Issues in Cross-Border Valuation and the Implications for Damages Assessments in Investor-State Disputes

Cornerstone Research

Ronnie Barnes

Introduction

Assessing damages in an Investor-State dispute often requires the quantum expert to either conduct a valuation – of a firm, a project, or some other investment – or to quantify the impact of the alleged wrongful behaviour on the value of an investment. Increasingly, these valuation approaches rely on the discounted cash flow (DCF) methodology, whereby the future cash flows of the investment are discounted back to the valuation date at a rate that reflects both the time value of money and the level of risk or uncertainty. Clearly, a critical element of any DCF-based valuation is determining the appropriate discount rate. This chapter provides a high-level overview of key considerations in undertaking such an exercise, with an emphasis on the additional complexities introduced by the cross-border nature of the valuations required in the Investor-State arena.

The chapter is divided into three sections. The first of these ignores the international dimension and, adopting a purely domestic perspective, reviews some basic ideas regarding what is referred to as the "risk-return trade-off". The section then shows how a consideration of this trade-off leads to the Capital Asset Pricing Model (CAPM), which is by far the most commonly used approach for determining discount rates in a wide range of practical settings. The second section presents a specific example of a project valuation in a fictitious emerging market country from the perspective of a US investor, and discusses the various considerations that result from the need to incorporate the international nature of the exercise. In particular, this section examines questions that arise when implementing the CAPM in an international setting. The third section introduces country risk and political risk, and discusses the issue of how such risks should be incorporated into a valuation.

Risk and Return, and the CAPM

To illustrate the concepts of risk and return, suppose that we live in a world that consists of a single country, the currency of which is the dollar ($). Consider first the case of an investment which will – with absolute certainty – pay $105 at the end of next year. Suppose that the current interest rate is 5%. In this case, the "present value" of the future cash flow (equivalently, the amount that an investor would be willing to pay today to acquire the investment) is simply $105/1.05, or $100. Because there is no uncertainty in the amount that will be received a year from now, the investment is said to be "risk-free" – moreover, the investment offers the investor a guaranteed (net) return of 5%.[1]

Now consider a second investment which will – with probabilities of 50% and 50% – pay either $125 or $85 at the end of next year. The expected, or average, amount that will be received is 50% × $125 + 50% × $85 = $105. How much would an investor be willing to pay today for this investment? If we assume that investors are risk-averse, and therefore prefer an investment offering $105 with certainty to one offering $105 on average, the answer is something less than $100 – but the question is how much less? Answering this question requires determining how much risk the investor perceives the investment to carry. If a lot, maybe the investor will be willing to pay only $80, in which case the expected return offered by the investment is 31.25%.[2] Note that this is also the rate at which the expected payoff of $105 needs to be discounted in order to arrive at the $80, while the "risk premium" on the investment (the expected return less the guaranteed return on a risk-free investment, or the "risk-free rate") is 31.25% – 5% = 26.25%. However, an investor who perceives only a small amount of risk may be willing to pay $90, in which case the expected return is 16.67%, and the risk premium 11.67%.[3]

This illustrates the risk-return trade-off: the riskier an investment is, the lower its current price will be, and the higher the expected return and risk premium it will offer. While intuitively obvious, for this observation to be useful when undertaking a valuation, we need to be able to (i) specify how risk should be quantified, and (ii) having quantified risk, translate this into a risk premium or expected return.

With respect to the quantification of risk, a key point is that an investor will typically not hold a single investment, but rather a portfolio of investments, and therefore what the investor cares about is the risk of the portfolio, not the risk of any individual investment. Consequently, when asking the question "how much would I be willing to pay for this investment" (equivalently, "what expected return does it need to offer me for it to be an attractive investment"), the investor will assess not the risk of the investment in isolation, but will consider its impact on the risk of an existing portfolio.

In general, the amount by which the risk of a portfolio increases when an investment is added will be less than the total risk of the investment viewed on a standalone basis.[4] This is the result of what is typically referred to as diversification. Broadly speaking, the total risk of an investment can be decomposed into two distinct elements, (i) its diversifiable, or non-systematic, risk, and (ii) its systematic risk. Further, providing a portfolio is sufficiently well diversified, only the systematic element remains – the diversifiable risk is diversified away – and it is the systematic risk of the investment, rather than the total risk, that determines the risk premium that investors demand from a particular risky investment.

