Time-travel riddles in the assessment of damages

(Manuel Conthe[1], Austrian Yearbook on International Arbitration 2020[2], p.265-287)

Time is an inevitable dimension of all arbitrations, since relevant events take place at different points in time, sometimes over long periods and at very long intervals. Typical milestones in an arbitration involving claims for damages include:

- The time when the investment was made, or the construction project designed.
- The time when the alleged breach of the contract or BIT took place (e.g. when the confiscation or the malfunctioning of the factory happened).
- The time when the immediate consequences of the alleged breach materialized.
- The time when arbitrators adjudicate the dispute and issue the award.
- The time in the future when the financial cashflows or consequences which would happen "but for" the alleged breach were expected to materialize.

Thus, arbitrators will inevitably need to engage in some "time travel" and carry out from their vantage point in the present backward- and forward- looking analyses of past and even future events. This will not be easy, because when virtually hopping from the present to the past they may fail pray to biases, suffer mirages and encounter thorny conundrums or riddles, some of which, unbeknownst to lawyers, economists had met before, as I will show below.

I will illustrate the difficulty of time-travelling with four practical riddles which I have seen come up in real arbitration cases:

- In determining liability, are "subsequent remedial measures" proof of previous negligence?

In cases where a Discounted Cash Flow (DCF) model is being used to assess damages

- Should all the political risks as of the time when the expropriation took place be included in the discount rate, in order to assess the "fair market value" (FMV) of the expropriated assets?

- Once the amount of damages has been determined with the DCF methodology, should it be compared with the initial sunk investment, in order to gauge whether the resulting return for the investor is "excessive"?

- Once the amount of damages, as of the date of the breach, has been determined using a "weighted average cost of capital" ("WACC") as discount factor, should that rate also be used as pre-award interest rate?

---

[1] *Manuel Conthe is an international arbitrator based in Madrid. This article is based on the presentation he made on March 1, 2019 during the panel "Juggling the numbers: Mathematics and Economics in Arbitration", at the Vienna Arbitration Days 2019.*

[2] Austrian Yearbook on International Arbitration 2020, Klausegger, Klein, Kremslehner, Petsche Pitkowitz, Welser &Zeiler eds., 2020.

RIDDLE # 1: SUBSEQUENT REMEDIAL MEASURES

The new habit of "binge-watching" of television series (i.e. to watch all the shows from one series in one go) allows fans to jump ahead and spoil the stories for their friends and colleagues and may have compounded the spoiler problem. But why, after all, we hate so much that someone spoils a novel or film for us? Why do reviewers of books or films feel the need to include an "spoiler alert" when their review will reveal essential aspects of their plot?

The obvious reason is that, once we know the ending of a story, we will be unable to enjoy its reading or watching as if we did not. In more general terms, once you know something, you will be unable to ignore it and put you in the shoes of someone who did not know it.

In 1989 three economists, Colin Camerer, George Loewenstein and Martin Weber coined the term "curse of knowledge" to describe that predicament.[3]They came up with the concept to argue that "information asymmetries" in economic transactions -for example, sellers are better informed about the true value of their products than buyers; or workers know more about their ability and motivation than prospective employers- were not as disruptive as Nobel Prize George Akerlof had imagined in his seminal work on "the market for lemons" (i.e. faulty second-hand cars). Camerer and his colleagues argued that the better-informed agents will be unable to anticipate the judgments of less-informed agents and will inevitably reflect in their offers the additional information they enjoy: "in predicting the judgments of others, agents are unable to ignore the additional information they possess". Hence, for instance, "the seller of a 'lemon' may lower its price to reflect unobservable defects, reducing the degree of market failure".

The "curse of knowledge" was empirically confirmed shortly thereafter by the American psychologist Elizabeth Newton.[4] In the experiment she carried out as part as her doctoral thesis, she asked her subjects to tap out with their finger the melodies of very familiar songs (like "Happy Birthday", "Yankee Doodle"..) and guess what fraction of those songs would be recognized by listeners. 120 songs were tapped out and tappers predicted that listeners would guess 60 songs (i.e. 50%). In reality they only guessed right 3 (i.e. 2.5%)!

The "curse of knowledge" is a pretty pervasive phenomenon, and helps explains, for instance, why some scientists and experts make poor teachers: they are unable to put themselves in the position of a student who lacks their understanding of the matter and, hence, their attempts to convey their knowledge may not be very illuminating.[5]

But the "curse of knowledge" is particularly relevant in litigation and arbitration, since the time-lag between the events leading to the dispute and the time when is adjudicated will inevitably result in a "curse of knowledge": judges and arbitrators will have to pass judgement on past *ex*

---

[3] Colin Camerer , George Loewenstein and Martin Weber, "*The Curse of Knowledge in Economic Settings: An Experimental Analysis*", Journal of Political Economy, 1989, Vol. 97, Issue 5, pages 1232-54, avaiable at https://www.cmu.edu/dietrich/sds/docs/loewenstein/CurseknowledgeEconSet.pdf.

[4] Elizabeth Louise Newton, Ph.D. "*The rocky road from actions to intentions*", Stanford University, 1990, available at https://creatorsvancouver.com/wp-content/uploads/2016/06/rocky-road-from-actions-to-intentions.pdf.

[5] In the author's experience, the curse seems particular pervasive among IT experts when giving troubleshooting advice to computer users.

ante behaviors when the parties' pleadings have already spoiled for them the *ex post* outturn (normally, an unhappy one for the claimant).

When making those backward-looking judgements, the "curse of knowledge" will pose the risk of "hindsight bias", a specific judgement distortion -i.e. the *ex post* overestimation of the *ex-ante* foreseeability of the events which actually happened- discussed extensively in recent years by the arbitration community.[6]

I saw this bias first-hand in an arbitration in which an industrial claimant sought damages from an engineering company for the faulty initial design of a machine (which subsequently had to be re-engineered, with the attendant delays and adverse consequences for the factory´s functioning). And I was baffled when an experienced expert supported claimant's argument that the engineering company had acted with gross negligence on these grounds:

> *"The success of the later designs [of the machine, carried out at its own expense by the engineering company] confirms that an appropriate design could have been achieved initially. In other words, the fact that a problem that occurred [in the design of the machine] was later solved, confirms, in and of itself, that the problem was foreseeable and avoidable in the first place, and demonstrates the supplier's gross negligence".*

His testimony made clear that he had not read a very entertaining, enjoyable book by American sociologist Duncan J. Watts published shortly before, whose title gives the lie to the expert's assertion: "Everything is obvious…, once you know the answer".[7]

More seriously, he seemed unfamiliar with a famous British sentence on damages which is at the origin of Rule 407 of the US Federal Rules on Evidence, concerning "Subsequent Remedial Measures".

