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Comment R. Richard Geddes

Overview

Is the social cost of bearing a fixed amount of project risk greater when borne by private investors or by taxpayers? That question was addressed by some of the twentieth century's greatest economists within the context of private versus government firm ownership. Noted contributions include Baumol (1968), Diamond (1967), Harberger (1968), Hirshleifer (1965, 1966), and Sandmo (1972), among others. Although the outcome of the intellectual battle can fairly be characterized as a stalemate, Arrow and Lind's 1970 contribution perhaps had the most lasting impact. They argued that, under certain conditions, the social cost of bearing a given amount of project risk approaches zero as risk is spread over an increasing number of taxpayers. Their analysis continues to influence the cost-of-capital (COK) debate today.

That debate waned after widespread economic liberalization in the late twentieth century but has recently resurfaced in the context of infrastructure delivery.[1] A poor record of on-time and on-cost delivery combined with constrained state and local budgets has increased scrutiny of large infrastructure projects. Moreover, accurate assessment of the relative public and private COK has gained renewed importance as governments turn to private partners to bear the risk of large infrastructure projects through public-private partnerships (PPPs).

Inaccurate or incomplete public-sector risk assessment has distorted infrastructure decision-making on at least two important margins. The first is the basic "go or no-go" decision, relevant for any project but particularly so for infrastructure megaprojects. If the assessed cost of taxpayer risk is below its true cost, then too many projects will pass benefit-cost muster, creating a social loss. That is critical not only for large projects but also for those with long design lives, where ignoring the cost of risk may overstate project value by huge amounts. Second, inaccurate public-sector risk assessment will distort the public-private delivery margin, with excessively low assessed taxpayer-risk cost driving too little private-sector participation. That distortion again generates deadweight loss.

Lucas and Montesinos (LM) make several important and timely contributions to the twentieth-century cost-of-capital debate, which when

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1. In the infrastructure community, the term "delivery" refers to a wide range of infrastructure-related activities, including project selection, design, construction, operations, maintenance, and financing.

implemented will help mitigate those distortions. LM incorporate strides in theoretical finance from the intervening decades to offer a new, general framework for assessing the social cost of risk bearing. In doing so, they harmonize public-sector risk assessment with sophisticated tools used to assess the cost of risk bearing in publicly traded corporations where careful assessments are crucial for efficiently allocating large amounts of capital.

LM's framework is also important because of its applicability to large, idiosyncratic infrastructure projects. A one-size-fits-all approach to assessing such projects is unhelpful and sometimes deceptive. State and local infrastructure owners often resort to using the observed tax-exempt bond rate, effectively ignoring the cost of taxpayer risk bearing altogether, *a la* Arrow and Lind (see Quiggin [1997] for one academic example). LM's approach is useful because of its generality and adaptability. They offer a menu of important project-specific adjustments, including for externalities, cash subsidies, and in-kind subsidies. They also provide examples illustrating the magnitude of the impact of various adjustments.

Moreover, LM contribute by reinforcing basic but overlooked risk-bearing concepts with a more institutional flavor. They state, "Taxpayers and other government stakeholders are the residual claimants to any profits or losses; effectively citizens are conscripted equity holders in all risky investments undertaken by governments." That statement's two key (but underexplored as applied to infrastructure) insights are that (i) taxpayers bear real risk from infrastructure projects in their capacity as residual claimants, similar to equity holders in private investment; and (ii) taxpayers do so involuntarily, in that they are "conscripted." That is, unless risk is properly accounted for, taxpayer capital is doing uncompensated risk-bearing "work." The analogous logic applied to labor suggests that the jurisdiction's residents would be legally required to work on infrastructure projects at below-market wages. A full accounting of such projects would include the true opportunity cost of that uncompensated work in any proper benefit-cost analysis.

LM use an adjusted present value approach through which they first calculate a project's all-equity-financed stand-alone value. They then make adjustments to that present value for externalities, tax distortions, and other project-specific considerations. This generates the project's adjusted present value (APV). When market prices are unavailable and approximations are needed for such adjustments, LM suggest using a "fair value" approach. That approach relies on using discount rates similar to what private financial institutions would apply to future cash flows. The APV model is operationalized using the capital asset pricing model (CAPM) to identify discount rates. LM argue that their framework's benefits include its relative ease of understanding and implementation.

