

**Assessment of Losses of
Omega Engineering LLC and Mr. Oscar
Rivera's Investments in Panama**

ICSID CASE No. ARB/16/42

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I. INTRODUCTION AND EXECUTIVE SUMMARY

1. We have been asked by Omega Engineering LLC (“Omega U.S.”) and Mr. Oscar Rivera (jointly referred to as “Claimants”) and by their counsel, Jones Day and International Dispute Resources LLC (jointly referred to as “Counsel”) to provide our independent and objective opinion on the amount of losses, if any, suffered by Claimants as a result of certain actions, inactions, and measures (collectively referred to as the “Measures”) implemented by the Republic of Panama (“RoP”) against Claimants and Omega Engineering Inc. (“Omega Panama”), a Panamanian full-service general construction company fully owned and controlled by Mr. Rivera.¹
2. In particular, Counsel has asked us to compute the losses suffered by Claimants as of December 23, 2014 (“Date of Valuation”), and to update the resulting losses to the date of this report, June 25, 2018.
3. Counsel informed us that Claimants’ alleged losses have arisen from certain Measures taken by the RoP, which have negatively affected the performance and completion of eight public works contracts awarded to Omega Panama and Omega U.S. (together the “Omega Consortium”) between 2010 and 2014. More specifically, Counsel informed us that the Measures comprised:
 - a. RoP’s failure to make contractual payments to Omega Panama for the completion of certain construction milestones;
 - b. RoP’s failure to provide required construction permits and change orders, which impeded the initiation or the continuation of the construction works by Omega Panama;

¹ See Letter of Instructions (CLEX-01).

- c. RoP's early unlawful termination of two contracts and abandonment of the remainder of the contracts obliging the Claimants to voluntarily suspend them; and
 - d. RoP's initiation of criminal investigations against Mr. Rivera and Omega Panama, among other actions, that affected Claimants' local and international reputation, which ultimately restricted Omega Panama's ability to win additional business in Panama and severely damaged Omega U.S.'s ability to secure financing as well as to win additional business abroad.
4. Counsel instructed us to assume that in the absence of such Measures, Omega Panama would have collected the full amount of contractual payments for the works performed, and would have completed each of the eight contracts, including any applicable amendments. Furthermore, Counsel instructed us to rely on the results and conclusions reached by Claimants' construction accounting expert, Mr. Greg McKinnon,² regarding: i) the amount of the unpaid progress billings that the Omega Consortium should have collected from the eight construction contracts before December 2014; ii) the amount of retentions (withheld as warranties by RoP) that will be reimbursed to the Omega Consortium at project completion; iii) the balance of the advance payments of Omega Consortium; and iv) the expected profits on uncompleted works that the Omega Consortium would have earned in these eight contracts between December 2014 and their respective completion dates.
5. In addition, Counsel instructed us to make the following assumptions for our analysis:
- a. The RoP has not paid since December 2014,³ and will never pay, any monies related to Omega Panama's outstanding balance as of December 2014.

² See Expert Witness Statement of Mr. Greg McKinnon ("McKinnon Report"), dated June 25, 2018.

³ Only one Omega Consortium invoice was ever approved and/or paid after December 2014—an invoice issued in January 2015 for the La Chorrera Contract, approved in October 2015, and paid shortly thereafter. See Work Advance No. 13 dated 26 Jan. 2015 (C-0062).

- b. Omega Panama will never be able to resume and/or finalize any of the eight contracts that were either cancelled by the RoP, or voluntarily suspended due to the lack of payment by the RoP.
 - c. The criminal investigations against Mr. Rivera and Omega Panama conducted by the RoP severely affected Omega Panama and Omega U.S.'s reputation in Panama, implying that the company will never be able to win any new public or private work contracts in Panama in the future.
6. In preparing our report we have examined Claimants' economic and financial documents regarding their bids for public sector works in Panama, Omega Panama and Omega U.S.'s financial statements, and the analysis and conclusions reached by Claimants' accounting expert, Mr. McKinnon. We have also examined information on public sector investment in infrastructure projects in Panama during the period 2009-2014, as well as information on several tenders of public sector works in Panama during the period 2015-2016, which could have been potential sources of business (targets) for the Omega Consortium in the absence of the Measures.
7. Between 2010 and 2014, the Omega Consortium has participated in [REDACTED] tender processes for public sector work contracts in Panama, implying an aggregate bidding amount of US\$ [REDACTED] [REDACTED]. Out of these tenders, Claimants won ten bids and signed nine contracts with eight RoP's Governmental agencies for an aggregate nominal value of US\$ [REDACTED]
[REDACTED]⁴, which was later amended to a nominal value of US\$ [REDACTED].
8. By December 2014, the Omega Consortium finalized one of these contracts, while the remaining eight contracts (which were either under construction or in the approval process for beginning construction) were terminated by the RoP or suspended by the Omega Consortium due to the Measures.

⁴ PR Solutions S.A., an investment vehicle wholly-owned by Claimant Mr. Rivera, had won and signed another contract prior to the facts described. See Contract No. 017/10 dated 14 Dec. 2010 (C- 0005).

9. In order to assess the losses suffered by Claimants in Omega Panama, we compare two scenarios:
 - a. Counterfactual Scenario: This is a hypothetical scenario that reflects the value that Claimants' interest in Omega Panama would have had as of December 23, 2014, in the absence of the Measures.
 - b. Actual Scenario: This scenario reflects the actual value of Claimants' interest in Omega Panama as of December 23, 2014, with the Measures in place.
10. In the counterfactual scenario, the value of Claimants' interest in Omega Panama stems from two sources. First, Claimants' value derives from the completion (and full collection of payments) of the eight outstanding contracts awarded prior to December 2014. Second, Claimants' value derives from Omega Panama's ability to continue as a going concern, bidding and winning further construction contracts in Panama from December 2014 onwards in a manner that reasonably reflects its historical track record.
11. Based on the analysis performed by Mr. McKinnon,⁵ we estimate that Claimants' losses in the eight existing contracts would have amounted to US\$ [REDACTED] as of December 2014 in the absence of the Measures. This amount is comprised as follows:⁶
 - a. The present value of the unpaid progress billings that Omega Panama should have collected from the eight construction contracts as of December 2014, estimated at US\$ [REDACTED] as of December 23, 2014;

⁵ See McKinnon Report, Annex 2.

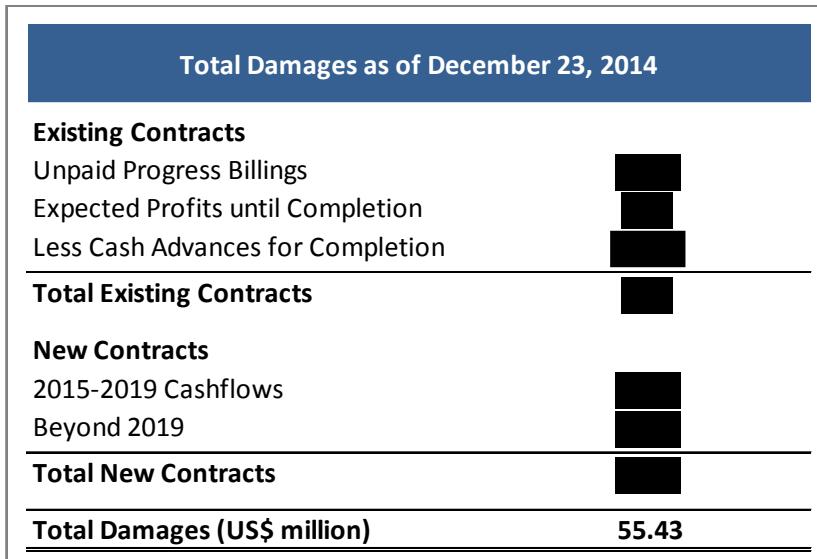
⁶ To compute the present value of these amounts we use the cost of equity of the engineering and construction industry in Panama, which we estimated at 11.65%. This rate reflects the cost incurred by Claimants to obtain the necessary funds to develop the construction works related to the eight contracts until they were terminated. It is also consistent with the return expected on the net benefits that the RoP precluded Claimants from obtaining after the early termination of the contracts. See Appendix B.

- b. Plus, the present value of the cash flows that Omega Panama would have received in these eight contracts between December 2014 until their respective completion dates, estimated at US\$ [REDACTED] as of December 23, 2014;⁷
 - c. Less, the present value of the advance payments (net of retentions) that would have been allocated to and credited against Omega Panama's future invoices until completion of each project, estimated at US\$ [REDACTED] as of December 23, 2014.
12. Had Omega Panama continued its operation as a going concern after December 2014 in the absence of the Measures, we estimate that the value of Claimants' interest in Omega Panama would have amounted to US\$ [REDACTED] as of December 23, 2014. This valuation corresponds to the Omega Consortium's capacity to generate new contracts, based on the historical performance of the company, as well as on the observed and expected evolution of public sector investment in infrastructure in Panama. In particular, in absence of the Measures, Omega Panama would have:
- a. Generated, on average, contractual revenues of US\$ [REDACTED] per year, with each contract having an average life of 18 months.
 - b. Earned an average annual nominal pre-tax profit on contracts of US\$ [REDACTED] consistent with a mark-up of [REDACTED].
 - c. Continued employing the same number of staff it had in the year 2013 to manage its construction business and administer its new contracts, and paying the corporate income tax.
 - d. Been subjected to a cost of equity capital for the engineering and construction industry in Panama of [REDACTED].

⁷ Losses are computed deducting the income tax that Omega Panama would have had to pay, which assumes that the damages award will not be taxable in Panama. Should the damages award be taxable in Panama, a grossing-up for the income tax should be added to the amount of damages to avoid double-counting.