Such Rule 407 currently states:

> *"When, after an injury or harm allegedly caused by an event, measures are taken that, if taken previously, would have made the injury or harm less likely to occur, evidence of the subsequent measures is not admissible to prove negligence, culpable conduct, a defect in a product, a defect in a product's design, or a need for a warning or instruction. This rule does not require the exclusion of evidence of subsequent measures when offered for another purpose, such as proving ownership, control, or feasibility of precautionary measures, if controverted, or impeachment".*

---

[6] The phenomenon of "hindsight bias" was first demonstrated by American academic Baruc Fischoff in "*Hindisight is not foresight: the effect of outcome knowledge on judgement under uncertainty*", Journal of Experimental Psychology: Human Perception and Performance, 1975, I, 288-299. By now there is a huge corpus of literature on this bias and its relevance for jurors, judges and arbitrators. But one of the best and most comprehensive analysis remains Jeffrey J. Rachlinski, "*A Positive Psychological Theory of Judging in Hindsight* ", The University of Chicago Law Review, 1998, 65, pages 571-625, available at https://pdfs.semanticscholar.org/9bee/03efcd8cbaa4fd6c5c5e68c0fe2c9ee0f7b7.pdf

[7] Duncan J. Watts, "*Everything is obvious (once you know the answer). How common sense fails us*", Crown Pub Inc, 2012.

As the official explanation of the Rule indicates, it harks back to the case *Hart v. Lancashire & Yorkshire Ry. Co*. (1869), in which the Court of Exchequer decided a request for damages resulting from the injuries sustained by a passenger in a railway station.

The facts of the case were the following:[8]

> *"At Miles Platting station, on the defendant's main line, a few miles from Manchester, there were sidings leading from the main line of rails to coaling and engine sheds, the points of which sidings were always open to the main line. On the day in question an engine had, in accordance with the usual practice, been taken by a servant of the company appointed for the purpose to the coaling-shed, and was returning slowly therefore on its way to the engine-shed. In the ordinary course of things the engine would have gone along the siding until it passed the points of the siding leading to the engine-shed, when it would have been reversed and backed over them into that shed; but, at the moment when the driver should have reversed, he fell down in a fit on the footboard of the engine, which consequently proceeded on towards the main line. At this moment a down express from Manchester and an express from Rochdale were approaching the station at full speed, and the pointsman in charge of the points at the spot, seeing the runaway engine with the man lying on the floor approaching, in order to prevent its getting on the main line and colliding with either of these expresses, deliberately, as a choice of evils, turned the points so as to send it on to a branch line from Ashton which formed a junction at this station with the main line, at the platform of which branch line he knew that a train was stopping for tickets to be collected. The consequence was that the engine ran into the stationary branch train, and the plaintiff, a second-class passenger in one of the carriages of that train, was injured.*

He sued the company for compensation on the ground of negligence, firstly, in not having two men on the engine while coaling and running it from the coaling-shed to the engine-shed; and secondly, in having the points of the siding so arranged that the engine must necessarily in case of accident to the driver, pass on to the main line; and the fact of an alteration having been made since their accident, so that a runaway engine would pass on to a supplementary siding leading up to a 'dead end' was urged as evidence of their previous negligence.

The Court declared the railway company not liable for damages, and concerning the arrangements of the sidings stated:

> *"The arrangement of the sidings having been used for twenty years without accident, the defendants could not be held bound to have foreseen the accident, or to be held responsible for it upon its happening; nor was the subsequent alteration of the siding rails evidence of the antecedent negligence on their part in that respect".*

[8] Albert Parsons, "*The Liability of Railway Companies for Negligence towards Passengers*", London, Horace Cox, 1893, available at https://archive.org/details/liabilityofrailw00pars (University of California, Los Angeles, School of Law Library).

One of the judges, Baron Channel[9], wrote:

> *'With regard to the branch siding and its alteration since the accident, it is not because the defendants have become wiser, and done something subsequently to the accident, that their doing so is to be evidence of any antecedent negligence on their part in that respect'*[10].

A similar doctrine on "subsequent remedial measures" can be ascertained in the domain of product liability in the so-called "state of the art defense" or "development risk clause" (DRC) enshrined in the European Union in article 7 of the EU Directive 85/374/EEC on Product Liability. It states the following: [11]

> *"The producer of a defective product will not be liable if he proves (e) that the state of scientific and technical knowledge at the time when he put the product into circulation was not such as to enable the existence of the defect to be discovered".*

In interpreting that clause, the European Court of Justice stated that

> *"The producer of a defective product must prove that the objective state of scientific and technical knowledge, including the most advanced level of such knowledge, at the time when the product in question was put into circulation was not such as to enable the existence of the defect to be discovered".*

The DRC was meant to strike the right balance between the interests of consumers, industry and governments in sharing risks and the financial consequences in case of injury caused by products originally distributed when the risks were not predictable.

One consequence of the DRC is that a producer can theoretically escape liability from a defective product if it can prove that the damage was unpredictable when the product was put into circulation, even if subsequent remedial measures were found to improve the product and prevent subsequent damages.

In conclusion, both Rule 407 and the DRC can be understood as legal rules meant to avoid that, when judges or arbitrators have to determine whether the defendant was negligent, the "curse of knowledge" sways their minds, since they already know that, had the defendant behaved differently -by designing the machine, the lay out of the railway station's sidings or the product better, as they subsequently did- injury could have been avoided.

---

[9] In the "Notes of Advisory Committe on Proposed Rules", available at https://uscode.house.gov/view.xhtml?path=/prelim@title28/title28a/node218&edition=prelim, the saying is attributed to Barom Bramwell, who argued that claimant's argument led to the wrong conclusion that "because the world gets wiser as it gets older, therefore it was foolish before".

[10] Albert Parsons, *supra* note 7, at page 86.

[11] ECJ 300/1995. For a broad analysis of the Directive and its implementation by Member countries, see "*Analysis of the Economic Impact of the Development Risk Clause as provided by Directive 85/374/EEC on Liability for Defective Products. Final Report*", Study for the European Commission, Fondazione Rosselli, 7 October 2014.

This first riddle has thus a clear solution: subsequent remedial measures after an accident are not proof of negligence.

