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Transportation Arbitrations and Complexities in Estimating Damages

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Introduction

The most common disputes in the transportation industry have tended to involve concession agreements for transportation infrastructure. A typical arrangement involves a government, or other public sector body, contracting with a private investor to invest in, operate and maintain transportation infrastructure such as roads, bridges, tunnels, ports, airports or rail networks.[2] The concessionaire will generally make the investment in the infrastructure and maintain and operate the infrastructure for a defined multi-year period. Multi-year concessions can also apply to investment and operation in airports, ports, roads or railway passenger services, and to obligations to operate certain transportation routes at predefined frequencies over several years.

A common economic feature in the various types of transportation concessions is that the concessionaire provides the up-front investment and expects to recover costs and receive a return on the investment over a long operating period. Because of the need for significant up-front investments, concession contracts define ex ante the allocation of risks between the parties. However, owing to extended payback periods, concessionaires are vulnerable to ex post changes, such as by a state or relevant public authority, or to general changes in economic conditions.

For this chapter, we reviewed 902 investor-state arbitrations on the International Centre for Settlement of Investment Disputes (ICSID) database and identified 71 transportation-related arbitrations from 1997 to 2022. Many of these were in respect of toll roads but a material number have concerned maritime transport and aviation. Only a handful of cases have related to railways. In addition to the mode of transport, we categorise the available data on transportation-related disputes according to geographical location.

Latin America has witnessed a higher number of transportation-related arbitrations than other locations, in part reflecting extensive foreign transportation infrastructure investment. The rate of this foreign investment at times accelerated ahead of the creation of robust host-state legislation and regulation.[3]

Most transportation-related disputes have included expropriation claims, such as claims in relation to early contract termination. A commonly cited reason for contract termination is the protection of national interests and societal purposes. Other circumstances that have also led to arbitration include ex post changes in contract terms; failures to rebalance contract terms in light of material changes in market circumstances; and failures on behalf of a host state or relevant authority to fulfil promises made to attract the relevant investment. For example, contract rebalancing may be economically required but difficult to achieve in light of public pressure,[4] or investors might be promised exclusivity and invest only to face competition from local providers.[5]

Disputes relating to measures enacted during the covid-19 pandemic appear to be emerging in the near term.[6] In the longer term, different political approaches may see the role of the public sector differently with respect to ownership and management of transportation infrastructure assets, leading to an increased chance of expropriation across several different jurisdictions.[7]

We highlight four common features of transportation-related investments and thus of transportation-related disputes:

1. the need to develop traffic forecasts that are subject to uncertainty;
2. the sensitivity of concessionaire business plans to changes in economic circumstances;
3. the use of extensive debt financing; and
4. the political sensitivity affecting many transportation infrastructure investments.

Common features of transportation arbitrations

Traffic forecasting

Valuing a transportation asset or operation in the context of arbitration necessarily requires the construction of a traffic forecast. Traffic forecasts – and possible changes to them over time – are also likely to be important for liability analysis. Traffic forecasts form the basis for the parties' expectations, and changes in those expectations over time can be an important factor in assessing the parties' respective positions in a dispute.

Forecasting traffic movements can be complex, requiring a comprehensive understanding of market structure and trends. Arbitrations typically focus on a given valuation date, meaning that any traffic forecast should reflect only information and expectations at a given point in time and exclude hindsight or knowledge that may become available after the relevant date. The relevant analysis in the arbitration might require a comparison of traffic forecasts developed at two different points in time.

Take air traffic as an example. Air traffic activity comprises three elements: passengers, cargo and air traffic movements (take-offs and landings). This activity is split into two types of traffic: traffic generated by the airport catchment area, consisting of the origin and destination passengers and cargo, and connecting traffic travelling between two other airports, which is brought into the airport by the airlines via their respective route networks.

Passenger traffic forecasting involves the identification of different market segments, including business traffic, tourism and passengers travelling to visit friends and relatives. For each segment, the origin country and final destination must be identified. Forecasting cargo volumes requires the consideration of a different set of factors, taking into account that cargo travels in only one direction. This means that airlifted freight may change by route as well as by market. The standard methodology then employs econometric analysis to relate each of these markets and submarkets to specific macroeconomic independent variables. This method, known as 'top-down', assumes that what has happened in the past will continue to occur in the future.

