage directly, and all of them find it large. Caldeira et al. (2023) find administrative reassignment raising collection by about forty-two per cent in year one and roughly one hundred and nine per cent by year eight. Bergeron et al. (2024), in a field experiment with nearly thirty-eight thousand property owners, find the revenue-maximising tax rate rising with enforcement capacity by about forty per cent when low-performing collectors were replaced, and joint optimisation of rate and enforcement yielding about ten per cent more revenue than optimising either alone.

Weigel (2020), across 356 neighbourhoods, finds door-to-door collection raising compliance from 0.1 to 11.6 per cent — an administrative change with no change in the tax owed. Balán et al. (2022) find local intermediaries improving collection where formal records are weak. Chen (2021) finds enforcement effort interacting spatially across jurisdictions and intensifying over time.

These studies were not designed to make the present argument, which is what gives them evidentiary force. Each held the fiscal instrument constant and varied administration, and each found a large effect. If administration produces effects of that magnitude, then a coefficient estimated across jurisdictions with different administrations is measuring administration as much as policy.

Absorption failure at scale

Absorption failure is documented in exactly the setting where transfer effects are most studied. In one province receiving a large special autonomy transfer, unspent balances of Rp5.58 trillion accumulated over six years alongside a fiscal dependency of 51.58 per cent of the total budget and thirty-one unresolved audit recommendations (Badan Akuntabilitas Keuangan Negara DPR RI, 2020).

Those figures resist a single explanation and that is their value. A jurisdiction that cannot spend what it receives is not principally revenue-constrained; a jurisdiction depending on one source for more than half its budget is not principally administratively constrained. Both constraints operate, in different parts of the same organisation, and an outcome regression on allocation attributes the joint result to the transfer.

Ali (2019) identifies five unmet institutional preconditions for the same fund — incomplete implementing regulations, weak central–regional communication, absent socialisation, missing implementation guidelines and an unitemised division of authority between tiers. Every one is a specification failure operating at the absorption stage. Wijatmoko et al. (2023) report the resulting

expenditure pattern, with roughly half going to infrastructure against about seven per cent to economic empowerment. Prabowo et al. (2020) find limited effectiveness after two decades in a comparable arrangement.

Why the omission is not innocuous

An omitted variable biases an estimate when it is correlated with both the included regressor and the outcome. Absorption satisfies both conditions. It is correlated with allocation because larger allocations are harder to execute within a budget year, as the unspent balance record indicates. It is correlated with outcomes by construction, since unspent money produces nothing.

Lewis (2023) judges a statutory overhaul of the decentralisation framework technically flawed and unlikely to improve spending efficiency or service delivery, locating the binding constraint outside the formula. Chalil (2020) finds spatial interaction among municipal fiscal decisions, so absorption in one jurisdiction is not independent of its neighbours'. Aragon and Winkler (2023) and Corral et al. (2019) both find resource windfall effects conditional on administrative capacity — the same variable, entering as a moderator in a different literature.

Cook and Fortunato (2023), across 19,095 agencies over five decades, establish that reporting accuracy is a property of the relationship between reporter and recipient rather than of the reporting unit. Applied here, the finding says that even the execution data that do exist vary in quality with the capacity of the body receiving them — so absorption is measured worst precisely where it fails most.

RESEARCH GAP

Two gaps follow. The first is that no study in the reviewed literature includes an execution measure in a transfer-effect model, although execution rates are published in most budget systems and unspent balances are a standard accounting item.

The second is that the size of the identification problem has not been bounded. If absorption varied little across jurisdictions the omission would be harmless; the evidence from Caldeira et al. (2023) and Bergeron et al. (2024) suggests it does not, but no study estimates the variance of the absorption stage relative to the variance of the estimated total effect.

3. METHOD

The study is conceptual. It advances no new estimate; it examines what existing estimates identify.

A corpus was assembled of peer-reviewed research published between 2017 and 2024 on intergovernmental transfer effects, tax administration, budget execution and budget credibility. Each item was verified against the publisher record, the digital object identifier resolver, or an indexing record, and items in journals discontinued from major indexes or flagged as predatory were excluded regardless of topical fit.

Each study was classified on two dimensions specified in advance: whether it observes an administrative or execution stage between the fiscal instrument and the outcome; and where it does, whether the administrative stage is found to be material. The classification is descriptive and cannot establish how large the bias is in studies that omit the stage.

Two limitations apply. The corpus is not a systematic sample. And the argument concerns what a coefficient identifies rather than whether any particular published estimate is wrong; a study whose sample happens to be administratively homogeneous would not suffer the problem described here.