DAMAGES AND THE DCF MODEL

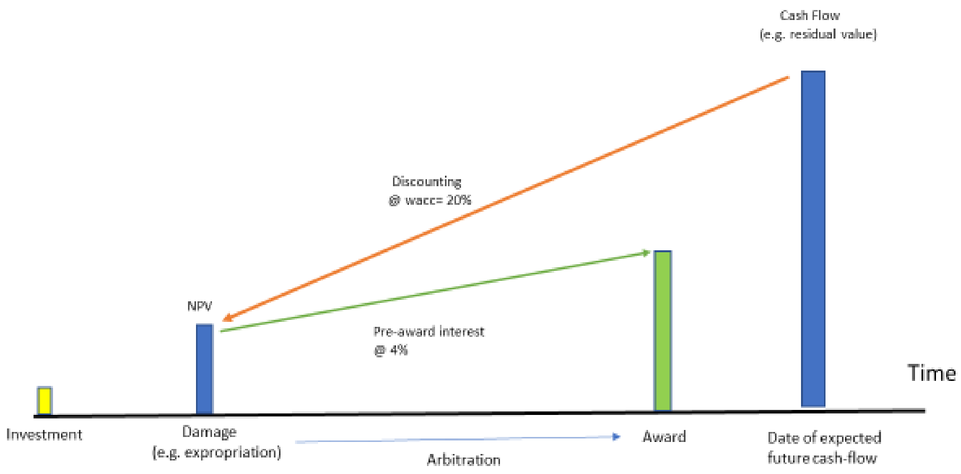
Before discussing the three riddles occasionally raised by the use of the Discounted Cash Flow (or DCF) method to assess damages, let's underline first that it is only sensible to use this method when some minimum conditions are met. They are aptly described in *Rusoro*[12]:

- The enterprise has an established historical record of financial performance
- There are reliable projections of its future cash flow, ideally in the form of a detailed business plan adopted in *tempore insuspecto*, prepared by the company's officers and verified by an impartial expert
- The price at which the enterprise will be able to sell its products or services can be determined with reasonable certainty
- The business plan can be financed with self-generated cash, or, if additional cash is required, there must be no uncertainty regarding the availability of financing
- It is possible to calculate a meaningful WACC, including a reasonable country risk premium, which fairly represents the political risk in the host country
- The enterprise is active in a sector with low regulatory pressure, or, if the regulatory pressure is high, its scope and effects must be predictable: it should be possible to establish the impact of regulation on future cash flows with a minimum of certainty

Now, to illustrate the three riddles, let's consider, for the sake of simplicity, the case of an investor who makes a certain investment and suffers subsequently some damage (e.g. an expropriation). In order to simplify the analysis even further, let us assume that the project was expected to produce just one single big cash flow in the very distant future, so that the arbitration award is rendered somewhere between the moments when the expropriation takes place and the

[12] *Rusoro Mining Limited vs Bolivarian Republic of Venezuela*, ICSID Case No. ARB (AF)/12/5, paragraph 759.

future cashflow is expected to materialize, as shown in the picture.



As indicated, by applying a certain discount factor (normally, the "weighted average cost of capital" or WACC of the expropriated company), the tribunal will arrive at the "net present value" (NPV) of the company as of the date of the expropriation, that it will have to bring forward to the date of the award by applying to that historic NPV or "fair market value" (FMV) a "pre-award interest rate".[13]

Under those assumptions, we will consider three different issues:

- Should all the political risks prevailing at the time when the expropriation took place be included in the discount rate, in order to assess the "fair market value" (FMV) of the expropriated assets?

  I will describe this riddle as "the political risk conundrum".

- Once the amount of damages has been determined with a DCF methodology, should it be compared with the initial sunk investment, in order to assess whether the investor's return could be considered "excessive"?

  This will be the "excessive return riddle".

- Once the amount of damages has been determined using a "weighted average cost of capital" ("WACC") as discount factor, should that rate also be used as pre-award interest rate?

  This will be the "financial roundtrip riddle".

[13] The picture assumes a discount factor of 20% and pre-award rate of 4%. The relation between these two rates -and whether they should be the same- will be the subject of Riddle # 4.

RIDDLE # 2: "THE POLITICAL RISK CONUNDRUM"

Shortly after the investment bank Lehman Brothers filed for bankruptcy in September 2008 and triggered a financial shock which sent the creditworthiness of many banks and financial institutions into a tailspin, the quarterly accounts of international banks which had previously decided to use the so-called "fair value option" (FVO) to measure some liabilities -typically outstanding bonds or implicit liabilities embedded in credit derivatives (e.g. credit default swaps or CDS)- showed sizable accounting profits in their fixed income book…resulting from the deterioration of their own creditworthiness!

This paradoxical outcome, described at the time as the "own-credit conundrum", resulted from applying "fair value accounting" to liabilities: when the banks' creditworthiness deteriorated, and, consequently, the market price of their bonds came down and their credit spread in CDS went up, this translated into an accounting gain, to be reflected in their P&L.

This created an outcry from some investors, and even left financial bank supervisors baffled, primarily because booking profits as a result of the deterioration of their own credit was counter-intuitive and even misleading. Conversely, any subsequent recovery in their creditworthiness would translate into an accounting loss, such that sizeable fair value gains in one period might largely be wiped out by equally large losses in the next period, if markets recovered, thereby introducing substantial and unwarranted volatility in earnings[14].

The International Accounting Standards Board (IASB) reacted fast with a consultation paper on the role of credit risk in liability measurement and in October 2010 decided that the new International Financial Reporting Requirement Standard Number 9 (IFRS 9) consider the accounting gains and losses resulting from own credit valuation adjustments (CVA) not as regular income (to be reflected in the P&L Statement), but as "other comprehensive income", to be booked directly as a change in reserves, with no impact on profits. This new accounting treatment solved, by and large, the "own credit conundrum".

International arbitrators, probably not very familiar with international accounting standards and with the "own-credit conundrum", face occasionally -as they have done mostly in investment arbitration cases concerning Venezuela- a closely related "conundrum", deriving also from fair value accounting: when the *quantum* of liability to be paid by an State (i.e. the damage to be compensated) is determined by the DCF method -i.e. applying a discount factor to the foregone future cash flows-, an increase in the domestic political risk resulting from a more hostile attitude towards private business will result in a lower amount of compensation. It this not as counterintuitive as the "own credit conundrum"? Put more dramatically, "can a State benefit from its own wrong?".