This is still somewhat vague – however, under certain assumptions (which are beyond the scope of this chapter to discuss), what follows from this line of thinking is the CAPM, which may be written as follows:

$$E[r] = r_f + \beta\,(E[r_m] - r_f)$$

This asserts that the expected return $E[r]$ offered by a risky investment (e.g., an investment in a listed equity share) comprises two elements. The first is the risk-free rate (r_f), which may be thought of as compensation for the time value of money. The second is the risk premium, the compensation for the systematic risk inherent in the investment, and itself is the product of two terms.

The first of these (β) (beta) may be thought of as measuring the quantity of systematic risk that the investment carries – it essentially

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measures the extent to which the returns on the investment are "correlated" with returns on the market for risky investments as a whole (for all practical purposes, it is reasonable to interpret this as meaning the overall equity market). If the investment is positively correlated with the market – meaning that it tends to offer high returns when the market is performing well, and low returns when the market is performing poorly – the beta will be positive. It follows that the higher this positive correlation, the higher the beta, and the higher the risk premium that the investment will command. However, if there is little correlation between the investment and the market – meaning that how the market performs has little or no impact on whether the investment offers high or low returns – the beta will be close to zero, and the risk premium on the investment will be relatively low.

The second term $(E[r_m] - r_f)$ is referred to as the expected market risk premium (EMRP). As the name suggests, this is the expected return on the market as a whole in excess of the risk-free rate, and may be thought of as the risk premium per unit of risk (as measured by beta). For example, if the EMRP is estimated at 6%, an investment with a beta of 0.4 will be priced so that it offers a risk premium of 0.4 × 6%, or 2.4%; an investment with a beta that is twice as large at 0.8 will offer a risk premium that is twice as large at 4.8%.

In this simple, one-country setting, implementing the CAPM to determine the appropriate discount rate for a valuation is *conceptually* straightforward, although one that is subject to a number of significant practical challenges:

- Using information regarding the prices of, and interest rates offered by, government securities (which are assumed to be free of default risk) to determine the risk-free rate r_f.[5]
- Estimating the EMRP – this is acknowledged to be an extremely challenging question with a wide range of opinions across both finance academics and market practitioners. A discussion of the different approaches that are typically employed when tackling this question, and the results from utilising these approaches, is beyond the scope of this chapter.
- Estimating the beta of the investment being valued, a standard approach to which is as follows:
  - identify publicly listed companies in the same industry;
  - estimate a beta for each such "comparable" company, using historical data on that company's stock returns and on the returns to a broad-based stock market index[6] (a proxy for the market as a whole), and a statistical technique known as regression analysis; and
  - use the average across these comparable company betas as an estimate of the required beta.

For illustrative purposes, suppose that we have estimated $r_f = 4\%$, $EMRP = 6\%$, and $\beta = 0.7$. If we input these estimates to the CAPM, we obtain an estimate of the discount rate for this investment of 0.04 + 0.7 × 0.06 = 0.082, that is, 8.2%. In other words, to determine the value of this investment, we need to discount the future cash flows that the investment is expected to generate at 8.2%.[7]

The CAPM in an International Setting

We now turn to the question of what happens when we relax the assumption of a one country world. To make the discussion concrete, we consider an example of the valuation of a project in Ruritania, a fictitious emerging market country, from the perspective of a large US firm with a New York Stock Exchange listing. What discount rate should be used in such a valuation? The short answer is that we are still able to use the CAPM – however, we need to be extremely careful when thinking about how to estimate the required inputs (risk-free rate, beta, and EMRP).

To start, we need to consider in what currency the expected future cash flows will be denominated. Given that it is a Ruritanian project, an obvious answer is the Ruritanian currency (denoted RUR). However, as explained below, this approach would introduce a number of complications to the discount rate estimation – consequently, we assume that the projected cash flows will be denominated in US dollars (denoted USD).

Given this assumption, it should be obvious that the discount rate needs to be a USD rate. For the risk-free rate, it is clear what that means – the government securities that are used to estimate this input to the CAPM are those issued by the US government. However, when determining the appropriate risk premium (both the beta and EMRP), the situation is somewhat more complex. A key factor when answering this question – and one that is often overlooked – relates to what assumption the quantum expert makes regarding the extent to which capital markets across the globe are integrated. Assuming that capital markets are fully integrated (meaning that investors in all countries hold portfolios that are well diversified internationally) can lead to a very different discount rate estimate to that generated when assuming that capital markets are fully segmented (meaning that US investors hold only US stocks, French investors hold only French stocks, and so on). Under both assumptions, the fundamental approach is the same – namely, to determine what risk premium the US firm should incorporate into its discount rate for the Ruritanian project, the firm should consider how much risk the project brings to the existing portfolios of its investors. However, these existing portfolios differ significantly under the two assumptions.