13. In the actual scenario, on the other hand, the value of Claimants' interest in Omega Panama was zero as of December 23, 2014. This is because, as per Counsel's instructions, Omega Panama was not able to collect the unpaid amounts as of December 2014, nor would it be able to resume and/or finalize the eight outstanding contracts, and it would also be unable to win any new public or private work contracts in Panama in the future.
14. Therefore, we estimate that the value of Claimants' investment in Omega Panama lost as a result of the Measures amounts to US\$ 55.4 million as of December 23, 2014.⁸

**Table I. Claimants' Losses in Omega Panama as of December 23, 2014
(in US\$ million)**



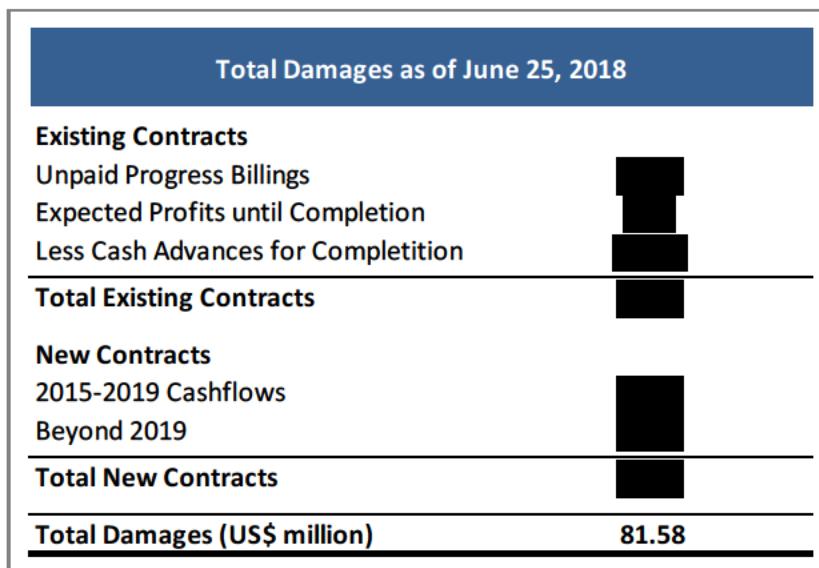
Source: Compass Lexecon based on CL Valuation Model (CLEX-02).

15. We express the December 2014 damages value as of the current date (*i.e.* June 25, 2018), by using a pre-judgment interest rate based on the industry cost of equity (estimated at 11.65%) and compounded annually. This rate is consistent with the opportunity cost to

⁸ Our valuation deducts the income tax that Omega Panama would have had to pay, which assumes that the damages award will not be taxable in Panama. Should the damages award be taxable in Panama, a grossing-up for the income tax should be added to the amount of damages to avoid double-counting.

Claimants as it reflects a commercially reasonable rate at which the market would invest capital in an engineering and construction business operating in Panama, such as the Claimants' business, and reflects the risks that Claimants would have been exposed to until the present in the absence of the Measures. Thus, their deprived cash flows could have earned, on average, a return equal to the average cost of equity in the engineering and construction industry in Panama. Applying a 11.65% pre-judgment interest rate, total damages on Claimants' interest in Omega Panama, expressed as of the current date of June 25, 2018 amount to US\$ 81.6 million.

**Table II. Claimants' Losses in Omega Panama as of June 25, 2018
(in US\$ million)**



Source: Compass Lexecon based CL Valuation Model (CLEX-02)

16. We have also been asked to evaluate whether the Measures affected Omega U.S.'s ability to bid and win construction projects in markets abroad (other than Panama). We understand, per Counsel's instructions, that the Measures affected Claimants' reputation in the U.S. and elsewhere, and therefore its ability to develop and create new business abroad. As a result, we expect that the Measures may imply a significant loss in Claimants' value in markets other than Panama. We were, however, instructed not to

value such losses for this report, and thus we reserve the right to perform such exercise during the course of this arbitration should the instruction change.

17. This report is organized as follows. In Section II, we present a summary of the credentials of the authors of this report. In Section III, we provide a summary of the historical facts of Claimants' investments in Panama, a brief description the public procuring process in Panama, as well as an analysis of Claimants' potential market and a description of the Measures. In Section IV we provide an overview of the damages valuation methodology used to determine Claimants' damages. In Section V we present the results and conclusions on the value of the damages to Claimants. This document is also comprised of two Appendices and 31 support documents listed in Appendix A.

II. EXPERT QUALIFICATIONS

II.1 PABLO LOPEZ ZADICOFF

18. Pablo D. López Zadicoff is a Senior Vice President with Compass Lexecon, based in Washington DC. Mr. López Zadicoff has consulted or provided expert testimony in more than 60 commercial and treaty arbitration proceedings.
19. Previously with LECG's International Arbitration practice, Mr. Lopez Zadicoff has 15 years of experience consulting and providing economic, regulatory and financial analysis used in amicable and non-amicable dispute resolution mechanisms. He has designed and led teams in charge of implementing customized valuation models for more than 70 assets from diverse industries (energy, commodities, consumer goods, financial products, industrial products, hospitality and real estate, telecommunications and regulated utilities) located all over the world, with emphasis in emerging markets.
20. Mr. López Zadicoff has a Master in Economics (Universidad Nacional de La Plata - UNLP) and an MBA from NYU Stern School of Business (specialized in finance, marketing and economics). He has been an independent researcher in the Labor market in Argentina and has been a lecturer in economics at Universidad del CEMA and Universidad de Buenos Aires.
21. Mr. López Zadicoff's curriculum vitae provided as exhibit CLEX-03 includes a summary of qualifications.

II.2 SEBASTIAN ZUCCON

22. Sebastian Zuccon is senior vice president and head of the Buenos Aires office at Compass Lexecon. Mr. Zuccon has a Masters in Economics from the London School of Economics, Masters in Finance from Universidad di Tella, and a B.A in Economics from Universidad de Buenos Aires.

23. Mr. Zuccon specializes in damage assessing in treaty disputes, commercial arbitrations and litigations. He has testified as an economic expert and has been team leader in more than 60 international arbitrations. His arbitration experience comprises several industries comprising airports, banking, electricity, food and beverages, infrastructure, insurance, natural gas & oil, pharmaceutical, pulp & paper, retail, telecommunications, transportation and water. These cases have involved contractual disputes, expropriations and commercial damages in countries like Argentina, Bolivia, Chile, Colombia, Ecuador, Hungary, Italy, Mexico, Panama, Poland, Romania, Russia, The Philippines, Trinidad & Tobago, Turkey, United Kingdom, Ukraine and Uruguay.
24. Mr. Zuccon was previously a Senior Managing Economist with LECG in Paris during 2008-2011 and held senior consultant roles with LECG in Buenos Aires during 2003-2007. He previously worked at KPMG Corporate Finance, where he served for three years as a senior corporate finance analyst specializing in business valuation, M&A and strategy and he also worked at the Argentinean Ministry of Economics.
25. Mr. Zuccon has authored “Damages Assessment in Cross Border Sales Between Related Parties”, published by Transnational Dispute Management in 2013 and co-authored with Manuel Abdala and Pablo Spiller "Chorzów’s Compensation Standard: As Applied in ADC v Hungary" published by the Institute of Transnational Arbitration in 2007.
26. Mr. Zuccon’s curriculum vitae provided as exhibit CLEX-04 includes a summary of qualifications.

III. CLAIMANTS' INVESTMENTS IN PANAMA

III.1 HISTORY OF THE OMEGA CONSORTIUM

27. Claimants have provided us facts as follows: Omega Engineering LLC (“Omega U.S.”) was founded in 1980, and is wholly owned by Mr. Oscar Rivera, a national of the United States of America, since 2006. Its aim is to provide services as a general contractor, mainly in the Commonwealth of Puerto Rico, where it is duly incorporated under the laws of that territory. Omega Engineering LLC is duly registered as a foreign company in Panama.⁹
28. Since its founding, the company has been involved in a variety of infrastructure projects including “...office buildings, shopping centers, residential condominiums, correctional facilities, pharmaceuticals, athletic facilities and institutional buildings.”¹⁰
29. After an initial success in public sector construction bids through the Panamanian company PR Solutions (a company also owned by Claimant Mr. Rivera), and with the aim of expanding their operations in the Panamanian market, Claimants established and began to use Omega Engineering Inc. (“Omega Panama”), a company duly registered under the laws of the Republic of Panama, on 26 October 2009. Omega Panama is a privately held company with Mr. Rivera owning 100% of the shares.¹¹
30. Claimants subsequently proceeded to operate through a consortium (i.e., the “Omega Consortium”) in Panama with the aim of bidding and obtaining public sector construction contracts in Panama. This consortium had the advantage of having a Panamanian company (Omega Panama) on the ground and access to wide construction industry

⁹ See Request for Arbitration (RFA), ¶¶ 3 and 12. See also Omega Engineering LLC Company Profile, p.3 (CS-3).

¹⁰ See Omega Engineering LLC Company Profile (CS-3).