I myself tried to illustrate this conundrum with the question I put to an expert, in an investment arbitration whose hearing was being conducted in 2013, shortly after North Korea's Politburo decided to continue testing long-range rockets despite the condemnation of previous tests by the United Nations Security Council. In my hypothetical scenario, North Korea's Politburo decided overnight to overrun South Korea, take over forcibly all its factories and companies, and unify the entire Korean peninsula into a unified Socialist country, where private property was banned.

---

[14] See, for instance, Tracy Alloway, "*Own Credit Conundrum at the IASB*", Financial Times June 23, 2009 and "*Profiting from your own crummy creditworthiness, redux*", Financial Times June 4, 2009.

In this fanciful scenario, North Korea subsequently accepted to be Respondent in arbitration cases launched under various BITs by expropriated investors in South Korea's companies. Now, could it argue that under the DCF method the fair market value (FMV) of the expropriated companies was nil, as the political risk premium and corresponding discount rate had shot through the roof?

The "conundrum" may arise indeed in the real world when the applicable BIT requires that compensation represents "the market value of the investment before the measures are taken or the impending measures became public knowledge, whichever is earlier". And if fair market value (FMV) is assessed with a DCF methodology the questions arises as to whether the general expropriating attitude of the host Government and its hostility to private business should be reflected in the discount factor.

Those in favor of a positive response argue that FMV should be based on the market value that a "willing buyer" would pay to a willing seller; and they add that any willing buyer would consider all political risks of doing business in the country.

Those opposing that view argue that the discount rate can take into consideration country risks such as those resulting from a volatile economy or civil disorder, but not a general confiscation risk resulting from the host State's behavior. They underline that a State should not be allowed to profit from its own wrong (i.e. from breaching its international obligations).

Experience shows that arbitrators and tribunals are divided on this issue. This became particularly apparent in the series of awards rendered during the years 2014-2016 in investment arbitration cases against Venezuela, relating to damages occurred several years before. In those cases, tribunals applied widely divergent discount rates resulting from very different country risk premia[15].

Thus, for instance, in *Gold Reserve* the tribunal argued:[16]

> *"It is not appropriate to increase the country risk premium to reflect the market's perception that a State might have a propensity to expropriate investments in breach of BIT obligations".*

As a consequence, it set the country risk premium at 4%, the cost of equity at 11.92% and the WACC at 10.09%.

[15] An important, but separate issue, not discussed here, is what is the right measure of "political" or "country risk" and specifically whether the standard practice of using as a proxy sovereign default risks or market spreads is adequate. The issue is discussed extensively by Manuel A. Abdala, Carla Chavich and Pablo López Zadicoff in "*Assesing Country Risk at Times of Sovereign Financial Distress*", Journal of Damages, Vol. 5,No.2, 2018, where they claim that "when a sovereign enters financial distress or where there is a run against financial assets of a particular class or located in a particular region, the EMBI and CDS spreads are no longer a suitable measure of the country risk faced by private businesses" (page 4).

[16] *Gold Reserve Inc. vs Bolivarian Republic of Venezuela*, ICSID Case No. ARB(AF)/09/1, 22 September 2014, paragraph 841.

But the tribunal in *Venezuela Holdings*, an award published just three weeks later, took a very different tack:[17]

> *"Article 6(c) of the BIT requires that the compensation due in case of expropriation represent 'the market value of the investments affected before the measures are taken or the impending measures become public knowledge, whichever is earlier'. This means that the compensation must correspond to the amount that a willing buyer would have been ready to pay to a willing seller in order to acquire his interests but for the expropriation, that is, at a time before the expropriation had occurred or before it had become public that it would occur. The Tribunal finds that it is precisely at the time before an expropriation (or the pending knowledge of an impending expropriation) that the risk of a potential expropriation would exist, and this hypothetical buyer would take into account when determining the amount he would be willing to pay in that moment. The Tribunal considers that the confiscation risk remains part of the country risk and must be considered in the determination of the discount rate".*

As a result, the tribunal applied a discount rate of 18%.[18]

A few months later, the *Tidewater*`s tribunal followed the same criterion as *Venezuela Holdings*:[19]

> *"[According to Claimant's expert, 'If the State can create risks that it controls, threaten businesses […], lower the value of the business, and then they expropriate, if we´re going to take all that risk into account, then they get to purchase the company at a very steep discount because of their own risks that they have created hostiles towards those companies'.*
>
> *"If the Tribunal finds liability, then, at the second quantum state, the Tribunal must determine the 'market value' of the investment. This second element in the claim is in essence an economic question. It depends upon the value that the market would attribute to the investment in question. Returning to the World Bank Guidelines, this is an amount that a willing buyer would pay to a willing seller of the investment immediately prior to the taking in question. Where this is determined by use of a discounted cash flow analysis, the Guidelines specifically invite a consideration of the 'risk associated with such cash flow under realistic circumstances.*
>
> *This is not a matter of permitting a respondent State to profit from its own wrong. On the contrary, the damages that the Tribunal is empowered by virtue of the Treaty to award are designed to ensure that the private investor is compensated for the loss of its investment. But, in determining the amount of that compensation by reference to a discounted cash flow analysis, the*

---

[17] *Venezuela Holdings et al. vs Bolivarian Republic of Venezuela*, ICSID Case No. ARB/07/27, 9 October 2014, paragraph 365.
[18] *Id.,* paragraph 368.
[19] *Tidewater Investment SRL et al vs Bolivarian Republic of Venezuela*, ICSID Case No. ARB/10/5, 13 March 2015, paragraph 183.

> *Tribunal should consider the value that a willing buyer would have placed on the investment. In determining this value, one element that a buyer would consider is the risk associated with investing in a particular country. Such a factor is not specific to the particular State measure that gives rise to the claim. That measure must be left out of account in arriving at a valuation, since, according to Article 5 [of the BIT], the market valuation must be arrived at 'immediately before the expropriation or before the impending expropriation became public knowledge, whichever is the earlier'".*

Consequently, the tribunal accepted, and even declared "conservative", a country risk premium of 14.75%.[20]

Later that year, in *Flughafen Zürich*, the tribunal seemed to endorse *Gold Reserve*'s criterion, but understood in an "incremental manner" which, under the circumstances, did not require any adjustment in the political risk premium:[21]

> *"A State which, once the investment has materialized, adopts new political measures which increase country risk cannot benefit from an illicit act of his own to reduce the compensation to be paid. But this was not the case. When in 2004 Claimants decided to invest in [the airport], the country risk already existed and they were perfectly aware of existing political and legal uncertainties (…). Political risk already existed before the investment, and its size could not change significantly during the brief period investors held their investment".*

The following year, in *OI European Group B.V.*, the tribunal set the country risk premium at 6%, as suggested by Respondent, and rejected the 2% advocated by Claimants, arguing that it was the same rate Professor Damodaran assigned to Italy and "it does make any financial sense that Italy and Venezuela share the same risk premium". It further argued that "although it may be true that the repeated expropriations in Venezuela may be perceived by investors as 'negative messages', it has not been demonstrated that these negative messages may have increased Venezuela's country risk premium by 4 full points".[22]

In *Saint-Gobain*´s 2016 decision on liability and *quantum*, a majority of the Tribunal endorsed again *Tidewater* 's criterion that "the determination of fair market value has to be made in accordance with economic principles and thus factor in all risks that a willing buyer would take into account.[23]

The decision was particularly interesting for two reasons.