However, market knowledge is essential to develop corrective 'bottom-up' adjustments to the results of the top-down approach. This bottom-up corrective considers market trends (such as airline strategies, competing modes of transport, regulatory structures, etc.), technological and political changes and environmental factors. This bottom-up

corrective requires extensive sector-specific knowledge. Very often, unforeseen events can significantly alter traffic projections. For example, the following can all affect traffic:

1. Airline strategies: Airline expansion plans, mergers or even bankruptcies could redirect traffic through other airports or airlines. In turn, this could alter the overall traffic or the composition of passengers (international versus domestic).
2. Technological: For instance, it is expected that the widespread use of telecommunications – specifically, videoconferencing – will continue to replace some portion of business travel in an unprecedented manner. Another example is the progressive introduction of newer aircraft with further-reaching capabilities. These newer services may affect airports that are no longer needed as technical stops.
3. Political: Conflicts between countries, internal turmoil and changes in political regimes can affect not only the economy but the entire social conditions. Incoming tourists and visitors could also be affected by these factors.
4. Competing modes of transport: High-speed train services are an increasing competitor to air transport for short and medium distances. Rail services become more relevant as road congestion and airport access increase the overall cost of travel (in terms of time and money).
5. Regulatory: The bilateral air service agreement between two countries can limit traffic volumes. When reaching an exhaustive limit, a particular airline's direct traffic services between two countries could face limited growth.
6. Institutional: Changes in visa regimes can ease or limit traffic volumes, chiefly for tourism purposes.
7. Environmental: It is expected that there will be increasing pressure on corporations to reduce the amount of air travel generated per employee, or to divert traffic to other modes of transport that have a lower environmental impact (e.g., rail).

Forecasting toll road traffic is likewise difficult and can be subject to uncertainties, particularly for greenfield assets. Nevertheless, from a structural point of view, toll roads are simpler than airports as the pairs of origin-destinations are known ex ante and generally fixed. Most of the traffic is generated by the catchment area; however, part of the traffic would be 'in transit' if, for example, the asset is located at the border between two countries and serves as a corridor for international traffic flows. Customers are usually split between light and heavy vehicles, where heavy vehicles are mainly used for commercial purposes. Light vehicle passengers are distinguished between business and leisure, depending on the purpose of the trip.

Standard methodologies to estimate future traffic flows on toll road assets are similar to the airport sector and primarily based on a top-down approach. We can distinguish between two main categories of forecasting methodologies, which are respectively based on network models and econometric techniques:

1. Network models take into account origin-destination matrixes and allocate traffic flows to different network segments by maximising users' utility functions. The model considers the estimated time value for different user categories (i.e., light and heavy vehicles; leisure and business) and a series of exogenous factors, such as alternative roads and construction sites along the route. Network models are challenging to

replicate and require the use of specific software. Input data are often missing and difficult to measure. Resulting traffic forecasts are often a black box, which makes it difficult to separate the effects of different assumptions and variables on the overall results.

2. Econometric models are based on time series of traffic volumes collected for the specific network of interest or for alternative roads. The length and frequency of the data contained in the time series depend on the reliability of traffic detection systems and the consistency of data over time. Econometric models may be less sophisticated than network models, and they can be easily replicated if the underlying data set is publicly available. However, the econometric approach can lead to inaccurate estimates if the model's specification is wrong and if there are many missing variables.

Sensitive business plans

A second common feature of transportation businesses is that business plans tend to be relatively sensitive. Complicated interrelationships and feedback between traffic demand and prices and costs are commonplace and typically cause business plans to be vulnerable to ex post changes in demand or operating conditions. Like demand forecasting, analysing business plans will form an important part of any analysis of liability and quantum in an arbitration proceeding. It will necessitate identifying and analysing the specific drivers of revenues, operating expenses, capital expenditures and their interrelationships.