Under the assumption of fully integrated capital markets, the US firm's investor base will comprise investors from all over the world, each of which will have an existing portfolio that is geographically diversified. Consequently, what this investor cares about is the extent to which the USD-denominated cash flows from the project are correlated with the USD-denominated returns on the investor's geographically diversified existing portfolio. In practice, this will typically involve identifying "comparable" Ruritanian companies that operate in the same industrial sector as the project being valued, computing the historical USD-denominated returns on these companies, using regression analysis on these returns and *the historical USD-denominated returns on a global stock market index* (*such as the FTSE All-World Index*)[8] to estimate a beta for each company, and averaging across these betas to obtain an estimated beta for the project. Similarly, the EMRP to be input to the CAPM is an estimate of the excess of the forward-looking expected USD-denominated return on this index over the current USD risk-free rate. This version of the CAPM – whereby betas and the EMRP are measured with respect to a world stock market index – is typically referred to as the World CAPM.

By contrast, under the assumption of fully segmented capital markets, the US firm's investor base will comprise investors from the US only, each of which will have an existing portfolio that is diversified across US stocks but not internationally. Consequently, this investor cares about the extent to which the USD-denominated cash flows from the project are correlated with the returns on the investor's existing US portfolio. In practice, this will once again involve identifying "comparable" Ruritanian companies that operate in the same industrial sector as the project being valued, computing the historical USD-denominated returns on these companies, using regression analysis on these returns and the *historical returns on a US stock market index* (*such as the S&P 500*) to estimate a beta for each company, and averaging across these betas to obtain an estimated beta for the project. As might be expected, the EMRP to be input to the CAPM is an estimate of the excess of the forward-looking expected USD-denominated return on this US index over the current USD risk-free rate.

One point that should be stressed is that whether we assume that markets are integrated or segmented, what enters the beta estimation exercise should be the USD-denominated historical returns of comparable Ruritanian companies. While we could use RUR-denominated returns, this would require that the entire analysis be conducted in RUR. For example, the expected future cash flows would

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need to be denominated in RUR, while the EMRP to be input to the CAPM would need to be an estimate of the excess of the forward-looking expected RUR-denominated return on the FTSE All-World Index over the current RUR risk-free rate. Generally, this would make the exercise unnecessarily complicated, and so it is standard to conduct these valuation exercises in USD. Further, the use of comparable companies from Ruritania is important if we are to measure the impact of the project on the risk of the existing portfolios of the US company's investors. This is because even within the same industrial sector, US companies may exhibit different levels of correlation with the world index than Ruritanian companies.[9]

We conclude this section with two observations. First, in reality, capital markets are neither fully integrated nor fully segmented. Various suggestions have been advanced as to how to overcome this issue but these tend to lack theoretical justification and as such are somewhat *ad hoc*. Consequently, it is probably prudent to estimate discount rates under both assumptions – judgment may be required as to how much weight to place on each estimate, but this is likely preferable to adopting an approach that is absent of any conceptual foundation.

Second, in many cases, whichever assumption – integrated or segmented – is adopted, the resulting discount rate may be lower than seems intuitively reasonable. This reflects an implicit belief that an investment in Ruritania must be riskier from the perspective of a US investor compared to that of a Ruritanian investor. The discussion above reveals the potential flaw in this reasoning: an investment in Ruritania is likely to be less correlated with either the US or the world stock markets than it is with the Ruritanian stock market – as a result, an investor holding a well-diversified US or world portfolio will demand a lower risk premium than will an investor holding a portfolio that is heavily concentrated in Ruritanian stocks.