¹¹ See Public Registry of Omega Engineering Inc. dated 26 Oct. 2009 (C-0017).

expertise from abroad (Omega U.S.), which was essential for proving sufficient qualifications in various bidding processes with Government entities.¹²

III.2 PROVISION OF PUBLIC WORK CONSTRUCTION SERVICES IN PANAMA

31. In Panama, the process of procurement by the Government (for any of its branches and controlled entities) is regulated by Law No. 22 of June 27, 2006 and the subsequent amending laws (“Public Procurement Law”).¹³
32. Under the Public Procurement Law, all invitations to tender (also known as requests for proposal) must be published on the “*Panama Compra*” website.¹⁴ The law also stipulates the minimum requirements and information that need to be present in tender notices, which vary according to the appropriate purchasing modality.
33. Interested companies are required, within the timeframe stipulated by tender notices, to present their proposals. Proposals generally contain three main features:
 - a. Description and presentation of company or Consortium’s Credentials.
 - b. Description of a Technical Proposal, which, depending on a particular project’s scope, may include: construction methodology, proposed schedule, list of equipment, Gantt charts and pre-construction studies, among others.
 - c. Terms and conditions of the economic proposal to execute the contract.

¹² See Witness Statement of Oscar Rivera, ¶ 26.

¹³ Law 22 of June 27, 2006 was amended by the following laws: Law 35 of 2006, Law 2 of 2007, Laws 21 and 41 of 2008, Laws 69 and 80 of 2009, Laws 12, 30 and 66 of 2010 and Law 48 of 2011. See Texto único de la Ley 22 de 27 de junio de 2006, que regula la contratación pública con las reformas aprobadas por la Ley 35 de 2006, Ley 2 de 2007, Ley 21 de 2008, Ley 41 de 2008, Ley 69 de 2009, Ley 80 de 2009, Ley 12 de 2010, Ley 30 de 2010, Ley 66 de 2010 y Ley 48 de 2011 (Public Procurement Law) (CLEX-05).

¹⁴ See Public Procurement Law, Art. 32 (CLEX-05).

34. The proposals presented by bidders are then analyzed and evaluated by committee appointed by the state institution which submitted the invitation to tender. The evaluation committee's assessment usually consists of two steps:
 - a. An initial review of submitted proposals, in which proposals not complying with all requirements detailed in the invitation to tender are promptly discarded; and
 - b. The ranking in accordance to the point system detailed in the tender invitation, being the contract awarded to the proposal that scores the highest number of points (on a scale from 0 to 100).
35. In the type of proposals submitted by Claimants in Panama, which are further described in Section III.4 below, the point system is based on the following criteria:¹⁵
 - a. The Price, the weight of which in the total score must never be under 30% and never exceed 50%. Full marks are usually awarded to the lowest bid, whereas the rest of the proposals are discounted points in proportion to their deviation of the best price.
 - b. Financial Capacity, which can be evaluated by the following criteria, among others:
 - i. Analysis of audited financial statements and the use of financial ratios.
 - ii. Requesting the presentation of references issued by prestigious financial institutions, certifying proponents liquidity. Letters from suppliers with which the proponent has credit may also be requested.
 - c. Proponents experience and the quality of the technical proposals.

¹⁵ Requirements vary in accordance with the type of purchasing modality and the institution which issues the request for proposal. Of the 42 historical public sector bids, 40 of them responded to the “Best Value” or “Abbreviated Best Value” Purchasing Modality (“*Licitación por Mejor Valor*”), which establishes a point system contemplating other variables besides price. See Public Procurement Law, Art. 43 and 48 (CLEX-05). See also Omega Historical Bids (CLEX-06). The remaining 2 bids, both called by the *Autoridad Aeronáutica Civil*, were of the “Best Price” purchasing modality, also known as “*Licitación Pública*”. See Public Procurement Law, Art. 42 (CLEX-05). See also Omega Historical Bids (CLEX-06).

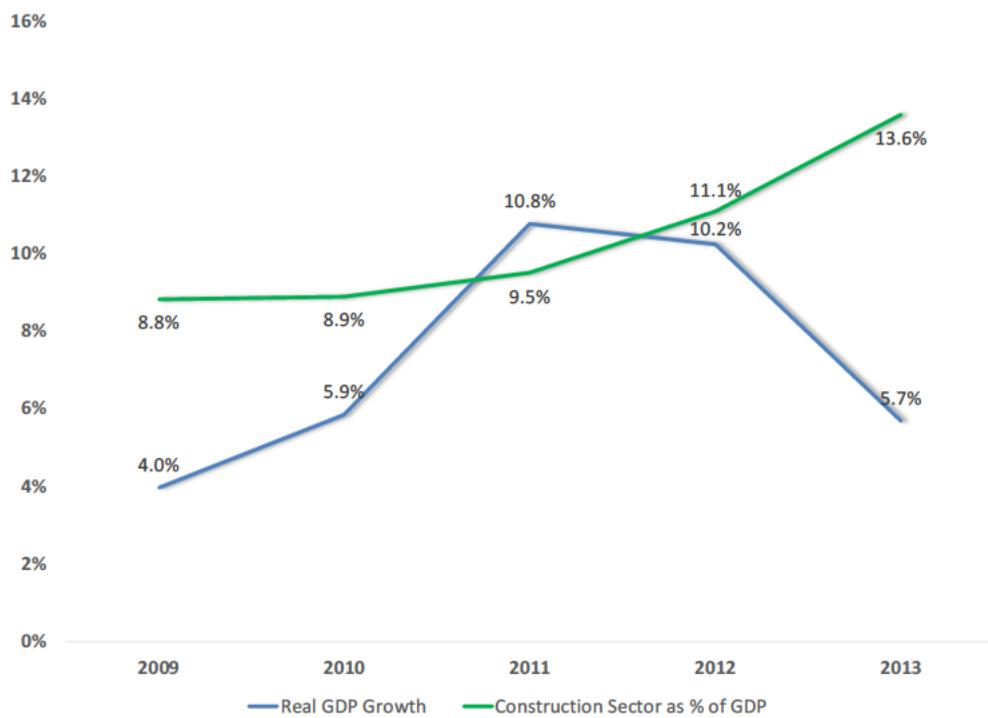
- d. Experience of proponents' personnel.

III.3 PUBLIC INFRASTRUCTURE INVESTMENTS IN PANAMA

36. The economy and the construction industry in Panama enjoyed a solid economic growth between 2009 and 2013, the period in which Claimants were active in the country. In fact, Panama's GDP grew at a compounded annual rate (CAGR) of 8.1% during the period, while the share of the construction sector in the GDP grew from 8.8% in 2009 to 13.6% in 2013.¹⁶

¹⁶ Real GDP was US\$ 23.9 billion for 2009 and US\$ 32.7 billion for 2013. See INEC. GDP Statistics for Panama (CLEX-07). According to Hausmann et al (2016), the country's GDP per capita doubled in this period, and that "...[c]onstruction, the spearhead of the large economic expansion, has been growing at a compounded annual rate of more than 18% for ten years, tripling its share within GDP over that period." See Hausmann, R., L. Espinoza and M. A. Santos. 2016. *Shifting Gears: A Growth Diagnostic in Panama*. Center for International Development at Harvard University. CID Working Paper No. 325, p.2 (CLEX-08).

Figure I. Evolution of GDP Growth and the participation of the Construction Sector as a % of GDP – (2009-2013)

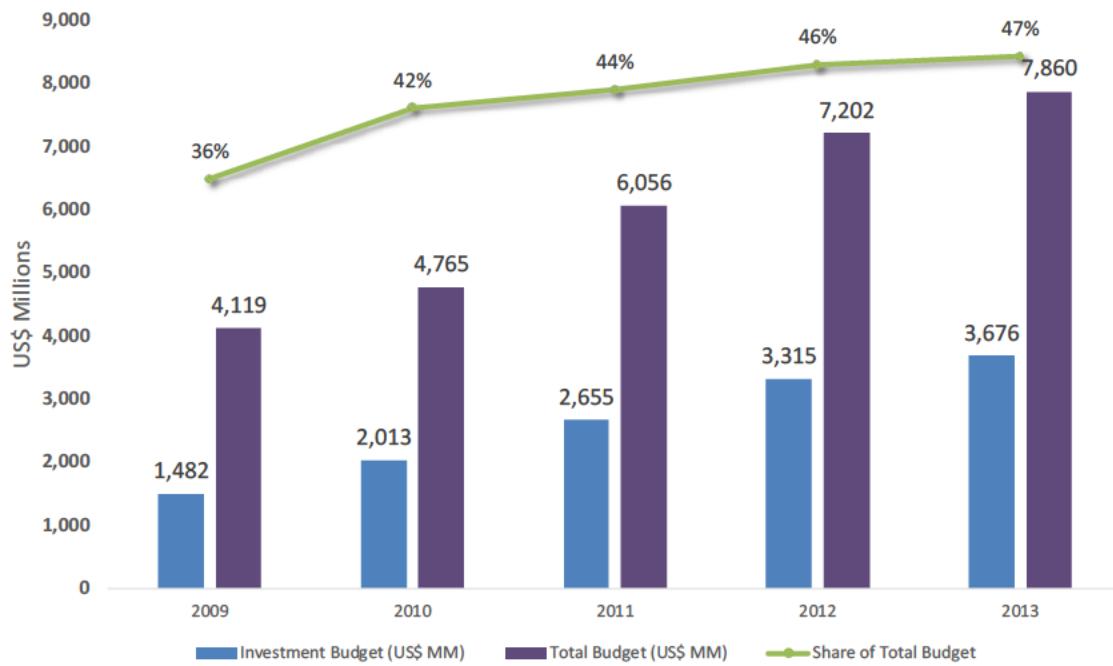


Source: Compass Lexecon based on Instituto Nacional de Estadística y Censo (CLEX-07).