Constructing a traffic forecast is always a necessary starting point for an analysis of investor expectations. The analysis must then proceed to project business revenues and costs. Revenue projections can vary considerably, depending on the mode of transportation. Using airports as an example again, revenues are derived from fees and charges levied on aircraft operators (e.g., airlines), passengers and service providers. These types of revenues tend to be regulated and depend on the flight origin and destination (international versus domestic), aircraft type (weight and model) and time of day.

Evolution in the aviation industry may alter the revenue composition of an airport's type of traffic. For example, the proliferation of narrow-body aircraft at the expense of the wide-bodied models may result in a larger number of aircraft movements, increasing revenues and the scope of services provided to airliners. Service providers at airports may project their businesses depending not only on the forecast traffic demand but also on the type of aircraft, the airline strategies and specific agreements between alliance partners.

Revenue projections of airlines require an understanding of the dynamics of markets and parameters involved in setting air fares based on seat inventories (known as 'revenue management'). Strategies of competing airlines, other modes of transport and government policies and regulations may significantly affect an airline's revenue. These factors may also imply changes in the prescribed business strategies. For example, the restrictive policy of landing slots at a particular airport may force an airline to split operations with another airport that cannot handle air traffic with the same level of service to passengers, losing business to other airlines or modes of transportation.

Costs projected for each business are not directly derived from the expected traffic demand but from a unique set of drivers specific to each type of business, market and

regulatory environment. Changes affecting the different businesses can significantly alter the expectations, in ways that are not foreseeable based on historical trends. For example, regulatory restrictions on air service agreements may alter the possibilities for an airline to compete with new carriers entering previously unchallenged markets, forcing an increase in commercial expenses and commissions to distributors. In another example, an airport may see its expenses change in a different proportion to traffic when airlines change strategies and move their hub operations out or spread their operations over a broader period throughout the day.

Business planning also involves the projection of capital expenditure. Transport investments depend on compliance with regulations and often need to consider major asset repairs and accommodation for future capacity. Knowledge of industry trends is crucial to understanding the regulatory and operational issues that dictate capital expenditures. In the case of airlines, investments are subject to procurement strategies, whereby leasing options (financial or operational) can alter the financial parameters of a carrier. Aircraft manufacturers may see investment costs seriously affected by disruptions in their supply chain or defects found on outsourced production parts. Service providers such as those in air navigation may face significant investment requirements due to the implementation of new global norms or to accommodate changes in traffic trends or airlines' strategies.

The business plans of toll roads heavily depend on assumptions about future investments and the related effects on revenues and operating costs. Depending on the specific type of asset, the investment plan can dramatically affect future expected cash flows – for example, if there is an expansion of existing networks and the creation of new lanes. The realisation of works temporarily affects the traffic flows along the network. When fully operational, the investment could generate more traffic and, therefore, more revenues for the operator. On the other hand, new network segments would require additional maintenance and therefore determine increasing operating costs. Fares are directly linked to costs in many jurisdictions, and additional investments and operating costs imply higher revenues.

Concession contracts usually delineate predetermined increases in fees and charges during the years of the concession that will compensate investors for the cost of the investments and recognise a return on the invested capital. However, the return is guaranteed only if the economic and financial plan assumptions are based on reasonable expectations, and they factor in a realistic vision of the project development plan.

Construction work often requires a substantial amount of time, and there are often delays to completion of the work relating to approval of the project or unexpected events. When the business plan does not properly factor in these elements, there is a high probability that cash flows will be below expectations and will not guarantee the project's viability. Project development plans are often the object of negotiations among the parties, where governments push to reduce completion time for political reasons.

Part of the costs and the investors' return on the assets could be financed through public funds. However, payments of public contributions will be recognised to investors only on completion of specific milestones. If there are construction delays, there is a vicious circle in which investors remain short on financial resources and cannot proceed with work, and the state does not pay until the respective milestone is reached. Revenues from users are collected after the commissioning of the asset. If there are delays, it could be that original traffic forecasts will no longer be valid and the traffic never increases.