Country Risk and Political Risk

Among the most heavily debated questions in the context of damages assessments in Investor-State disputes are those relating to the measurement, and the appropriate treatment, of so-called country risk. One of the key challenges in addressing such questions is that there is no consensus as to how to define country risk, making its measurement somewhat problematic. Loosely speaking, however, the notion of country risk stems from the idea that an investment in a project in an emerging market is in some sense inherently riskier than an investment in an equivalent project in a developed market, and as such, the former should have a lower value than the latter. Therefore, it is often argued, having determined the appropriate discount rate for the developed market project, a "country risk premium" should be added when estimating the discount rate for the emerging market project. In this final section, we explain the flaws in this logic and argue that – providing discount rates are estimated using the approach set out in the previous section – no adjustment is required for country risk, however defined. We also discuss the concept of political risk, one of the principal components of country risk, and explain why such risk should be accounted for via an adjustment to the expected future cash flows that are being discounted, rather than via an adjustment to the discount rate. Finally, we briefly consider how the magnitude of such cash flow adjustments might be quantified.

We start by providing a definition of country risk as articulated in a textbook written by two of the leading academics in the field of international finance:

> "Country risk includes the adverse political and economic risks of operating in a country. For example, a recession in a country that reduces the revenues of exporters to that nation is a realization of country risk. Labor strikes by a country's dockworkers, truckers, and transit workers that disrupt production and distribution of products, thus lowering profits, also qualify as country risks. Clashes between rival ethnic or religious groups that prevent people in a country from shopping can also be considered country risks."[10]

Consider again the valuation of the project in Ruritania from the perspective of a US firm. Recall that the starting point for such a valuation is the set of projected future (USD-denominated) cash flows that the project is expected to generate. Implicit in the word "expected" is the idea that the level of a given future cash flow is, as of the valuation date, uncertain and that what is input to the DCF valuation is a probability-weighted average of all the possible levels that the cash flow might take. For example, if the possible levels of the future cash flow are USD 10 million, 50 million, and 100 million, with probabilities of 20%, 50%, and 30%, respectively, the expected future cash flow is USD (0.2 × 10 million + 0.5 × 50 million + 0.3 × 100 million) = USD 57 million. What is important here is that the possible cash flow levels, and the respective probabilities, that are used (if only implicitly) in estimating the expected future cash flow that is input to the valuation *should be those that relate to the Ruritanian project in question*. To the extent that (relative to an equivalent project in the United States) the expected future cash flow levels are reduced as a result of the risks set out in the quote above, then the risks from investing in the Ruritanian project are clearly being incorporated into the valuation.

Does the discount rate need to be increased to reflect these risks? In short, the answer is no. As discussed in the previous section, the appropriate discount rate for the project comprises the USD risk-free rate, together with a risk premium that reflects the systematic risk carried by the project, that is, the risk that the project adds to the portfolios of the US firm's investors. This systematic risk is measured by the project's beta with respect to the relevant portfolio (a broad-based index of US stocks if capital markets are segmented, or a geographically diversified world index if capital markets are integrated), and, providing that this beta has been properly estimated, no country risk premium is required. In other words, if the risks that arise from the project being located in Ruritania lead to the project's cash flows being more correlated with the relevant portfolio than would be the cash flows from an equivalent US project, this will translate into a higher beta, risk premium, and discount rate. The key point is that no further adjustment is required. Increasing the discount rate to reflect country risk would be either double counting the project's systematic risk, or bringing diversifiable, non-systematic risk into the discount rate calculation, neither of which is appropriate.

While the above observations apply to country risk in general, they are particularly apposite when it comes to the case of political risk which "is a special case of country risk in which a government or political action negatively affects a company's cash flow".[11] Included within the factors leading to political risk are "the risk of expropriation, contract repudiation, currency controls that prevent the conversion of local currencies to foreign currencies, …laws that prevent [multinational corporations] from transferring their earnings out of the host country[,] [c]orruption, civil strife, and war…".[12] However, for ease of exposition, we restrict ourselves to the case of expropriation. Specifically, suppose again that the possible levels of a future cash flow are USD 10 million, 50 million, and 100 million, with probabilities 20%, 50%, and 30% respectively, *if the host country government does not expropriate* – however, there is a 40% probability that the government will expropriate the project in its entirety. In this case, the USD 57 million previously calculated is the expected future cash flow assuming no expropriation, and the expected future cash flow to be input to the valuation is equal to 40% × USD 0 + 60% × USD 57 million = USD 34.2 million. Once more, no adjustment is required to the discount rate unless the risk of expropriation is considered to be systematic in nature, that is, if the likelihood of expropriation is in some way correlated with overall equity market conditions. In general, this is unlikely to be the case:

> "[I]t remains best to view political risk as country-specific risk that can be diversified away by global investors. For that reason, we recommend not adjusting the discount rate for pure political risk and using only business risk to increase the magnitude of the discount rate above the risk-free rate."[13]

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A criticism that is often levied against this approach – of accounting for political risk in the expected future cash flow, rather than in the discount rate – is that it can be very difficult to estimate the appropriate political risk probability, and thus easier to leave the expected future cash flow as it is and adjust the discount rate. There are two responses to this line of argument. First, while difficult, it is not – as we explain shortly – impossible. Second, adjusting the discount rate does not eliminate the problem; it simply sweeps it under the carpet. If an expert is unable to estimate the required political risk probability, the expert is surely equally unable to determine by how much the discount rate should be increased to reflect political risk.

To illustrate how realistic political risk probabilities might be estimated, consider the following simplified example. Suppose that the government of Ruritania has outstanding USD 100 million notional of debt with a one-year maturity and a 5% coupon, so that the investors are promised a payment of USD 105 million at the end of the year. The current USD one-year risk-free rate (extracted from the prices of securities issued by the US government) is 3%, meaning that if there was no possibility of default on the debt, its value would be equal (in millions of USD) to 105/1.03 = 101.94. However, suppose that there is a 10% probability that Ruritania defaults before the year ends, in which case the investors in the debt receive nothing. Then, the expected (rather than the promised) payment to investors is 90% × 105 + 10% × 0 = 94.5, and its value is 94.5/1.03 = 91.75. From this, it is possible to calculate what is referred to as the "yield" on the debt – this is defined as the rate at which the promised payment of 105 must be discounted in order to arrive at the value of the debt of 91.75, that is, 91.75 = 105/(1 + yield), or yield = 105/91.75 – 1 = 14.44%. Further, we can calculate Ruritania's sovereign spread as the difference between this yield and the equivalent USD risk-free rate, that is, sovereign spread = 14.44% – 3% = 11.44%.

In this analysis, we used the probability of default to determine the debt's value, yield, and sovereign spread. Importantly, it is possible to work in the reverse direction – given one of value, yield, or sovereign spread, we can back out an implied probability of default. For example, a value of USD 89.71 million is equivalent to a yield of 17.04% and a sovereign spread of 14.04%, from which we can determine that the implied probability of default is 12%.

While this example is based on the simplest case of one-year debt, it is possible to apply a similar analysis to imply default probabilities from debt with longer maturities. Consequently, it is tempting to use these implied default probabilities as the basis for the political risk probabilities that are used to adjust the expected future cash flows in a valuation. However, this assumes that defaults on sovereign debt occur only as a result of political risk factors that affect the country's *willingness* to pay. In reality, there are other factors, unrelated to political risk, that affect the *ability* to pay and so these implied probabilities of default will typically overstate the likelihood of a political risk event in the country in question. The previously cited textbook makes this point in no uncertain terms:

> "Recent academic research on sovereign spreads …dramatically shows why unadjusted spreads cannot be used to infer political risk probabilities. These articles determine what factors drive the cross-country and temporal variation in credit spreads, invariably finding that local macroeconomic conditions and, importantly, global risk factors (such as US credit spreads) play an important role. This implies that the use of credit spreads leads to a double counting of risk factors. Macroeconomic risk factors should already be accounted for in the usual cash flow analysis, whereas global risk factors presumably should already be part of the usual discount rate factor. It therefore makes no economic sense to simply add a sovereign credit spread to a discount factor obtained from, say, the world CAPM. Only the part of the sovereign spread that is driven by pure political risk factors is useful to enter political risk computations."[14]

In a related paper, the authors develop a methodology that allows for extracting "the part of the sovereign spread that is driven by pure political risk factors" and for computing the related political risk probabilities.[15] The details of this methodology are beyond the scope of the current chapter, but an example in the paper illustrates the potential magnitude of the valuation errors that may arise if this issue is not addressed properly. In this example (which involves a Pakistani power plant being valued as of the end of 2009), the unadjusted sovereign spread for Pakistan as of the valuation date is 6.88%. This is shown to correspond to an annual probability of default of 6.2%, meaning that the probability of default by the end of the project's 20-year life is 72.3%. If this is used to estimate the annual probability of a political risk event, the value of the project is shown to be USD 493.3 million. However, the authors show (using their methodology) that the part of the sovereign spread attributable to political risk factors lies somewhere between 2.56% and 4.56%. This corresponds to estimates of the annual *probability of a political risk event* of between 2.32% and 4.12%, and a value of the project of between USD 582.5 million and USD 677.7 million.[16] In other words, a failure to strip from the sovereign spread the part that is unrelated to political risk factors leads to the project being undervalued by somewhere between 15.3% and 27.2%.[17]