---

[20] *Id.*, paragraph 190. Note that the 14.75 is not a WACC, but just a country risk premium, and should be compared with the 4% accepted by the *Gold Reserve's* tribunal.

[21] *Flughafen Zürich A.G. y Gestion e Ingeniería IDC S.A. c.República Bolivariana de Venezuela*, Caso CIADI No.ARB/10/19, 18 November, 2014, paragraphs 905-907.

[22] *OI European Group B.V. c. República Bolivariana de Venezuela*, Caso CIADI No.ARB/11/25, 10 March, 2015, paragraphs 780-782.

[23] *Saint-Gobain Performance Plastics Europe vs Bolivarian Republic of Venezuela*, ICSID Case No. ARB/12/13, Decision on Liability and the Principles of Quantum, 30 December 2016, paragraph 722 and 723.

First, because of the relevance the tribunal attached to the changes in the political risk premium over time:[24]

> *"The Tribunal considers relevant whether the risk, which Claimant now seeks to be excluded from the country risk premium, already existed in 2006 or whether there was an apparent change of policy since the investment was made, i.e., from an investor-friendly environment towards establishing a tendency to expropriate foreigners without adequate compensation (...). Claimant already considered Venezuela a 'high risk' country and even added 3% for additional risk when it made its investment decision in 2006. In its own words, Claimant invested 'during the height of the Bolivarian Revolution'. In the Tribunal's view, this demonstrates that, already in 2006, Claimant factored in certain risks that are not covered by the usual risk of investing in 'high risk' countries and most probably relate to a risk of being expropriated with o no sufficient compensation. It must further be noted that it is undisputed between the Parties that the country risk has increased since 2006. The question is whether such increased risk must, or rather must not, be taken into account in the present valuation of Norpro Venezuela because the increase is due to Respondent's alleged practice to expropriate investments without (sufficient) compensation and would thus allow it to Benefit from its own wrongful conduct".*

However, a few paragraphs later the majority of the tribunal concludes:[25]

> *"The Treaty and this Arbitration do not serve the purpose of insuring Claimant against the general risks of investing in Venezuela that a willing buyer would take into account in its assessment of the purchase price it would pay for Norpro Venezuela".*

Nonetheless, the relevance the tribunal accords to the change in the level of political risk between the time when the investment was made and the moment when the damage took place suggests that it was close to endorse an "incremental approach" which would have implied taking away from the discount rate any increase resulting directly from the State's own wrong conduct.

The decision was also interesting because of Judge Charles N. Brower's dissenting view:[26]

> *"By increasing the country risk factor to include precisely the risk against which the Decision undertakes to insulate the Claimant, whom the Tribunal has found to have been injured by the expropriatory breach of the BIT by the Respondent, the Tribunal does an injustice to the Claimant. It takes away with one hand what it has purported to give the Claimant with the other. To reduce the recovery to the injured Claimant by applying a "fair market value" that incorporates the very risk of which the Claimant purportedly is being relieved by the Tribunal is to deny the Claimant the full compensation to which it is*

---

[24] *Id.*, paragraphs 714-716.
[25] *Id.*, paragraph 719.
[26] *Concurring and dissenting opinion of Judge Charles N. Brower*, paragraph 3.

> *entitled. It is like undertaking to restore to the owner of a severely damaged automobile a perfectly repaired and restored vehicle but then leaving parts of it missing because it just might be damaged again in the future".*

Finally, the *Rusoro* award, already mentioned when defining the conditions necessary for the application of the DCF method -and actually basing compensation on a composite method in which a DCF calculation played only a limited role-, is very relevant in this context, particularly when it describes the "apparent inextricable riddle" which the tribunal was being asked to solve:[27]

> *"The calculation which the Tribunal must perform is a hypothetical exercise: in real life, in September 2011 no buyer having good information about the gold sector in Venezuela would have been prepared to buy a gold producing Enterprise in that country for a fair price. (…) The Tribunal must thus calculate the fair market value of an Enterprise which no well-informed purchaser would buy, at a fair price. (…) The fair market value which the State must pay is that which an innocent, uninformed third party would pay, having no knowledge of the State's pre-expropriation (but post-investment) policy towards the expropriated company and its sector".*

The *Rusoro´s* Tribunal explicitly rejects that a State benefits from its own wrong:[28]

> *"The Tribunal has already concluded that the intensification of the gold export restrictions contained in the 2010 Measures are incompatible with the Treaty. Consequently, the effect of the increased export restrictions must be excluded from the valuation of Rusoro's Enterprise -otherwise the State would be deriving advantage from its own wrong".*

The divergent approaches taken by the various tribunals dealing with Venezuela's political risks during a similar period suggests that the issue raises indeed a "conundrum" or "riddle", not unlike the one raised in financial markets by the "own credit risk" and fair value accounting during the 2008-2009 period. This seems to be confirmed by the despondent statement made recently by a tribunal in another new case on Venezuela, *Conoco Phillips*:[29]

> *"Little inspiration can be taken from discount rates retained by other arbitral awards relating to investments in Venezuela [see table]. One may think that such divergence simply demonstrates inconsistencies in the arbitral tribunals' work. While this may be true up to a point, another and more convincing conclusion is that the disparity in rates demonstrates a disparity in the businesses involved and the need to derive discount rates based on the characteristics of each particular investment involved in each case".*

---

[27] *Rusoro*, id., paragraphs 752, 755 and 756.
[28] Id., paragraph 757.
[29] *Conoco Phillips Petrozuata B.V. et al. v. Bolivarian Republic of Venezuela*, ICSID Case No. ARB/07/03, 8 March, 2019, paragraph 926.