There are different levers to re-equilibrate a business plan, including the provision of a terminal value. However, investors may dislike the idea of recovering investments through terminal values, especially if there is a lot of uncertainty about the future and the stability of the country. Infrastructure assets are long-lived, and many contracts entitle investors to receive returns for more than 30 or 40 years. Investments in infrastructure are sunk; they cannot be converted to an alternative utilisation.[8>] It is of the utmost importance, therefore, that project cash flows are predictable to include – when needed – a terminal value and to guarantee the proper compensation of realised investments at a fair market return. Revenues are calculated on forecast volumes to cover operating expenditures, return on invested capital and depreciation. The terminal value amounts to the value of undepreciated assets and has to be reimbursed by the grantor or the new concessionaire at the end of the concession.

Contract rules, however, do not always ensure coherence between revenues, yearly depreciation and terminal value. For example, in some jurisdictions, unexpected changes in regulation, or the regulatory accounting rules, may determine that investors accrue a terminal value lower than the actual value of the undepreciated assets. In these cases, investors have a disincentive to invest as they would not expect to recover the full value of their investment, including a reasonable market return.

Finally, because of the extended concession period, the choice about the expected evolution of costs implies a further challenge. In fact, monetary index projections are not always readily available for extended periods. Inflation risk becomes particularly high for investors in the presence of structural changes, such as the covid-19 pandemic, and for emerging countries where political and economic shifts are more frequent.

Use of debt financing

A third common feature of transportation assets is the presence of extensive debt financing. For example, we searched Capital IQ for companies in the bus transportation sector and identified up to 234 companies with relevant data for a period of five years.[9>] The sample includes bus operators, such as Stagecoach and Arriva, which operate in the United Kingdom. The sample indicated an average financial leverage[10p>] of 74 per cent. As many as 28 per cent of the bus transportation companies reported financial leverage in excess of 80 per cent; similar levels arise across other transportation sectors.

Accounting for this outstanding debt is relevant to loss quantification in transportation-related arbitrations because international claimants tend to be shareholders, and the damages claimed reflect shareholder loss. That is, a shareholder claims damages in its affected transportation investment; the affected investment does not present its independent claim.[11p>]

Allegations of financial imprudence

One consequence of extensive debt financing of transportation assets is the emergence of allegations of financial imprudence, typically directed by respondent states towards claimant shareholders. A common allegation is that claimants themselves have been irresponsible in burdening a transportation investment with excessive debt, which inevitably prompts poor financial performance and a slide into financial distress.

Evidence such as accounting statements might confirm the presence of extensive debt financing and high financial leverage, which may have led to a restructuring or bankruptcy. This type of evidence is informative and likely to be undisputed. However, it is insufficient to indicate imprudent financing choices or excessive debt. Such conclusions require an analysis of causation.

Assessing causation requires a detailed analysis of the financial effects of the measures at issue. The relevant analysis must reconstruct the financial performance of the transportation investment in the absence of ('but for') the measures at issue[12p>] and compare the reconstructed performance to the reality. Reconstructing financial performance can demand significant modelling effort, depending on the complexity of the investment in question and the terms of the relevant contracts or concessions. The modelling effort should aim to trace the evolution of key financial ratios, such as financial leverage, and debt service coverage ratios[13p>] and ultimately aim to identify whether sufficient additional cash flows would have been available to satisfy outstanding debt obligations. If so, then the transportation company or project could have avoided bankruptcy in the absence of the measures at issue, and the measures at issue were the cause of the financial problems.[14p>]

An analysis of claimant imprudence also needs to consider the original expectations of both the claimants and the lenders when they undertook the loans.[15p>] The available information should have informed a claimant's financing choices; it would not be reasonable to second-guess them in hindsight.

An investment's debt capacity depends on the magnitude and certainty of expected cash flows.[16p>] More debt is typically appropriate for activities with larger and relatively predictable cash flows; less debt is expected for smaller and highly volatile cash flows. More debt can provide significant financial benefits, including the imposition of business discipline and the opportunity to reduce a project's overall tax bill since debt interest is tax-deductible in most jurisdictions.