37. Similarly, the central Government's expenditure on investments and infrastructure also showed a very significant increase during the 2009-2013 period. In fact, the central Government budget for investment more than doubled during the period, from US\$ 1,482 million to US\$ 3,676 million, and represented 47% of total central Government budget by 2013.¹⁷

¹⁷ Private non-residential developments –office buildings, warehouses, telecom infrastructure, shopping malls– have been complemented by large public infrastructure projects, such as the expansion of the Canal, the first line of the Panama City Metro, and the new terminal of Tocumen international airport. See Hausmann, R., L. Espinoza and M. A. Santos. 2016. *Shifting Gears: A Growth Diagnostic in Panama*. Center for International Development at Harvard University. CID Working Paper No. 325, p.2 (CLEX-08).

Figure II. Evolution of ROP's Total Fiscal Budget, Investment Budget and % Share between 2009 and 2013



Source: Compass Lexecon based on RoP's Fiscal Budgets (CLEX- 09).

III.4 CLAIMANTS' PARTICIPATION IN CONSTRUCTION WORKS IN PANAMA

38. Between 2009 and early 2014, the Omega Consortium participated in █ tenders for construction projects in Panama, including █ projects in the private sector and █ projects in the public sector, for a total amount of US\$ █.¹⁸

¹⁸ We also understand that the Omega Consortium also evaluated six bids for public sector construction works for a value of US\$ 583 million. See Omega Historical Bids (CLEX-06).

Table III. Summary of the Omega Consortium Bids in the period 2010-2014

Bids Considered by Omega between 2010-2014		
Year	# of Bids	Total Amount (US\$ Million)
Public Sector		
Bids Won	■	■
Bids Lost	■	■
Cancelled	■	■
Private Sector		
Total	■	■

Source: Compass Lexecon based on Omega Historical Bids (CLEX- 06).

39. Although the Omega Consortium was not successful in any of the eight private sector bids it participated in, we should expect that once the consortium would have been established and with a portfolio of ■ projects for the public sector, it would have substantial local experience to allow for private sector contracting.¹⁹ For purposes of this report, and given the high success rate in public contracting (almost 25%)²⁰ and the expectations of continuous public sector related demand, we focus our analysis on the public sector.

III.4.1 The Omega Consortium's bids for Public Sector Projects

40. The Omega Consortium participated, between 2010 and 2014, in the tender process for ■ public sector work contracts in Panama, implying an aggregate bidding amount of US\$ ■²¹
41. The Omega Consortium's bids were mainly focused on low to mid-size infrastructure projects in which its international experience and superior financial capacity would make

¹⁹ The bid won with the Social Security Fund was cancelled before a final contract could ever be signed, while the remaining eight contracts were ongoing, with varying degrees of completion

²⁰ See CL Valuation Model (CLEX-02).

²¹ See Table III.

it stand out from its competitors. Indeed, over 80% of the Omega Consortium's bids in the Public Sector were in the [REDACTED] range as shown in Table IV below.

Table IV. The Omega Consortium's Public Sector Bids by Range Amount

Segmentation of Public Sector Tenders by Amount Range						
Tendered Contract Value	# Bids	Total Amount (US\$ Million)	% of Total	Average # Bidders	Avg. Rank in offered bid	Avg. Rank in Total Score
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Compass Lexecon based on Omega Historical Bids (CLEX-06).

42. The Omega Consortium's bids were submitted in response to requests for proposals published by 12 Government entities and state-owned institutions. Almost half of the Omega Consortium's bids were for tenders made by the Ministry of Health (Ministerio de Salud), mainly related to the construction and equipment of primary health care facilities. The Omega Consortium also made six bids to the Social Security Fund (Caja de Seguro Social), related to the construction of healthcare facilities. As shown in Table V, the Omega Consortium also bid with other 10 entities for works related to: i) construction of public markets; ii) Government office buildings; iii) airports; and iv) educational facilities, among others.

Table V. The Omega Consortium's Public Sector Bids by Entity

Segmentation of Public Sector Tenders by Project Owner						
Owner	# Bids	Total Amount (US\$ Million)	# Bids Awarded	Average # Bidders	Average Rank	
					Economic Proposal	Total Score
Ministry of Infrastructure	1200	15000	300	100	1.5	85
State Electricity Company	800	12000	250	80	2.0	80
National Water Agency	600	10000	200	60	2.5	75
Local Government Units	400	8000	150	40	3.0	70
Private Sector Initiatives	300	5000	100	30	3.5	65
International Organizations	200	3000	80	20	4.0	60
Small Business Units	100	2000	50	10	4.5	55
Academic Institutions	50	1000	20	5	5.0	50
Other Special Projects	20	500	10	2	5.5	45
Total	4000	50000	1000	250	2.5	80

Source: Compass Lexecon based on Omega Historical Bids (CLEX-06).

III.4.2 Public Sector Projects Awarded to the Omega Consortium

43. Out of these 42 tenders, Claimants won and signed ten contracts with eight ROP Governmental agencies (Ministry of Health, Ministry of the Presidency, Social Security Fund, National Institute of Culture, Judicial Branch, Municipality of Panama, Municipality of Colon, and Tocumen International Airport) for an aggregate nominal value of US\$ 141.6 million, which was later amended to a nominal value of US\$ 158.9 million.²² In some of these tenders, Claimants submitted bids in partnerships with other companies, however, other participants never held a share exceeding 1%.²³
 44. These ten contracts were as follows:

²² See Omega Historical Bids (CLEX-06).

²³ See Witness Statement of Oscar Rivera, footnotes 63, 73, 84, 88 and 92.

- a. Three contracts with the Ministry of Health (collectively, the “MINSA CAPSi Projects”):
 - i. MINSA CAPSi – Rio Sereno, a medical facility in the town of Rio Sereno, in the Chiriquí Province.
 - ii. MINSA CAPSi – Kuna Yala, a medical facility within the Indian Reservation of Kuna Yala.
 - iii. MINSA CAPSi – Puerto Caimito, a medical facility in the suburban area of Puerto Caimito, in the La Chorrera district.
- b. One contract with the Ministry of the Presidency, commissioning the construction of a public market in the City of Colón, on the Atlantic coast of Panama.
- c. One contract with the National Institute of Culture, commissioning the design and construction of a higher education facility for cultural and artistic disciplines.
- d. One contract with the Judicial Branch of the Panamanian Government, commissioning the construction of a building for the regional judicial unit of the La Chorrera district.
- e. One contract with the Municipality of Colon, commissioning the design, blueprint development, and the construction of a new city hall.
- f. One contract with the Municipality of Panama City, commissioning the design, blueprint development and the construction and equipment of two peripheral markets.

- g. One Contract with Tocumen International Airport, commissioning the preliminary studies, design and construction of an extension of the airport's northern terminal.²⁴
 - h. One Contract with the Social Security Fund, commissioning the design, development of final blueprints and construction of the urgency Ward of the Dr. Manuel Amador Guerrero hospital complex in the Colon Province.
45. These contracts were for an average amount of US\$ 14.2 million, as shown in Table VI.

Table VI. Projects won by the Omega Consortium per Year

Year	Won Bids				
	# of Bids	Initial Total Amount (US\$ Million)	Initial Average (US\$ Million/Bid)	Revised Total Amount (US\$ Million)	Revised Average (US\$ Million/Bid)

Source: Compass Lexecon based on Omega Historical Bids (CLEX-06).

46. As of the time of the Measures, the Omega Consortium had completed one contract (with Tocumen International Airport).²⁵ The bid won with the Social Security Fund was cancelled before a final contract could ever be signed, while the remaining eight contracts were ongoing, with varying degrees of completion.

²⁴ On December 14, 2010, PR Solutions S.A. (“PR Solutions”), a separate Panamanian company wholly-owned by Claimant Mr. Rivera, was awarded another public works construction contract for work pertaining to Panama’s Tocumen International Airport. See Contract No. 017/10 dated 14 Dec. 2010 (C-0005)

²⁵ The contract won and completed by PR Solutions is not counted here, given that, despite being wholly-owned by Claimant Mr. Rivera, was not part of the Omega Consortium.

III.5 ROP MEASURES AFFECTING CLAIMANTS' INVESTMENTS IN PANAMA

47. By December 23, 2014, RoP had instituted a series of Measures which negatively affected the performance and completion of the eight projects mentioned above. This affected not only Claimants' interest in those eight public works, but also hampered their ability to continue generating revenue via securing new contracts.
48. Based on the information and instructions provided by Counsel, the Measures can be classified as follows:²⁶
 - a. Measures leading to RoP's failure to make contractual payments to Omega Panama for the completion of certain construction milestones.
 - i. Seven of the eight contracts were affected by these Measures, whether they were instituted by the Project Owner or the actions of the Comptroller General.
 - b. Measures leading to RoP's failure to provide required construction permits and change orders, which impeded the continuation of the construction works by Omega Panama.
 - i. One of the two projects under the Peripheral Markets contracts was delayed with no clear date for re-initiation of the works. RoP also failed in securing required land permits.
 - ii. Panama's National Institute of Culture ("INAC"), owner of the Ciudad de las Artes Project, failed to approve a change order for additional work it had requested, failed to formalize agreed time extensions and failed to approve construction drawings.

²⁶ See Letter of Instructions (CLEX-01).