4. RESULTS AND DISCUSSION

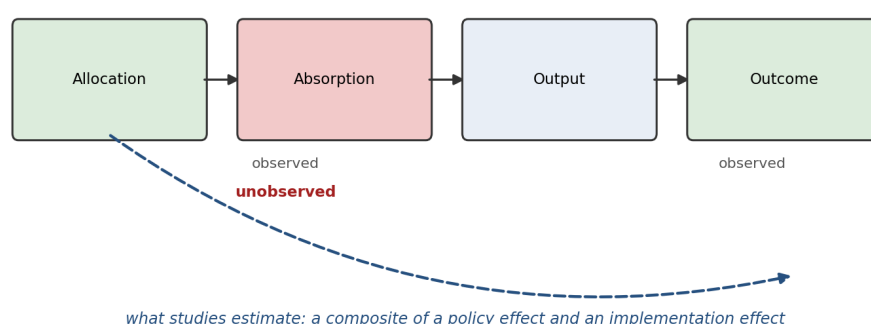


Figure 1. The estimated relationship and the stage it spans

Proposition one: the coefficient is a composite

An estimate linking allocation to outcome traverses three transitions: allocation to absorption, absorption to output, and output to outcome. Only the endpoints are in the model. The estimated coefficient is therefore the product of three conditional relationships, of which two are unobserved, and it will differ across settings that differ in any of them.

The practical consequence is that identical coefficients can describe different situations. A jurisdiction with a well-designed instrument and weak execution, and one with a poor instrument and strong execution, can produce the same estimate. Recommending instrument reform on the strength of it would be right in one case and wrong in the other, and the estimate does not say which.

Table 1. What is observed in transfer studies, and what is not

Stage	Typically observed?	Evidence that it matters
Allocation	Yes, from budget records	The regressor of interest
Absorption and execution	No	Administrative reassignment: +42% year one, about +109% by year eight (Caldeira et al., 2023)
Administrative capacity	Rarely	Revenue-maximising rate rises about 40%

		with enforcement capacity (Bergeron et al., 2024)
Output	Sometimes	Expenditure composition documented but rarely modelled
Outcome	Yes, from survey data	The dependent variable

Note. Compiled by the author from the reviewed corpus.

Proposition two: the unobserved stage is large where it has been observed

Three findings bound the magnitude from below. Caldeira et al. (2023) hold rate and base constant and vary administration, obtaining an effect that grows to roughly one hundred and nine per cent over eight years. Bergeron et al. (2024) find the revenue-maximising rate itself moving by about forty per cent with enforcement capacity, so administration changes not only outcomes but the optimal setting of the instrument. Weigel (2020) finds compliance moving from 0.1 to 11.6 per cent through a change in collection method alone.

None of these is a small residual. Each is larger than most incentive effects reported in the transfer literature, and each was produced by varying the stage that transfer studies do not observe.

Proposition three: absorption failure is documented and unmodelled

Unspent balances of Rp5.58 trillion over six years, alongside dependency of 51.58 per cent and thirty-one open audit findings, describe a jurisdiction in which a substantial share of allocated resources did not become expenditure (Badan Akuntabilitas Keuangan Negara DPR RI, 2020). Ali (2019) identifies five specification failures at exactly that stage.

An outcome regression on this jurisdiction would attribute the resulting outcomes to the transfer. The attribution is not merely imprecise; it is directed at the wrong object, because part of the allocation under study never left the account.

Proposition four: the omitted stage is systematically, not randomly, determined

Vidyattama et al. (2022) find budget delay determined by capacity, bargaining and politics. Chakraborty et al. (2020) find systematic deviation between approved and executed budgets. Boukari and Veiga (2018) find political determinants of forecast error substantial. Basri and Gusnardi (2021) document execution departing from plan under stress. Cook and Fortunato (2023) find reporting quality itself following recipient capacity.

Systematic determination is what makes the omission consequential. A randomly varying execution stage would add noise and widen confidence intervals. An execution stage driven by capacity and politics is correlated with the jurisdictions receiving different allocations, which is the configuration that produces bias rather than imprecision.

Proposition five: mediation is the design the question calls for

The statistical form of this argument is mediation. An effect of allocation on outcome that runs through absorption is a mediated effect, and the literature contains studies that estimate

mediation in adjacent settings, which establishes that the design is available rather than aspirational.