Analysing debt issuance and contemporaneous lender expectations is likely to cast light on allegations of financial imprudence in addition to but-for analysis. Prudent lenders will typically consider the borrower's legal rights and obligations; analyse major business, market and technical risks; and develop a detailed financial model to forecast project cash flows that helps to assess a project's ability to meet its scheduled debt service. Public bond offerings can also attract scrutiny from independent ratings agencies and investors. These considerations ultimately determine loan pricing; elevated risks naturally prompt higher interest rates.[17p>] Lender expectations represent an important and independent reference point to assess the reasonableness of financing choices and a claimant's overall expectations more broadly.[18p>]

Consequences for damages

Debt has a priority right to payment. So more debt implies that a larger share of project value must flow to debt holders before any residual value can flow to shareholders, including the claimant. Reliable assessments of shareholder damages must consider the priority payment of debt.[19p>]

For example, suppose a project was worth US$100 million, but the measures at issue destroyed US$70 million of economic value, reducing the project value to US$30 million. Suppose also that the project was prudently financed with US$50 million in debt and US$50 million in equity. The project would face bankruptcy owing to state measures; value would fall to US$30 million, with debt holders capturing all the US$30 million in available value from the project after the measures. Debt holders incur a US$20 million loss, while the shareholder loses the entirety of its US$50 million investment.

Suppose then that the shareholder responds by initiating arbitration proceedings but the debt holders do not. This assumption reflects our experience that shareholder claims predominate in international arbitration, while debt holder claims are less common, in part because project lenders often are domestic banks that lack standing to claim protection from an international investment treaty. The shareholder would be likely to advance claims under the relevant treaty and pursue damages equal to the full US$50 million value of its lost equity.

The US$50 million claim for shareholder reflective loss would be necessarily lower than the US$70 million of enterprise value destroyed by the measures at issue. Any damages claim for shareholder reflective loss must first account for the debt holders' priority right to payment and deduct the US$20 million in value lost to the debt holders. With only a shareholder claim and no corresponding debt holder claim in our example, a state could take a total of US$70 million in economic value, for which it would owe only US$50 million in shareholder damages. As over-leverage increases, the compensation owed by a state reduces.20p>

Incentive to arbitrate

The presence of extensive debt financing affects not just the analysis of liability and damages in an international arbitration but also the incentives of both investors and a host state in the lead-up to the arbitration. Extensive debt can render early settlement less attractive to both the investor and the state and leave arbitration as the inevitable outcome.

For example, the measures at issue may have left shareholders with little or no remaining value. With little left to lose, shareholders may prefer to escalate a dispute and run the risks of an investment arbitration, rather than pursue negotiations through the underlying project company. Negotiations between the underlying project company and the host state are likely to require the involvement and consent of lenders, and any resulting settlement value could largely flow to them in any event. Escalating a dispute in the hope of triggering a response from the host state and proceeding to arbitration provides a better chance of obtaining at least some equity return. Of course, shareholder damages in an arbitration would need to consider the priority payment of debt, as explained above, but at least the arbitration process might proceed directly between the shareholder and the state, without the complications of lender involvement.21p>

At the same time, extensive debt financing could create a disincentive for host states to seek resolution. A settlement with the project company would only serve to compensate debt holders, while foreign shareholders may still initiate arbitration proceedings. Therefore, the state might fear that an arbitration with the shareholder would emerge despite any politically acceptable payment to the project company.

Another incentive to arbitration is that government officials tend to be cautious about renegotiating or rebalancing the original conditions of a concession contract for fear of allegations of corruption. Then, although they understand the reasoning of claimants, they prefer to push the operators to a claim for arbitration than to be exposed as being personally liable for public servant wrongdoing.

Political sensitivities

As with other infrastructure businesses, governments tend to think that transportation infrastructure and networks are key strategic assets. Changes in government administrations have resulted in abrupt decisions with respect to ownership and control of those assets. In the past, transportation infrastructure has been expropriated as a result of a government seeking to regain alleged control of these companies through legal or illegal nationalisation.

Political interference may also be a key part of regulatory considerations, if a government takes drastic decisions on issues affecting traffic forecasts with different types of interpretation of the reasonableness of mitigation measures, if any.

Regulatory costs depend on actions, which are out of investors' control. In the presence of possible downside outcomes not counterbalanced by potential upside results, they provide a potential asymmetric allocation of risks, which investors evaluate negatively and absorb, either in requesting higher returns or in a disincentive to invest.