- iii. Failure to provide construction plans for the La Chorrera contract.
 - iv. Denial or failure to approve time extensions to compensate for the delays caused by RoP led all contracts to expire, with the exception of the Municipality of Colon contract.
- c. RoP's early and unilateral termination of contracts.
- i. The Ciudad de las Artes project was early and unilaterally terminated by the INAC, on grounds of unjustified delays.
 - ii. The Peripheral Markets contract was to be terminated on the grounds of alleged contract breaches by Claimants.
- d. RoP's initiation of criminal investigations against Mr. Rivera and Omega Panama.
- i. These Measures would have the effect of depriving Omega Panama of its bank accounts and doing irreparable damage to its reputation and, therefore, its ability to secure new contracts.
 - ii. It destroyed the relationship value the Omega Consortium had with its business partners, in particular suppliers, financing entities and insurance companies (providers of the necessary surety bonds), therefore, crippling its ability to bid for new contracts anywhere in the world.
49. Table VII below summarizes the effect of the Measures on each of the eight contracts.²⁷

²⁷ Counsel informed us that the criminal investigations were not related to any Contract in particular, although they were tangentially related to the La Chorrera Contract by virtue of Mr. Moncada Luna having been the President of Panama's Supreme Court. However, the criminal investigations affected all the Contracts because they affected Claimants' reputation and bonding capacity.

Table VII. Effects of each individual Measure on the Ongoing Contracts

Effects of the Individual Measures on Each Contract				
Project	Default on Contractual Payments	Failure to honor other Contractual Obligations	Wrongful early termination	Affected by Criminal Investigations
MINSA CAPSi Rio Sereno	Yes	Yes		Yes
MINSA CAPSi Kuna Yala	Yes	Yes		Yes
MINSA CAPSi Puerto Caimito	Yes	Yes		Yes
Mercado Publico De Colon		Yes		Yes
Ciudad De Las Artes	Yes	Yes	Yes	Yes
Unidad Judicial De La Chorrera	Yes	Yes		Yes
Palacio Municipal De Colon	Yes	Yes		Yes
Mercados Periferales	Yes	Yes	Yes	Yes

Note: the criminal investigations affected all the contracts, but were not directed at all the contracts.

Source: Compass Lexecon based on Letter of Instructions (CLEX-01).

50. In Table VIII below, we show the main features of the existing contracts as of the time of the Measures, which evidence the following features:

- a. Size: Average amount of [REDACTED] (with a median amount of [REDACTED]
[REDACTED].
- b. Lifespan: Average lifespan of 16.9 months (with a median of 15.0 months).
- c. Bid Profit Margin: Average profit margin [REDACTED] (with a median of [REDACTED].

Table VIII. Summary of Omega Consortium Projects Affected by the Measures

Summary of Bids won by Omega						
Project	Initial Period (Months)	Revised Period (Months)	Winning Bid US\$ Million	Markup US\$ Million	Bid Profit Margin %	Revised Value US\$ Million
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Compass Lexecon based on Omega Historical Bids (CLEX-06).

IV. DAMAGES VALUATION METHODOLOGY

IV.1 PRINCIPLE OF FULL COMPENSATION

51. As described above, we have been instructed to provide our assessment of the losses suffered by Claimants due to the Measures undertaken by the Republic of Panama, which first interrupted the completion of eight public works construction projects assigned to the Omega Consortium and ultimately resulted in the indirect expropriation without compensation of Claimants' construction services investment in Panama restricting their ability to continue operating their business as a going concern.
52. In addition, Counsel instructed us to assume that the Measures taken against Omega Panama and Claimants negatively affected Omega U.S.'s goodwill in Panama and its reputation abroad, causing Omega U.S. to lose its ability to secure financing for future potential projects, as well as its ability to get new projects in markets other than Panama. As a result of the Measures, Claimants also suffered a loss for the value of investment opportunities abroad, but we have been instructed not to value these.
53. Under a full compensation principle, these losses should be estimated to restore the Claimants to the position they would have been in had the Measures not taken place.²⁸
54. The value of Claimants' interest in the Omega Consortium stems from the value of its eight existing contracts awarded prior to December 2014, and from its ability to continue as a going concern, bidding and winning further public service work contracts from December 2014 onwards.
55. We describe below the methodologies that are most suitable for valuing Claimants' losses.

²⁸ See Ripinsky, S., and Williams, K. 2008. *Damages in International Investment Law*. London: British Institute of International and Comparative Law, pp.105-106 (CLEX-10). See also Wöss, H., San Román Rivera A., Spiller, P., and Dellepiane, S. *Damages in International Arbitration Under Complex Long-Term Contracts*. Oxford: Oxford University Press, ¶5.06 (CLEX-11).

IV.1.1 Valuation Methodology for the Existing Eight Contracts

56. In the absence of the Measures, Claimants would have i) received payments from each of the eight contracts in relation to the construction milestones that had already been reached; and ii) completed the construction planned for each contract in the time envisaged in the last contract amendment, collecting their respective contractual payments.²⁹
57. To value the losses associated with these existing contracts, we apply a discrete damages approach, through which we compute the actual losses suffered in each of the eight projects that the Omega Consortium had and could not complete because of the Measures. These losses are computed as of December 23, 2014 as follows:
 - a. The present value of the unpaid progress billings that were issued to the RoP by December 2014.³⁰
 - b. Plus, the present value of the cash flows that the Omega Consortium would have earned in each of these eight contracts between December 2014 and their respective completion dates.
 - c. Less, the present value of the advance payments (net of retentions) that would have been allocated to and credited against Omega Consortium's future invoices until completion of each project.³¹
58. To compute the present value of these amounts as of the Date of Valuation we use the cost of equity for the engineering and construction industry in Panama, which we estimate at

²⁹ This would have allowed Claimants to make the expected profit on those contracts, which would be used to cover Omega Consortium's general and administrative costs (sometimes referred to as home office overhead), pay taxes and the remainder to be distributed to its investors.

³⁰ The advance payments of the contracts paid at the beginning was regularly credited against the invoices issued by Omega Consortium by the contracting entities.

³¹ We also add at the end of each contract any amount withheld in relation to warranties from Omega Consortium to the contracting entities.

11.65% since Claimants in this case are the equity holders.³² This rate reflects the cost incurred by Claimants to obtain the necessary funds (equity) to develop the construction works related to the eight contracts until they were terminated. It is also consistent with the return expected on the net benefits that the RoP precluded Claimants from obtaining after the early termination of the contracts and reflects the cost to Claimants of replacing the funds deprived of.

IV.1.2 Valuation of Potential New Contracts in Panama

59. In the absence of the Measures undertaken by Panama, Claimants and the Omega Consortium would have been able to continue generating new business as a general construction company operating in Panama, with an established track record of ten completed projects in the country.³³ This would have allowed Claimants to continue providing construction services and participating in and likely winning additional public (or private) works contracts in Panama. The Measures, however, impeded Omega Panama from continuing as a going concern, reducing its value to zero.
60. To assess these losses suffered by Claimants, we apply a fair market value principle. We understand, and have confirmed this understanding with Counsel, that this compensation standard is supported by the TPA and the US-Panama BIT for disputes related to expropriation.³⁴
61. Fair market value is defined by the American Society of Appraisers as:³⁵

“...the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a

³² See Appendix B.

³³ This assumption implies that the Measures that ultimately led to the demise of the investment would not have occurred and Claimants would have been able to complete all eight Contracts successfully. See TPA, clause 10.7.2(c) (CL-0003).

³⁴ See TPA, clause 10.7.2(b) (CL-0003). See BIT US-Panama, article IV.1 and p. 42 (CL-0001).

³⁵ See American Society of Appraisers. 2001. *International Glossary of Business Valuation Terms*, p. 4 (CLEX-12).

hypothetical and able seller, acting at arm's length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts."

62. In his seminal 1991 paper, William Lieblich explains:³⁶

"In order for a transaction to take place, the buyer must believe that he is paying no more than the asset is worth to him, while the seller must believe that he is receiving no less than the asset is worth to him. This means that the buyer must place either the same or a higher value on the asset than does the seller."

63. A fair market value transaction takes place within the buyer and seller's planning horizons so that the handoff does not require the price to deviate from the asset's fundamental value. In that sense, fair market value ought to represent the cash flow-generating capabilities of the assets associated with Claimant's investment in the absence of the measures. According to Lieblich (1991)³⁷:

"More specifically, the value of income-producing capital assets or enterprise to its present owner or to a potential private purchaser is a function of the cash that the asset or enterprise is expected to generate in the future. This is because investors purchase and own capital assets in order to increase their wealth, and the only way to achieve that goal is to own assets that will generate cash or that will entitle their owner to receive more cash in the future."

³⁶ See Lieblich, W. 1991. *Determining the Economic Value of Expropriated Income-Producing Property in International Arbitration*. Journal of International Arbitration, 8 (1) 59 - 80, p. 74 (CLEX-13).

³⁷ See Lieblich, W. 1991. *Determining the Economic Value of Expropriated Income-Producing Property in International Arbitration*. Journal of International Arbitration, 8 (1) 59 - 80, p. 61 (CLEX-13).