The ICSID cases mentioned in *Conoco Phillips* can be summarized as follows:[30]

Case	ICSID No.	Date of award	Country risk premium (%)	Discount rate (%)
Gold Reserve	ARB (AF)/09/01	22 September 2014	4	10.09
Flughhafen Zürich	ARB/10/19	18 November 2014	7.9	14.4
OI European Group B.V.	ARB/11/25	10 March 2015	6	23[31]
Tidewater	ARB/10/5	13 March 2015	14.75	21.25
Saint-Gobain	ARB/12/13	30 December 2016	10.26	19.88

In my view, to extricate themselves from the "political risk riddle", tribunals can take two routes.

They can take the easiest, most expedient one and apply a pure "willing buyer"-FMV approach, at the cost of undercompensating investors and allowing Respondent States "benefit from their own wrong", very much as companies applying the "fair value option" to their liabilities book a capital gain (but not any longer a profit) when their creditworthiness deteriorates.

Alternatively, they can take a fairer but more complex approach, which requires that they either:

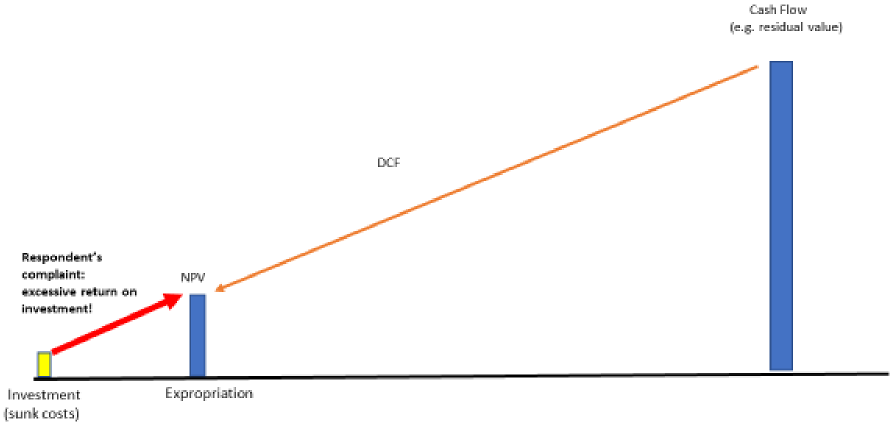
- Exclude the DCF methodology altogether and resort to alternative valuation methods (as in *Rusoro*) or

- Take an "incremental approach" and adjust the political risk premium, as of the date of expropriation, by deducting the notional increase in such premium since the investment was made which can reasonably be attributed to post-investment Respondent State's wrongful acts (e.g. illegal expropriations under the applicable BITs), as suggested in *Flughafen Zürich* and, to some extent, *Saint Gobain*.

RIDDLE # 3: THE "EXCESSIVE RETURN"

We will consider now the case when the application of the DCF methodology leads the tribunal to a net present value (NPV) as of the date of the expropriation which is significantly different - either higher (as in the graphic) or lower -than the original amount invested.

[30] The tribunal mentions also *ICC Case 20549/ASM/JPA, Phillips Petroleum et al. vs Bolivarian Republic of Venezuela*, were the corresponding figures were 8.89% (country risk premium) and 18% (discount rate).
[31]Note that this discount rate applies to amounts in Venezuelan bolivars, not US dollars.



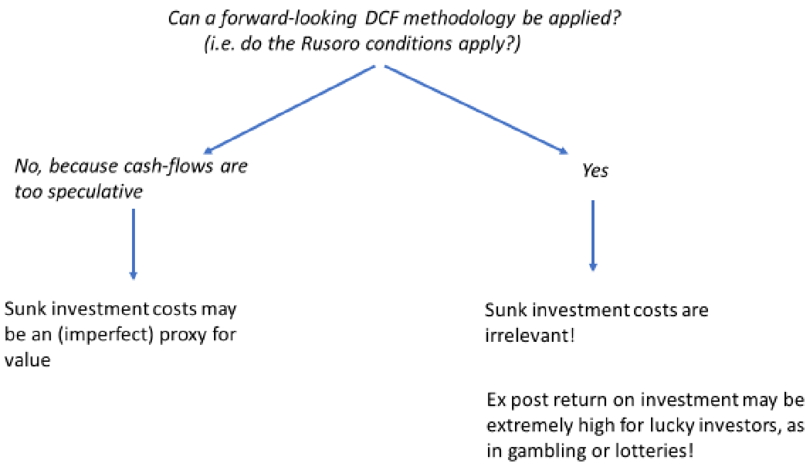
If the NPV is significantly higher than the invested amount, the Respondent State will typically call the tribunal's attention to the "excessive" return that the foreign investor would get if it were awarded such compensation, adding probably some references to the investor's greed and its attempt to extract huge profits from the host country's citizens. The alternative scenario of an NPV below the investment costs is also possible, but it is probably less frequent in international arbitration, as, other things being equal, States have a greater incentive to confiscate or expropriate companies when market trends have made them more profitable and attractive.[32]

Now, is it warranted to compare the DCF forward-looking valuation of the project with the original amount invested ("sunk costs")?

It is true that, when the application of the DCF methodology is not suitable -for instance, because the future cash flows are too speculative-, tribunals have to resort to alternative methods, one of them being the investment or "sunk" costs. This will be a rough proxy for the real value of the investment at the time of the expropriation, as it may overvalue it -if, for instance, the investor engaged in extravagant expenditures or there was over invoicing, or some post-investment adverse change happened (e.g. emergence of new competitors or disruptive technologies, slump in demand or market prices…) which transformed the "sunk costs" into "stranded costs"- or undervalue it -if, for instance, the investor was lucky and made unexpected discoveries or the sale price of the project's output went up-. For that reason, when the conditions for applying a DCF methodology are not forthcoming, "adjustment investment costs" may be an adequate proxy for the real value of the expropriated assets.

[32] On this point and, more generally, on Raymond Vernon's theory of the "obsolescing bargain", see Manuel Conthe, "*Geopolitics of Energy and Game Theory***",** chapter I of "Energy and Geostrategy 2019", Spanish Institute for Strategic Studies, 2019, available at www.manuel.conthe.com.

The key point here is that investment costs, whether adjusted or not, may be an alternative, second best backward-looking valuation method when a forward-looking DCF approach is not suitable; but when the DCF method is the one applied, then sunk investment costs are irrelevant bygones, as indicated in the decision tree.