Policymakers may not share sector objectives with the other key stakeholders, resulting in conflicting interests and motivations. The reasonableness of each side's view requires comprehensive experience in transportation policy matters with a long track record of crafting sector strategies and sector regulation.

Conclusion

The more common disputes in the transportation industry have tended to involve concession agreements for transportation infrastructure. Transportation-related arbitrations have covered a range of transport modes and different locations. Latin America has witnessed a higher number of transportation-related arbitrations than other locations, in part reflecting extensive foreign investment in transportation infrastructure.

Most transportation-related disputes have included expropriation claims. A commonly cited reason is the protection of national interests and societal purposes. Other arbitrations have included ex post changes in contract terms, such as failures to rebalance contract terms in light of material changes in market circumstances. In this respect, we expect covid-19-related transportation disputes to emerge as a trend in the near future.

Transportation-related arbitrations have at least four common features:

1. First, there is a need to construct traffic forecasts, which require detailed industry knowledge and can be affected by unforeseen circumstances such as technology, policy, competition and regulation.
2. Second, there is a related need to analyse business plans, which can reflect many complicated interrelationships between traffic, pricing and costs. Changes in one

part of the business plan can significantly affect other parts and cause financial performance to deteriorate relatively quickly.

3. Third, the use of extensive debt financing adds another layer of complexity to the analysis of liability and quantum, for example giving rise to claims of excessive debt and creating a need to analyse the causes of financial distress. At the same time, extensive debt financing actually reduces the magnitude of damages claimed by shareholders in international arbitration, all else being equal.
4. Fourth, there is a need to factor in political sensitivities.

Given these fundamental economic characteristics, we expect transportation arbitrations to continue to emerge in future.

Endnotes

1 Richard Caldwell and Lucia Bazzucchi are principals at The Brattle Group. Andy Ricover is a senior air transport economist and an outside expert for The Brattle Group.

2 International Financial Reporting Standards Foundation (IFRS), IFRIC 12 Service Concession Arrangements, www.ifrs.org/issued-standards/list-of-standards/ifric-12-service-concession-arrangements (accessed 23 May 2023).

3 Jonathan Hamilton, Ank Santens Viviana Méndez and Estefanía San Juan, 'Latin American arbitration in transition', White & Case LLP, 2022, www.whitecase.com/publications/insight/latin-america-focus/arbitration-transition (accessed 23 May 2023).

4 Autopista Concesionada de Venezuela, CA v. Bolivarian Republic of Venezuela was a case whereby a Venezuelan company called Aucoven, owned by a US corporation, had entered into a concession agreement with Venezuela for the construction and general maintenance of one of the country's main highway systems. The project was to be financed primarily through an increase in relevant tolls. After a series of violent public protests, Venezuela refused to increase tolls and Aucoven was forced to abandon the project. The tribunal found that Venezuela had breached the concession agreement, and thus had to reimburse Aucoven for a substantial part of its out-of-pocket expenses. The tribunal did not reimburse Aucoven for lost profits, as it was unable to determine future profits to a significant degree of reliability.

5 In Lidercón, SL v. Republic of Peru, Lidercón entered into a contract to build and operate motor vehicle inspection centres in the Metropolitan Municipality of Lima. Lidercón alleged non-compliance with respect to the condition of exclusivity to which it believes it is contractually entitled. The tribunal ultimately rejected claims owing to an absence of proof of breach of the bilateral investment treaty.

6 Both the Peruvian and Chilean governments have been notified of transport-related claims resulting from losses suffered as a result of the covid-19 measures taken by the state. See Cosmo Sanderson, 'Peru threatened over coronavirus emergency measure', Global Arbitration Review, 5 June 2020,

www.globalarbitrationreview.com/coronavirus/peru-threatened-over-coronaviru s-emergency-measure, and 'French consortium kicks off an ICSID claim against Chile after USD 37 million loss due to COVID-19 Pandemic', Investment Treaty News, 2021, www.iisd.org/itn/en/2021/03/23/french-consortium -kicks-off-an-icsid-claim-against-chile-after-usd-37-million-loss-due-to-covid-19-pandemic (accessed 23 May 2023).