64. The Omega Consortium's fundamental value as a going concern is based on its capacity to participate in bids for construction works in Panama. By the time the Omega Consortium had been significantly affected by the Government Measures, it had already obtained ten contracts and developed a proven track record of experience that would have increased its chances of obtaining further projects compared with its situation when it was first established in Panama for the first project. Thus, it is reasonable to assume that absent the Measures the Omega Consortium would have, at a minimum, maintained its success rate of winning future bids in which it would have participated. This generates an expectation of regular positive cash flows from a growing stream of projects in Panama. In fact, with a burgeoning reputation and a track record of completing projects, it is likely that the Omega Consortium would, over time, increase its "success rate" in terms of tender success. But, in order to approach this exercise conservatively, we assume that the future success rate identical to the historical success rate.
65. We have considered various methodologies to assess the value of Claimants' investment in Panama as a going concern. We have discarded valuation methodologies based on historical investment costs or that resemble an asset approach because the valuation ought to reflect the cash flow generating capability of Claimants' business to simulate a fair market value transaction, and none of these methods do so. Furthermore, the general construction industry does not necessarily require substantial investment in fixed assets as the most important costs are labor and equipment, which can be hired or rented. To the contrary, business relationships and track records are, like in any services industry, the core asset that each company has. It is the business's reputation and access to resources (i.e., financing, know-how, and knowledgeable sub-contractors) that allows it to provide value to its customers and, indirectly, to its shareholders.
66. Among the methods that reflect the cash flow generating capacity of the company, we have selected an income approach to valuation. Specifically, we use the Discounted Cash Flow ("DCF") method for valuing Claimants' business through potential new public

- works contracts.³⁸ We have chosen the income approach for at least the following three reasons.
67. First, business assets have value because they are expected to produce net cash flows to the investor. The DCF approach determines value on a specific date, on the basis of the net cash flows that the asset is expected to generate over time. As stated by Professor Damodaran:³⁹
- “[the DCF] is the foundation on which all other valuation approaches are built.”*
68. More specifically, the DCF method measures the value of a business by computing the present value of the cash flows expected from the business (and available to be distributed to its lenders and shareholders), discounted at a rate that reflects the weighted average cost of capital. As it is clearly explained by Brealey et. al.:⁴⁰
- “Cash flows are discounted for two simple reasons: first, because a dollar today is worth more than a dollar tomorrow, and second, because a risky dollar is worth less than a safe one.”*
69. Second, the income approach is based on fundamental principles of economics and finance. Leading financial authors support the DCF as the preferred valuation

³⁸ See Brealey, R., Myers, S. and Allen, F. 2006. *Principles of Corporate Finance*. 8th Ed. New York: McGraw-Hill. Ch. 2-3, pp. 15-51 (CLEX-14). This widely cited corporate finance textbook introduces the concept of “value” and demonstrates how to compute the present value of future cash flows.

³⁹ See Damodaran, A. 2002. *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*. 2nd Ed. New York: John Wiley & Sons. Ch. 2, pp. 11-12 (CLEX-15).

⁴⁰ See Brealey, R. and Myers, S. 2006. *Principles of Corporate Finance*. 8th Ed. New York: McGraw-Hill. Ch. 2, p. 29 (CLEX-14).

methodology for income-earning assets. In their leading textbook on valuation, Copeland et al. (1994), state that:⁴¹

“The DCF approach captures all the elements that affect the value of the company in a comprehensive yet straightforward manner. Furthermore, the DCF approach is strongly supported by research into how the stock markets actually value companies.”

70. Third, the DCF is one of the most common techniques used in valuation analyses for both going concern business as well as new projects. DCF analysis is widely supported in the professional literature and its workings are familiar to economists and financial industry participants alike.⁴²

⁴¹ See Copeland, T., Koller, T. and Murrin, J. 1994. *Valuation: Measuring and Managing the Value of Companies*. 2nd Ed. New York: John Wiley & Sons. Ch. 3, p. 70. (CLEX-16). Reilly and Brown (2003) also recommend this valuation methodology:

“These discounted cash flow valuation techniques are obvious choices for valuation because they are the epitome of how we describe value: that is, the present value of expected cash flows.”

See Reilly, F., and Brown, K. 2003. *Investment Analysis and Portfolio Management*. Mason, OH: Thomson South-Western, p. 378 (CLEX-17).

⁴² See Bruner, R., K. Eades, R. Harris, and R. Higgins, 1998. Best Practices in Estimating the Cost of Capital: Survey and Synthesis. *Journal of Financial Practice and Education*, Vol. 8, p. 17 (CLEX-18). This document mentions that 89% of surveyed North American companies use the DCF as their primary tool for firm valuation, and 7% use it as a secondary tool.

V. VALUATION OF CLAIMANTS' LOSSES IN PANAMA

V.1 VALUATION OF LOSSES ON EXISTING PROJECTS

71. To compute Claimants' damages from the Omega Consortium's existing contracts, we relied, per Counsel's instructions, on the analysis and conclusions reached by Claimants' construction accounting expert, Mr. McKinnon.

V.1.1 Summary of Mr. McKinnon's Conclusions

72. In his analysis, Mr. McKinnon analyzed and quantified the following issues:

- a. The amount of unpaid progress billing that the Omega Consortium should have collected from the eight construction contracts before December 2014, which he estimated at a nominal value of US\$ [REDACTED].⁴³
- b. The amount of retentions (withheld as warranties by RoP) that will be reimbursed to the Omega Consortium at project completion,⁴⁴ which he estimated at a nominal value of US\$ [REDACTED].
- c. The balance of the advance payments received by the Omega Consortium, which he estimated at a nominal value of US\$ [REDACTED]. This balance reflects the difference between the initial advance payment received by the Omega Consortium at the beginning of each contract, and amounts that were allocated to and credited against each of the effective payments made by RoP.⁴⁵

⁴³ We noted that the unpaid balance includes a portion of sales taxes which, if not already paid by Claimants (either directly or indirectly through sub-contractor's payments) would partially offset this debt. We were unable to verify such payments, but we understand that Claimants were forced to fulfill all their outstanding obligations and consequently, and as per our instruction, we rely on the balance calculated by Mr. McKinnon.

⁴⁴ Only Unidad Judicial La Chorrera, Palacio Municipal de Colon and Mercados Periferales contracts included payment retainage clauses. See McKinnon Report, Annex 1, pp. 4, 9, 14, 19, 23, 26, and 28.

⁴⁵ See McKinnon Report, Table 1, p.6.

- d. The expected profits on uncompleted works that the Omega Consortium would have earned in these eight contracts between December 2014 and their respective completion dates, which he estimated at a nominal value of US\$ [REDACTED]. These profits were computed based on an average margin of [REDACTED] 46

73. Then, Mr. McKinnon computes the losses suffered by Claimants at a nominal value of US\$ 10.24 million, which is calculated as the sum of unpaid billings, retentions and expected profits net of the amount of advance balance as shown below.

Table IX. Mr. McKinnon's Nominal Losses on Existing Contracts (US\$ million)

Source: Compass Lexecon based on McKinnon Report, Table 1, p.6.

V.1.2 Valuation of Losses on Existing Contracts as of December 2014

74. As described in Section IV above, we estimate Claimants' losses on existing contracts as of December 23, 2014 by following a three-step process using Mr. McKinnon's findings as input:

⁴⁶ See McKinnon Report, Annex 2.

- a. First, we compute the present value of unpaid progress billing that the Omega Consortium should have collected from the eight construction contracts before December 2014.
- b. Second, we compute the present value of cash flows that Omega Panama would have earned in each of these eight contracts between December 2014 and their respective completion dates.
- c. Third, we compute the present value of the advance payments (net of retentions) that would have been allocated to and credited against Omega Consortium's future invoices until completion of each project.⁴⁷

V.1.2.a Valuation of Losses on Unpaid Progress Billing

75. We compute the present value of unpaid progress billing as of December 23, 2014 by applying a prejudgment interest of [REDACTED]⁴⁸, from the date in which each of the unpaid invoices became due and December 23, 2014. For this calculation, we rely on the amount from unpaid invoices presented by Mr. McKinnon in his report and the date in which such invoices became due.⁴⁹
76. We estimate that these losses amount to [REDACTED] as of December 23, 2014.

⁴⁷ We also add at the end of each contract any amount withheld in relation to warranties from Omega Consortium to the contracting entities.

⁴⁸ This rate is the estimated cost of equity for the Omega Consortium. *See Appendix B.*

⁴⁹ We obtain billing dates from Mr. McKinnon's report and use payment terms informed by the Omega Consortium to compute the date in which those billings became due. Payment terms were established in 30 days for projects MINSA CAPSi Rio Sereno, MINSA CAPSi Kuna Yala, MINSA CAPSi Puerto Caimito, Mercado Publico de Colon and Ciudad de las Artes, and 90 days for projects Organo Judicial La Chorrera, Palacio Municipal and Mercados Periferales. *See McKinnon Report, Annex 1, pp. 5, 10, 15, 20, 23, 26, and 28.*

Table X. Losses on Unpaid Progress Billings as of December 23, 2014

Source: Compass Lexecon based on McKinnon Report (CLEX- 02)

V.1.2.b Valuation of Losses on Expected Future Cash Flows until Completion

77. In order to compute the present value of cash flows that Omega Panama would have earned from December 2014 until the completion date of each of the existing contracts, we need to estimate the expected cash flows to the remaining work in each contract.
 78. For this calculation, we rely on the amount of expected profits and general overheads presented by Mr. McKinnon in his report.⁵⁰ Given that Mr. McKinnon has estimated these figures on a nominal and aggregate basis, we have taken certain assumptions to estimate the monthly evolution of these variables until the completion of each respective project. In particular, we have assumed that:

⁵⁰ See McKinnon Report, Table 1, p. 6.

- a. The profits of each project are uniformly distributed between December 2014 and the completion date of each project.⁵¹
 - b. Omega Panama will pay income taxes of [REDACTED] on expected gross profits.⁵²
79. Once we estimate the monthly cash flow for each contract, we compute the present value of such cash flows as of December 23, 2014 by using the cost of equity for the engineering and construction industry in Panama, which we estimate at [REDACTED]. We also deduct the general overhead costs Mr. McKinnon estimated as needed until completion of the eight contracts net of income tax effects.
80. From our calculations, we estimate the Claimants have suffered a loss in relation to the completion of existing contracts of US\$ [REDACTED] as of December 2014.