But, irrespective of those arguments on valuation methodologies, on pure political and fairness grounds, is it not wrong that the net present value (NPV) resulting from the DCF methodology may be far higher than the original investment and result in an inordinately high *ex post* return for the investor?

The response to that political question was given in the late XVII century by the "founding father" of Economics, Adam Smith, with his famous and apt comparison between risky undertakings (including, incidentally, the legal professions!) and fair lotteries: [33]

> *"In a perfect fair lottery, those who draw the prizes ought to gain all that is lost by those who draw the blanks. In a profession where twenty fail for one that succeeds, that one ought to gain all that should have been gained by the unsuccessful twenty. The counsellor at law who, perhaps, at near forty years of age, begins to make something by his profession, ought to receive the retribution, not only of his own so tedious and expensive education, but that of more than twenty others who are never likely to make anything by it".*

In conclusion, the "excessive return riddle is easy to solve: when a forward-looking DCF model is the right valuation method to apply, the *ex post* rate of return on the initial investment, whether high or low, is irrelevant.

RIDDLE # 4: THE "FINANCIAL ROUNDTRIP".

From April 1954 to August 1976 -i.e. even after the Bretton Woods system of fixed but adjustable exchange rates collapsed- the spot exchange rate between the Mexican peso and the

[33] Adam Smith, "*The Wealth of Nations*", 1776, Book I, Chapter X, Part I on "Inequalities arising from the Nature of the Employments themselves".

US dollar remained fixed at 0.08 dollars per peso. In spite of such stability, foreign exchange traders feared a discrete, but significant potential devaluation of the peso and this was reflected in the peso's forward exchange rate discount and interest rate differential: one-year peso interest rates were around 2.6-2.7 points higher that equivalent US dollar ones.

During those years of stability in the bilateral exchange rate, an *ex-post* analysis seemed to suggest that traders had missed opportunities to make money by borrowing US dollars and earning the higher Mexican yields. Legend has it that it was American economist and future Nobel Prize winner Milton Friedman who first referred to this phenomenon as the "peso problem".[34]

A "peso problem" -i.e. the fear of a low-probability, but potentially catastrophic event, which translates into an interest rate premium- is one frequent explanation of why exchange rates movements between two currencies do not offset, over very long stretches, their interest rate differential (in economist's jargon, "uncovered interest parity" o UIP does not hold), thereby allowing for potentially profitable "carry trades" (i.e. borrowing in the low-interest rate currency and investing in the high-interest rate one).

In my view, the fact that interest rates include *ex ante* risk premia for low-probability events unlikely to materialize (i.e. the peso problem) has a bearing on the last time-travel riddle to be analyzed in this article: whether a tribunal which has applied a DCF methodology to determine the amount of damages as of the date of the breach should also use the discount factor as pre-award interest rate.

Let´s recall that in these cases, in keeping with the Discounted Cash Flow (DCF) methodology, the original damage was calculated as the discounted present value of the stream of future cash flows, and this required to apply some discount rate -normally, the so-called "weighted average cost of capital" (WACC), i.e. a combination of the company's cost of debt and required return on its equity-, to bring future cash flows back to the date when the damage took place.

Subsequently, the original damage figure will have to be brought forward to the date of the award and, hence, future cash flows will experience a "financial round-trip", as shown in the figure on page 7:

- First, a back trip from the future date when they are expected to materialize to the damage date; and

- Second, a forward trip from the damage date to the award date.

This prompts immediately the question: should the same interest rate be applied in both legs of the round trip (i.e. should the discount rate or WACC and the pre-award interest rate be the same)?

---

[34] For a brief explanation of the "peso problem" see Karen K. Lewis , "*Peso problem*", 2008, in New Palgrave Dictionary of Economics, Palgrave McMillan, available at https://faculty.wharton.upenn.edu/wp-content/uploads/2012/01/PesoProblem_Palgrave.pdf. In the event, the fear of a significant devaluation materialized: on 31 August 1976 the peso was allowed to float and its exchange rate dropped soon to 0.05 US dollars, implying a depreciation of about 46%.

In their response to the riddle, Compass Lexicon`s experts Manuel A. Abdala, Pablo López Zadicoff and Pablo T. Spiller (henceforth, ALS) argued that those two rates should be identical[35].

In their view, the WACC is the right measure of compensation for the opportunity cost for claimants (i.e. the injured party), since in competitive markets firms will be earning on average a return equal to the cost of capital of the industry in which they operate. Hence, setting the pre-award interest rate below the WACC would be inconsistent with the principle of "full compensation" and represent an "invalid round trip" (IRT).

They further argue that if the pre-award interest rate is lower than the cost of funds for the party causing the damage, it will become cheaper for the latter to breach the contract and pay pre-award interest. In their example, if a government has a cost of debt of 10% and expects to be subject to a 5% pre-award rate, it will find more convenient to levy a one-time S100 "expropriatory levy", to be repaid by means of an arbitration award, than to borrow the $100 in the market through the issuance of a bond. Furthermore, the government will have an incentive to delay the arbitration process, to continue benefitting from the lower "financing" rate.

In their rebuttal to ALS, experts Aaron Dolgoff & Tiago Duarte-Silva (henceforth, DD) claim that the right pre-award interest rate should be a risk-free interest rate (for instance, in the case of dollars the yield of the relevant US Treasury bond), rather than the WACC.[36] They argue that the cost of capital represents the expected rate an investor earns in exchange for bearing risk (including possibility of loss), a risk which the expropriation eliminated for the investor. Furthermore, the ALS' approach would imply that, the riskier the underlying investment, the faster an award grows over time.