7 Hamilton, Santens, Méndez and San Juan, op. cit. note 3, above.

8 The presence of an irrecoverable and irreversible cost gives rise to the well-known problem of 'hold up': if one of the parties in a commercial relationship makes an investment with sunk characteristics, the counterparty is then positioned in a situation of advantage and a chance of opportunistic behaviour (see Benjamin Klein, Robert G Crawford and Armen A Alchian, 'Vertical Integration, Appropriable Rents, and The Competitive Contracting Process', Journal of Law and Economics, Vol. 21, No. 2, 1978, 301-–02.

9 The precise number of companies we identify depends on the year and the metric. In 2015, we used 234 companies to calculate the leverage ratio. To obtain our sample, we used Capital IQ's company screening report. We applied two filters based on industry classifications: (1) 'Bus Transportation (Primary)' and (2) 'NOT (Intercity and Rural Bus Transportation OR School Buses OR Bus Charter Service)'. We also filtered to keep only companies of company type 'Private Company'.

10 Debt to equity (D to E), or debt to enterprise value (D to V).

11 We understand that foreign-controlled companies can pursue international treaty claims in some circumstances.

12 The reconstruction should eliminate the effects of the measures at issue, but reflect the effects of independent factors, such as changes in market prices and circumstances unrelated to the claims at issue.

13 Cash available for debt service in a given year divided by the debt service in that year.

14 Richard Caldwell, 'Financial Debt and Damages in Investor-State Arbitration', The International Arbitration Review, 12th edn., Law Business Research Ltd, 2021.

15 The host state may also have set out its financing expectations.

16 Richard A Brealey, Stewart C Myers and Frank Allen, Principles of Corporate Finance, 8th edn., McGraw-Hill Irwin, 2006, pp. 519–20.

17 Roughly 80 per cent of public bond issues in the US market are at an investment grade rating. Investment grade ratings are given to the largest, most creditworthy companies and projects. The remaining 20 per cent or so of public bond issues fall into the 'high yield' category. High yield issuers are often moderately sized companies, without the size or long history of large corporations. A 'high yield' issuance involves additional risk compared to investment grade, but high yield is not a signal of an unreasonable or imprudent financial choice.

18 However, the expectations of shareholders and lenders may legitimately differ, in part reflecting the distinct interests of shareholders and lenders in an investment project. Lenders are concerned with the ability of the borrower to service and repay a debt. Lenders are therefore likely to adopt conservative assumptions and consider downside risks that

could prompt loan losses, but largely ignore potential upsides from which they would not benefit. In contrast, shareholders will logically consider both the potential downsides (where they stand to lose money) and upsides (where they stand to gain).

19 The most common valuation approach is the WACC Valuation Method, which is an 'indirect approach' in that it estimates equity in two steps: (1) discounting project free cash flows at the weighted average cost of capital (WACC) to estimate the overall enterprise value, and (2) deducting the value of outstanding debt from the enterprise value to determine the equity value. A 'direct' alternative is a dividend discount model, which is a type of flow-to-equity method, which estimates the value of equity directly by discounting projected cash flows to equity (dividends) at an appropriate cost of equity. See for example Richard A Brealey, Stewart C Myers and Frank Allen, Principles of Corporate Finance, 10th edn., New York: McGraw-Hill, 2011, p. 479 and Jonathan Berk and Peter DeMarzo, Corporate Finance, 3rd edn., Pearson, 2013, Chapter 18.

20 Suppose that the shareholder had financed our US$100 million project with US$90 million of debt and US$10 million of equity. The ensuing shareholder arbitration would probably involve allegations of over-leverage and imprudence, which could affect liability. But the resulting shareholder damages would relate only to the shareholder's US$10 million investment, after proper accounting of the US$90 million in outstanding debt. US$10 million is less than the damages available to a comparable claimant utilising much less debt financing (US$50 million, for example), and far less than the total economic harm caused by the measures at issue (US$70 million).

21 The economics literature highlights the presence of incentive problems for highly indebted firms. For example, equity holders in highly indebted firms have an incentive to pursue high risk strategies. See Berk and DeMarzo, op. cit. note 19, pp. 553–57. See also Caldwell, op. cit. note 14, above.

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