⁵¹ Based on the information provided by Claimants, we assumed the following completion dates: MINSA CAPSi Rio Sereno, September 20, 2015; MINSA CAPSi Kuna Yala, March 23, 2015, MINSA CAPSi September 28, 2015; Mercado Publico Ciudad de Colon, March 24, 2016; Ciudad de las Artes, March 31, 2016; Orano Judicial, La Chorrera, January 31, 2016; Palacio Municipal January 22, 2016; and Mercados Periferales, June 20, 2015. Each project related cash-flow is assumed to materialize at the mid-point between the date of valuation (December 2014) and the individual date of completion.

⁵² We rely on the gross profits (aggregate value of US\$ [REDACTED] estimated by Mr. McKinnon in Annex 2 of his report. Should the damages award be taxable in Panama, a grossing-up for the income tax should be added to the amount of damages to avoid double-counting. We note that the residual taxable base is higher than the expected cash flow related to these contracts. As explained in footnote 43, we understand that all fiscal obligations (as well as all obligations with third parties) outstanding as of the date of valuation have subsequently been met by Claimants, in the actual scenario, so that no deduction is needed in our counterfactual calculation.

Table XI. Losses on Expected Future Cash Flows as of December 2014

Source: Compass Lexecon based on CL Valuation Model (CLEX- 02).

V.1.2.c Valuation of Advance Balance

81. In order to compute the present value of the advance balance to be credited against Omega Consortium's invoices we rely on the amount of advance balance computed by Mr. McKinnon in his report.⁵³ Given that Mr. McKinnon has estimated this figure on a nominal and aggregate basis, we have taken certain assumptions to estimate the monthly evolution until the completion of each respective project. In particular, we have assumed that:

 - a. The balance of advance payments for each project is allocated uniformly between December 2014 and the completion date of each project.⁵⁴
 - b. The retentions withheld by RoP are repaid on the completion date.⁵⁵

⁵³ See McKinnon Report, Table 1, p. 6.

⁵⁴ The balance of advance payments, which is a net amount already collected by the Omega Consortium, is deducted from payments of works that the Company would have received after December 2014.

⁵⁵ Only Unidad Judicial La Chorrera, Palacio Municipal de Colon and Mercados Periféricos contracts included payment retainage clauses. See McKinnon Report, Annex 1, pp. 4, 9, 14, 19, 23, 26, and 28.

82. We compute the present value of these amounts at US\$ [REDACTED] as of December 23, 2014, by using the cost of equity for the engineering and construction industry in Panama [REDACTED]. We deduct this value from the estimation of losses.

Table XII. Valuation of Advance Balance (net of retentions) as of Dec 2014 (US\$ million)

Contract Project	Advances		Withholdings		Net Advances	
	Nominal Value		Nominal Value		Nominal Value	As of December 2014
[REDACTED]						

Source: Compass Lexecon based on McKinnon Report (CLEX- 02).

V.2 VALUATION OF LOSSES ON POTENTIAL NEW CONTRACTS

83. The value of Claimants' interest in Omega Panama not only stems from its existing contracts, but also from its ability to continue as a going concern, bidding and winning further construction contracts in Panama after December 2014. The Measures, however, have caused the Omega Consortium to be unable to secure new public-sector contracts since December 2014.⁵⁶
84. To compute the losses suffered by Claimants, we assess the value that Claimants' interest in Omega Panama would have had as of December 2014 had the Measures not been enacted. To calculate these losses, we assess the value of Omega Consortium as a going

⁵⁶ According to Counsel's instructions, the criminal investigations against Mr. Rivera and Omega Panama conducted by the RoP severely affected Omega Panama and Omega U.S.'s reputation in Panama, implying that the company will never be able to win any new public or private work contracts in Panama in the future. See Letter of Instructions (CLEX-01).

concern as of December 23, 2014, by estimating the future cash flows that the company would have generated after December 2014 from new construction contracts.

V.2.1 Projected Cash Flows from Potential New Contracts

85. Below we describe the key assumptions that we have used to estimate the cash flows that new contracts would have generated after December 2014.

V.2.1.a Expected Revenues from New Contracts

86. We estimate the future revenues that the Omega Consortium would have generated in the future by analyzing and forecasting two key variables:⁵⁷
- a. Target Market for the Omega Consortium's bids.
 - b. Expected success rate of the Omega Consortium's bids.
87. We describe our analysis below.

V.2.1.a.i Target Market for the Omega Consortium's bids

88. We estimate the potential relevant target market for Omega Consortium, through market forecasts, as a willing buyer/seller would do, specifically, by looking at Panama's GDP and central Government investment in infrastructure.⁵⁸ In particular, we assume that Omega Consortium's target market would have represented a constant share of central Government expected investment in infrastructure. We perform such estimation in a two-step process.

⁵⁷ As discussed, although we limit our present analysis to Government-related contracts, which would have provided significant demand to Omega's business, we could reasonably expect Omega to shift part of its portfolio to the private sector in the future.

⁵⁸ We reserve the right to update our valuation if and when we obtain this information during the course of this arbitration, considering that this information would ordinarily be in the possession of RoP and thus should be available for production during discovery.

89. First, we estimate the central Government's expected investment in infrastructure through analyzing the following factors:
- a. We evaluate the historical yearly amount allocated by the central Government to capital expenditures.⁵⁹
 - b. We calculate the fiscal capital expenditures as a yearly percentage of Panama's Gross Domestic Product (GDP) for the 2009-2014 period. We find that, on average, the central Government's capital expenditure was around 8.5% of GDP.⁶⁰
 - c. Finally, we forecast the central Government's fiscal capital expenditure based on GDP projections for Panama obtained from the International Monetary Fund's World Economic Outlook Report for October 2014.⁶¹
90. Second, we estimate the share of central Government capital expenditure that comprises Omega Consortium's target market. To estimate this, we assume that the observed ratio between the historical bids made by the Omega Consortium and total fiscal capital expenditure during the 2010-2013 period, would have been maintained in the future. Hence, we estimate that the Omega Consortium target market would have represented 5.0% of total central Government capital expenditures in the future.⁶²

V.2.1.a.i *Expected Success Rate of Omega Panama's bids*

91. Once we obtained an estimate of the target market, we then determine what share of that market the Omega Consortium would have been able to materialize into actual contracts. We find that the Omega Consortium's historical success rate during the 2010-2013 period

⁵⁹ See Figure II. See also RoP's Fiscal Budgets for the period 2009-2014 (CLEX- 09).

⁶⁰ Given that this value was 8.6% for 2014 and averages for the periods 2010-2013 and 2009-2014 were 8.7% and 8.4% respectively, we assume a constant ratio of 8.5% since December 2014. See RoP's Fiscal Budgets for the period 2009-2014 (CLEX- 09).

⁶¹ See IMF. World Economic Outlook Database – October 2014 (CLEX-31)

⁶² Given that this ratio was 5.7% and 5.0% for the 2010-2013 and 2011-2013 periods respectively, we opted to forecast this ratio at of 5.0%. See CL Valuation Model (CLEX-02).

was 21.4%.⁶³ For the 2011-2013 period, the success rate was 29.2%.⁶⁴ Based on these two figures, we assume a success rate of 25% beyond December 2014.

V.2.1.a.ii Projected Awarded Amounts 2015-2019

92. Based on the methodology mentioned above, we estimate gross revenues as follows.

Table XIII. Projected Awarded Amounts (2015-2019)

Year	Fiscal Expense	Market Size	Amount of Awarded Contracts
	[A]	[B] = [5%] x [A]	[C] = [25%] x [B]
2015	4,177.1	45.7*	11.4
2016	4,590.3	210.4*	52.6
2017	5,011.1	250.6	62.6
2018	5,435.8	271.8	67.9
2019	5,888.9	294.4	73.6

Note: An adjustment factor was applied in years 2015 and 2016 to reflect Omega's Consortium lower participation in tenders due to its ongoing interests in unfinished existing contracts. The adjustment factor takes into account that there were already a number of existing contracts to avoid double counting.

Source: Compass Lexecon based on CL Valuation Model (CLEX-02).

93. In order to assess the reasonability of our estimations, we looked for information regarding public sector work tenders issued after December 23, 2014, which could have been potential targets for the Omega Consortium.
94. Despite being unable to access a full list and detailed information on all public-sector bids since December 2014 we were, however, able to identify 96 requests for proposals on the

⁶³ It is based on i) total contract value of bids in which the Omega Consortium effectively presented an offer, totaling US\$ 661.7 million; and ii) total contract value of bids effectively won by the Omega consortium, totaling US\$ 141.6 million. *See Omega Historical Bids (CLEX- 06).*

⁶⁴ It is based on i) total contract value of bids in which the Omega Consortium effectively presented an offer, totaling US\$ [REDACTED]; and ii) total contract value of bids effectively won by the Omega Consortium, totaling US\$ [REDACTED]. *See Omega Historical Bids (CLEX- 06).*

Panama Compra website during the 2015-2016 period, that could have been within Omega Consortium's target market.⁶⁵

95. Out of the 96 total bids, 12 were declared deserted by the public entities who had issued the request for proposals. The remaining 84 bids were awarded to various contractors for a total awarded value of US\$ 1,190 million. We find that there were on average 3.4 bidders, the average contract value was for US\$ 14.2 million (while the median was US\$ 9.5 million).

Table XIV. Potential Bids for the Omega Consortium (2015-2016)

Analysis of Potential Bids for the Omega Consortium in absence of the Measures			
	2015	2016	Total
Sector			
Low Income Housing	23	43	66
Underground utilities	5	3	8
Sport Facilities	3	4	7
Schools	3	2	5
Correctional Facilities	3	0	3
Others	3	4	7
Total Bids	40	56	96
Deserted Bids	4	8	12
Awarded Bids	36	48	84
Total Contract Value Awarded	516.6	673.9	1,190.5
Average Contract Value	14.3	14.0	14.2
Median Contract Value	8.7	9.8	9.5
Avg. # Bidders per Contract	3.2	3.5	3.4

Source: Compass Lexecon based on Omega Potential Bids 2015-2016 (CLEX-19).