Other experts have joined the debate, with Gervase Macgregor and David Michell siding with DD and arguing that one of the absurd results from using WACC as pre-award interest rate is that "a claimant investing in higher risk ventures, some of which will fail, receive a higher interest rate than a well-managed claimant that invests in a portfolio of high and low risk projects, and thus has a lower WACC. Indeed, a company with poor corporate governance and therefore higher risk would receive far greater compensation than a company with good corporate governance. [Furthermore] where a company can borrow money on the capital markets, it over-compensates the claimant for its loss. This is because, if the assumption is that the claimant would have been able to generate profits from its alternative investment, logically it should simply have borrowed money anyway and invested in those projects. Compensating a claimant on the basis of its WACC even though it did not actually borrow money to invest in such potentially profitable projects would be to over-compensate the claimant".[37]

---

[35] Manuel A. Abdala, Pablo D. López Zadicoff, Pablo T. Spiller, "*Invalid Round Trips in Setting Pre-Judgment Interest in International Arbitration*", World Arbitration & Mediation Review, Volume 5, No.1, 2011.
[36] Aaron Dolgoff and Tiago Duarte-Silva, "*Prejudgment Interest and the Fallacy of the Invalid Round Trip*", World Arbitration & Mediation Review, Vol. 10, 2016. This was followed by ALS`s reply "*Prejudgment Interest and the Fallacy of the Invalid Round Trip: a Reply*", Vol. 10, No.3, 2016.
[37] Gervase Macgregor and David Michell, "*Pre-award Interest, and the Difference Between Interest and Investment Returns*", chapter 2 of "The International Comparative Legal Guide to: International Arbitration 2019" 15th Edition, Global Legal Group, International Arbitration 2019, available at https://iclg.com/practice-areas/international-arbitration-laws-and-regulations/2-pre-award-interest-and-the-difference-between-interest-and-investment-returns.

Finally, Brattle Group's experts Alexis Maniatis, Florin Dorbantu and Fabricio Nuñez (henceforth MDN) dismiss also as unwarranted ALS's theory, since "the cost of capital represents the expected rate of return an investor earns in exchange for bearing the risk of earning more or less than a particular target, including the possibility of actually experiencing a loss. The cost of capital is by no means a certain return. Awarding such a return is inappropriate if the alleged violation has itself deprived the claimant of the risk associated with an asset or business".[38]

But MDN do not endorse unconditionally the alternative of a risk-free interest rate advocated by DD. They argue that such approach may be reasonable only if the tribunal considers that there was no debt until the award was rendered. But if the tribunal considers that the debt was due since the damage date, then the claimant deserves compensation for the risk of the respondent´s default prior to the award, so that pre-award interest rate should reflect the respondent´s borrowing rate, as in the so-called "forced loan theory", which looks at respondent as owing a fixed amount as of the date of the breach, with the failure to pay immediate compensation being equivalent to borrowing money from claimant. In MDN's view, "the tribunal has to decide whether to compensate the claimant for the risk of default between the date of the breach and the date of the award. If the tribunal decides that it should not, then the tribunal should award interest based on a risk-free rate, otherwise it is appropriate to apply the respondent's borrowing rate".[39]

The 2015 PwC analysis of 100 international awards on damages rendered over the previous 25 years concluded that tribunals and awards did not show much consistency concerning "what the concept of interest represents, the appropriate rate to apply, whether interest should be linked to the currency of award, the impact on interest of the length of the period between breach and award, and the application of pre-award and post-award interest, with as much as 60% of the awards not discussing the issue at all".[40]

In its December 2017 update, PwC experts celebrate that "encouragingly, in the new cases we have reviewed, most awards devoted a number of pages to the subject and there is evidence that Tribunals have thoroughly considered the purpose for which interest is awarded, the appropriate rate and the justification for awarding compound vs simple interest. However, there remain a few Tribunals which did not explain clearly the rationale behind their award of interest. In some cases, less than half a page was devoted to the subject". After pointing out a potential convergence on a LIBOR + 2% criterion, they conclude that "each case should be considered on its merits rather than adopting LIBOR + 2% by default".[41]

It is understandable that the ALS's criterion of using the WACC as pre-award interest rate has not gained traction among tribunals. One of its questionable consequences would be that, by first

---

[38] M.Alexis Maniatis, Florin Dorobantu and Fabricio Núñez, "*A Framework for Interest Awards in International Arbitration*", Fordham International Law Journal, Volume 41, Issue 4, 2018 (avaiable at https://ir.lawnet.fordham.edu/ilj/vol41/iss4/3/), page 837.
[39] *Id.*, page 832.
[40] PwC, "*Dispute perspectives. Tribunals' conflicts on interest*", 2015, available at https://www.pwc.co.uk/tax/assets/tribunals-conflicts-on-interest-new.pdf.
[41] "*PwC International Arbitration damages research, 2017 update*", available at https://www.pwc.co.uk/forensic-services/assets/pwc-international-arbitration-damages-research-2017.pdf

discounting and then capitalizing at the same rate future financial cashflows, their nominal amount would determine the amount of damages to be awarded, irrespective of how uncertain they were as of the date of the damage. Furthermore, as the discussion by economists of the "peso problem" shows, sovereign interest rates include insurance premia which do not reflect an expected return.

But ALS are right when they recall that too low a pre-award interest rate -as it happens when applying a risk-free interest rate- will give respondents a perverse incentive to refuse the voluntary payment of compensation right after the damage and to delay the arbitration procedure, as the low pre-award interest rate will allow the expropriating State to implicitly fund its future liability on US Treasury terms. Besides, it is not obvious that a sovereign debtor, either as an issuer which sold bonds in financial markets or as a respondent found liable in an investment arbitration case, should be entitled *ex post* to pay a risk-free interest rate just because it is honoring its debt by paying cash: in either case the lender had its money tied up in the borrower´s hands since the time when the debt arose.

All in all, except when the applicable Treaty is nice enough to dispose of the issue by instructing arbitrators to apply "a commercial rate", the determination of the pre-award interest rate will pose a riddle which has not found so far an unequivocal response.

CONCLUSION

Arbitrators will almost always be asked to pass judgement on past "stories" whose ending the parties' pleadings have already spoiled; and, particularly when using the DCF methodology to assess damages, they will have to engage in "time travelling" by carrying out, from their current vantage point, backward- and forward- looking analyses of past and future events.

In so doing arbitrators will likely encounter riddles as those described in this article. Some will be easy to solve, as there are clear (even if sometimes counter-intuitive) rules to sort them out. In liability cases, for instance, arbitrators should not see in the adoption of "subsequent remedial measures" after a mishap happened a proof of a previous negligence, as in so doing they would fall prey to "hindsight bias". Similarly, in deciding whether a DCF valuation based on reliable future cashflows is reasonable, arbitrators must ignore sunk investment costs and refuse to use them as a benchmark to gauge whether the resulting *ex post* rate of return for the investor is "excessive". But other riddles -like deciding the right measure of political and country risk when it increased noticeably due to the respondent State's wrongs, or selecting the appropriate pre-award interest rate- will be harder to crack, as there are no cut and dried recipes to sort them out: arbitrators will need good judgement and effort to extricate themselves from such conundrums.

Let's hope that their further mapping and discussion by tribunals and experts will bring to a minimum the number of inextricable time-travel riddles.