Conclusion

While this chapter has covered a lot of ground, there are two key messages. The first is the importance of distinguishing between diversifiable and systematic risk, and of ensuring that the former is accounted for via adjustments to the expected future cash flows in a valuation exercise. The fact that this might be challenging should not be used as the rationale for making *ad hoc* adjustments to the discount rate. The second key message is that when determining the risk premium to be included in the discount rate, attention must be paid to the existing portfolios of the investors from whose perspective the valuation is being assessed. Without this, the analysis will be devoid of any consideration of how much additional systematic risk the investment carries, and this is one of the crucial determinants of the required risk premium.

Endnotes

1. The gross return is calculated as the amount to be received a year from now ($105), divided by the amount paid for the investment ($100), that is, 1.05. The net return is calculated by subtracting one from the gross return, that is, 1.05 – 1 = 0.05, or 5%. Henceforth, all references to returns should be interpreted as net returns.
2. Calculated as $105/$80 – 1 = 0.3125, or 31.25%.
3. $105/$90 – 1 = 16.67%; 16.67% – 5% = 11.67%.
4. In certain cases, it is even possible to *reduce* the risk of a portfolio by adding a new investment to it.
5. For the purposes of this discussion, we ignore the fact that governments issue securities with different maturities, and that the risk-free interest rate may differ by maturity.
6. For example, the S&P 500 in the US, the FTSE 350 in the UK, or the CAC 40 in France.
7. Throughout this discussion, we ignore the fact that firms and projects are typically financed by a mix of debt and equity, rather than equity alone – a fact that introduces additional complications into the discount rate question.
8. See http://www.ftse.com/Analytics/FactSheets/Home/DownloadSingleIssue/GAE?issueName=AWORLDS.
9. In practice, the existence of comparable companies in the market in which the project is located may be limited, in which case judgment may be required to determine an appropriate set of comparable companies.

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10. Geert Bekaert and Robert Hodrick, *International Financial Management*, 3rd ed. (Cambridge, UK: Cambridge University Press, 2018), p. 603.
11. *Ibid*., p. 655.
12. *Ibid*., p. 655.
13. *Ibid*., p. 620.
14. *Ibid*., p. 645.
15. Geert Bekaert, Campbell R. Harvey, Christian Lundblad, and Stephan Siegel, "Political Risk and International Valuation", *Journal of Corporate Finance* 37 (2016), pp. 1–23.
16. *Ibid*., pp. 18–19.
17. Calculated as 1 – 493.3/582.5 and 1 – 493.3/677.7, respectively.

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Ronnie Barnes heads Cornerstone Research's international arbitration practice. Dr. Barnes is an expert on accounting, damages, and valuation. He specialises in complex valuation methodologies, including estimating the cost of capital, determining country risk premia, and conducting valuation of complex financial instruments such as derivatives and structured finance products.

Dr. Barnes has provided written and oral testimony in multiple matters involving topics such as the tax treatment of hire purchase contracts; the assessment of damages resulting from the breach of a joint venture agreement; the economic equivalence of various financial derivatives; and the use of derivatives in alleged share price manipulation. Dr. Barnes has testified in cases heard by the International Court of Arbitration, the South African Competition Tribunal, and the Queen's Bench of Alberta.

In addition to serving as a testifying expert, Dr. Barnes leads teams that support Cornerstone Research's affiliated academic and practitioner experts. In this capacity, he has worked on numerous matters related to financial institutions and financial products, cases requiring the analysis of damages stemming from alleged misrepresentations and omissions in corporate disclosures, and other matters requiring sophisticated accounting, financial, and/or economic analysis.

Cornerstone Research
4 More London Riverside
5th Floor
London SE1 2AU
United Kingdom

Tel: +44 20 3655 0903
Fax: +44 20 3655 0999
Email: rbarnes@cornerstone.com
URL: www.cornerstone.com

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