LM then apply their approach to illustrate the risk cost of several common infrastructure delivery arrangements. This is where their work may be of greatest interest and value to infrastructure practitioners. The foremost example is a PPP that contains a revenue guarantee, under which a public-project sponsor promises the private partner a certain minimum level of revenue over the life of the contract. That is not uncommon in PPPs. The APV approach reveals such a high value of PPP revenue guarantees that it may change public owners' future decisions about the use of such guarantees. Using their illustrative example, LM state, "For example, for a 20-year guarantee of a $30 million floor, under either volatility assumption, the guarantee value is more than $42 million higher when the cost of risk is taken into account. That difference is greater than the NPV of the standalone project."

One can imagine exploring the application of the APV model to reveal other standard PPP arrangements' true risk cost. Although there are many, a particularly timely example was provided by Statement No. 94 of the Governmental Accounting Standards Board, entitled "Public-Private and Public-Public Partnerships and Availability Payment Arrangements," which was released in March 2020. The statement provides specific guidance for public infrastructure asset owners on how they should account for PPPs and availability payments (which are essentially performance payments promised by the public project sponsor) on public-sector balance sheets. It will require that public agencies begin accounting for PPPs and availability payment liabilities starting in 2022, so there is no time to waste. The APV approach offers an excellent framework for teasing out the impact of such arrangements on the cost of capital. Additional future applications of the LM approach include the public-sector comparator and value-for-money analysis when comparing PPPs with traditional infrastructure delivery, both of which are beyond the scope of this comment.

LM's analysis is not without its flaws, however. It repeats a common mistake in infrastructure policy analysis, which is to conflate the funding of infrastructure with its financing. Funding refers to the underlying source of dollars to pay for the infrastructure, while financing refers to the use of various financial instruments to generate the large up-front payments needed to design and construct an infrastructure facility once funding is in place. Funding can come from either some type of user fee (such as a toll or rate), or from a broad-based tax unrelated to facility use.

This concern extends beyond semantics, since the main policy challenge facing US infrastructure today is in securing adequate funding. The United States is fortunate in that, once adequate funding is in place (that is, if a deal is "bankable"), then developed financial markets, which can access a variety of financial instruments, exist to provide the necessary financing.

LM would also benefit from more careful and explicit recognition of the institutional differences between public and private-sector risk bearing. The terms "public" and "private" are introduced in LM's chapter (and indeed in most research papers) as though the terms are understood clearly without further elucidation. Although common, those terms are shorthand for a strikingly different set of institutional arrangements, including property rights, contractual arrangements, and social norms.

Two examples include limited liability and the transferability of residual claims. Although private investors benefit from limited liability (that is, their financial liability is in general strictly limited to the amount invested), taxpayers do not. In other words, when states or political subdivisions encounter fiscal difficulties, they can increase tax rates to raise revenues to meet obligations. Limited liability likely has an important impact on the cost of risk bearing.

Another example lies in the differing nature of public versus private residual claims. A defining feature of private-firm ownership is that ownership units are tradable or alienable on either public or private markets. Taxpayer residual claims in contrast are inseparable from residence in a particular jurisdiction, which precludes them from being traded in a market and thus rendering them unpriced.[2] That second difference also has profound implications for risk-bearing costs, which remain largely unexplored in the infrastructure and PPP literature. Indeed, the institutional differences may be so great that an added term in the CAPM model is needed to properly identify discount rates (for example, Geddes and Goldman 2020).

Finally, LM's view that the approach is easily understood and applied by public asset owners may understate the range of other responsibilities borne by those owners. There is rising awareness that the twenty-first century will require public owners to confront more complex delivery structures. Enhanced COK estimation is just one aspect of that new, more challenging delivery setting. Fortunately, rising awareness has engendered calls to formally assist asset owners in adopting new delivery techniques. Although just one tool, calls for the creation of state and regional "PPP units," which are small, expert groups within government that consult on delivery, have grown as a result (for example, Casady and Geddes 2016).

Such criticisms are, however, minor relative to the contribution made by this chapter to the cost-of-capital literature at a crucial time for infrastructure policy. Lucas and Montesinos are to be congratulated for skillfully bringing insights from modern finance, as well as the concept of residual claims, together to offer a new framework to properly account for the social cost of risk in major infrastructure projects. Their work, and the efforts flowing from it, is likely to improve infrastructure delivery in the coming decades.

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2. A third example, beyond the scope of this comment, is that tradability allows ownership concentration to change, which may also impact risk-bearing costs. See, for example, Demsetz and Lehn (1985).

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