Chen et al. (2022), matching 16,876 rural household observations to a financial inclusion index, estimate that household entrepreneurship mediates 65.6 per cent of the effect of inclusion on poverty vulnerability. Xiang et al. (2024), across a survey covering ten provinces, fifty counties and more than 3,800 households, decompose the effect of property rights reform into two mediating channels and report coefficients for each. Li et al. (2023), combining village statistics for 604 villages with a qualitative survey, estimate a direct elite effect of 0.2893 alongside an indirect effect through collective action of 0.1158.

Each of these studies asked what the effect ran through and answered it quantitatively. The measurement burden was a variable already present in the survey. For transfers the equivalent variable is the execution rate, which is already present in the budget system, and no study in the reviewed corpus uses it that way.

Rammohan and Tohari (2023) and Indra and Khoirunurrofik (2022) both estimate effects of a village transfer on outcomes, and both report subgroup variation that hints at an implementation channel — the second finding that adding village officials beyond the head reduced stunting significantly while the education level of village leaders did not. Administrative staffing, not leadership credentials, carried the effect. That is an absorption finding arrived at indirectly, and it is the closest the corpus comes to modelling the stage this study is about.

Proposition six: the two remedies are not interchangeable

The practical stake in separating policy from implementation is that the two remedies compete for the same reform capacity, and choosing between them requires knowing which constraint binds.

Where the instrument is the constraint, the evidence points to formula design. Lago et al. (2024) find capacity-based formulas crowding in own revenue where realised-revenue formulas crowd it out. Cruz and Silva (2020) find a spending rule binding only below its threshold. Samal (2020) finds responses differing by income group. Each implies a change to the instrument.

Where absorption is the constraint, the evidence points elsewhere entirely. Vidyattama et al. (2022) locate budget delay in capacity, bargaining and politics. Ali (2019) identifies five specification failures in implementing rules. Elston and Zhang (2023) and Budiman and Amyar (2021) locate the gap between audit finding and correction. None of these is addressed by changing a formula, and a jurisdiction that reformed its formula in response to a composite estimate would have spent its reform capacity on the wrong constraint.

Aragon and Winkler (2023) and Corral et al. (2019) make the same point from the resource-windfall literature, both finding effects conditional on administrative capacity. Bergeron et al. (2024) make it most sharply: rate and enforcement are complementary levers, and optimising

either alone forgoes most of the available gain. A composite estimate cannot tell a government which lever it is holding.

What reporting absorption would require

Three steps follow, and none requires new collection. First, report the execution rate for the transferred funds alongside the allocation, since both are already recorded. Second, report the closing unspent balance attributable to the transfer, which is an existing accounting item. Third, where an outcome model is estimated, include the execution measure, so that the coefficient on allocation recovers a policy effect conditional on implementation rather than a composite of the two.

Rios et al. (2022) demonstrate that this is feasible, entering tax-collection efficiency into a large-panel model and finding it moderating the coefficient of interest. Saptono and Mahmud (2023) show what is inferred when it is absent: a mechanism read from the timing of an effect rather than observed. The difference between the two studies is not method but whether the administrative variable was included.

Limitations

Three limits bound the argument. The corpus is not a systematic sample and over-represents studies that reported an administrative variable. The claim is about what estimates identify rather than about whether particular estimates are mistaken. And the magnitude of the resulting bias is not estimated here, which is the exercise the second research gap identifies as missing.

5. CONCLUSION

Between the allocation of a transfer and the outcome it is credited with lies a stage that determines whether the money became anything: whether it was spent, on what, and with what competence. Transfer studies estimate across that stage without observing it, so the coefficient they report combines a policy effect with an implementation effect that no additional precision will separate.

The evidence that the stage is large comes from studies that varied it deliberately. Reassigning tax administration raised collection by roughly one hundred and nine per cent over eight years with rate and base unchanged. The revenue-maximising rate itself moves by about forty per cent with enforcement capacity. Compliance moved from 0.1 to 11.6 per cent through a change in collection method.

Absorption failure is documented at scale — Rp5.58 trillion unspent over six years in a jurisdiction depending on the same transfer for more than half its budget — and it is determined by capacity, bargaining and politics rather than by chance. That is the configuration that biases an estimate rather than merely widening it.

The remedy is available at no collection cost. Execution rates and unspent balances are already recorded. Reporting them as intermediate outcomes, and including them in outcome models, would let a coefficient on allocation mean what readers currently assume it means.

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Author contributions (CRediT)

Adissya Maya Andara: conceptualisation; methodology; formal analysis; writing - original draft; writing - review and editing.

Conflict of interest

The authors declare that they have no competing interests.

Data availability

All data supporting the findings of this study are available within the article and from the publicly accessible sources cited therein.

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Declaration on the use of artificial intelligence

No generative artificial intelligence tool was used in the preparation of this manuscript.

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