⁶⁵ Potential projects comprising the sample were selected based on the following criteria: i) belonging to a sector where the Omega Consortium had prior experience; and ii) Bid reference price was within ±15% of the Omega Consortium's historical bid range of US\$ 0.8 million - US\$ 126.5 million.

96. Consequently, had Omega bid for these Projects, as it traditionally did, and achieved a success rate of 25% (which is in line with the existence of approximately 4 bidders per tender), it would have earnt contracts worth US\$ 150 million per year, which is almost double our base case projection.

V.2.1.b Estimated Gross Profit Margin on New Contracts

97. After obtaining a suitable forecast of future contract revenue, the next step in determining the future cash flows generated by the Omega Consortium is to estimate the profit margin that would have been obtained from future contracts.
98. To estimate the future profit margin, we analyze two sources of historical information:
- a. We analyze Omega Panama's audited financial statements for the period 2011-2013; and
 - b. We analyze the job costs reports relevant to the eight existing contracts.⁶⁶
99. The analysis of the financial statements results in a gross estimated margin of [REDACTED] based on an average of the reported gross profit for the 2011-2013 period.⁶⁷ On the other hand, the analysis of project job costs (prepared for bidding documents) shows a margin on contracts of [REDACTED]. Based on the result of both relevant analyses, we opted to forecast the margins on future projects at [REDACTED].⁶⁸ Therefore, we estimate the annual gross profit by multiplying annual estimated revenues by [REDACTED]

V.2.1.c General Expenses and Taxes

100. Once the gross profits of the future contracts are estimated, the next step required to estimate the future net cash flows is forecasting the relevant general expenses and taxes.

⁶⁶ See Omega Job Costs Reports (CLEX-20).

⁶⁷ See Omega Engineering, Inc. Financial Statements and Supplementary Information for years 2013 (C-0136), 2012 (C-0137) and 2011 (C-0311).

⁶⁸ This figure is consistent with the profit margin assumed by Mr. McKinnon. See McKinnon Report, Annex 2.

101. General expenses are estimated based on the last available audited financial statements from December 31, 2013. Based on this information, we calculate the general expense to revenue ratio to be [REDACTED] of sales. This estimate of the expense to revenue ratio is in line with Mr. McKinnon's implied estimate of [REDACTED].⁶⁹ Based on our estimate, we proceed to forecast yearly general expenses at an ad-hoc percentage of [REDACTED] total contract value awarded that year.
102. Finally, we compute the income tax, which is deducted in the cash flow calculation. To calculate income tax expenses, we compute the projected annual gross profit, net of general expenses, and we apply a 25% tax rate consistent with Panamanian legislation.⁷⁰

V.2.1.d *Projected Cash Flows after December 2014*

103. When computing the annual cash flow,⁷¹ we have taken into account that, historically, the average length of the contracts awarded to Omega Consortium was 16.9 months.⁷² To correctly account for the timing of the expected cash flows, we calculate that an average of 67% of cash flows from each contract would be generated in the year the contract is awarded.⁷³
104. We assume that Omega Panama will continue in operation beyond 2019, obtaining new contracts whose value increase at a nominal rate of 2.0% per year in line with expected inflation in US dollars.⁷⁴

⁶⁹ Mr. McKinnon's implied ratio was calculated as the result of dividing expected G&A expenses by the total contract balance. See McKinnon Report, Annex 2.

⁷⁰ See CL Valuation Model (CLEX-02).

⁷¹ Annual cash flows were estimated as gross profit net of general expenses and income taxes.

⁷² See Table VIII.

⁷³ This is based on ad-hoc (and conservative) estimate of 18.0 month length.

⁷⁴ This is a conservative assumption.

V.2.2 Valuation of New Contracts as of December 2014

105. In order to assess the value of new contracts as of December 2014, we compute the present value of the cash flows projected applying a discount rate to account for both the time value of money and the risk associated with the cash flows.
106. We use the cost of equity faced in the industry in Panama as the discount rate, which we estimate at 11.65% as of December 2014. Such discount rate recognizes not only the general construction business risk, but also additional risks inherent in operating a business in Panama (which is captured through the country risk premium).
107. We conclude that the value of Claimants' investments in Panama as a going concern amounts to US\$ 46.75 million as of December 23, 2014, as shown below.

Table XV. Valuation of Claimants' investment through Potential New Contracts as of December 2014 (in US\$ million)

Future Contracts		
	Nominal Value	As of December 23 2014
Expected Cash Flow 2015		
Expected Cash Flow 2016		
Expected Cash Flow 2017		
Expected Cash Flow 2018		
Expected Cash Flow 2019		
2020 Onwards	[REDACTED]	[REDACTED]
Total		

Note: Annual cash flows are increased by 2% per year.

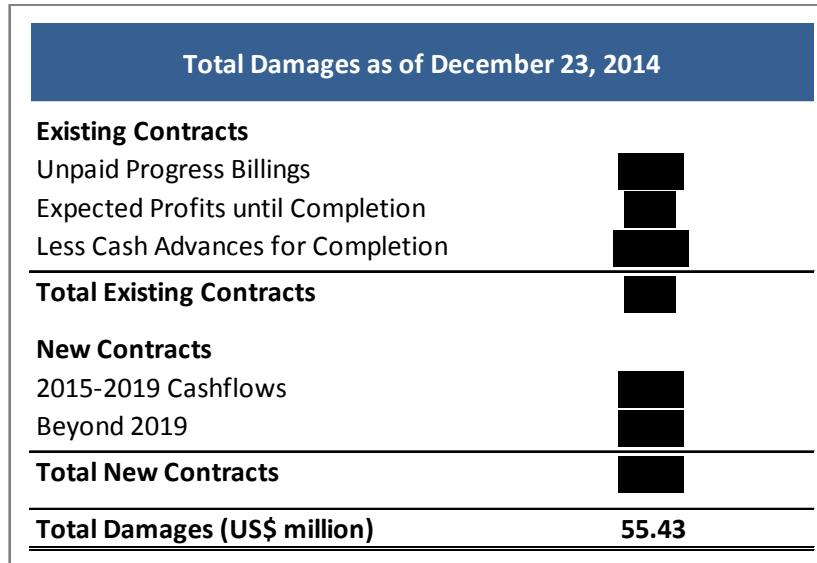
Source: CL Valuation Model (CLEX-02).

V.3 SUMMARY OF LOSSES AS OF DECEMBER 23, 2014

108. Total losses to Claimants amount to US\$ 55.4 million as of December 23, 2014. As shown in Table XVI below this value is comprised of US\$ [REDACTED] of losses associated

with Existing Contract Losses, and US\$ [REDACTED] related to the inability to continue as a going concern, bidding and winning new public sector contracts after December 2014.

Table XVI. Summary of Damages as of December 23, 2014 (in US\$ million)



Source: CL Valuation Model (CLEX-02).

V.4 VALUATION OF LOSSES AS OF JUNE 25, 2018

109. To grant Claimants full compensation for their losses, damages as of the Date of Valuation must be brought forward to the present and until the date of payment “at a commercially reasonable rate” of interest, based on the compensation standard set forth in the BIT and the TPA that govern this dispute.⁷⁵
110. From an economic point of view the rate that is commercially reasonable for Claimants’ investment is the cost of capital that is available in the marketplace for Claimants’ specific type of investment, that is, an equity stake in a general contractor company operating in Panama.

⁷⁵ See BIT US-Panama, article IV.1 (CL-0001) and TPA, article 10.7, 4(b) (CL-0003). Although these articles relate to compensation as a result of lawful expropriation, Counsel for Claimants have confirmed that the same commercially reasonable rate would apply to compensation for other breaches under the treaties.

111. To replace the cash flows lost, the Omega Consortium, could have obtained equity capital through an Initial Public Offering (IPO), through capital injections from its owners or from retained earnings (which would otherwise be used to pay dividends). Consequently, a commercially reasonable interest rate applicable to Claimants' investment is one that reflects its financing cost: the cost of equity capital. We have estimated the CoE at 11.65% as of December 23, 2014.⁷⁶
112. Finally, the CoE is the same rate we use to discount expected cash flows as of December 23, 2014, which allows us to avoid incurring in an invalid round-trip that would artificially reduce the compensation by discounting cash flows at a higher rate than the rate used to update those same cash flows to a future date.⁷⁷
113. Damages as of June 25, 2018 updated at the CoE of 11.65% amount to US\$ 81.6 million.

Table XVII. Summary of Damages as of June 25, 2018 (in US\$ million)

Summary of Damages			
	As of December 23 2014	Update Factor	As of June 25 2018
Existing Contracts			
New Contracts			
Total	55.43	1.47	81.58

Source: CL Valuation Model (CLEX-02).

⁷⁶ The cost of equity is the natural rate to update the economic value of losses to Claimants as it reflects their opportunity cost of their investments (*i.e.*, the return expected by an investor when deciding to invest in assets with a similar risk profile and the cost Claimants face to replace the cash flows deprived of). In other words, no investor would willingly postpone collection of his/her return for less than the cost of raising those funds. See, for example, Escher, Susan and Krueger, Kurt. "The Cost of Carry and Prejudgment Interest", *Litigation Economic Review*, 6 (1), 2003, pp. 12-16 (CLEX-21) and Gotanda, John Y. and Sénéchal, Thierry J. "Interest as Damages," *The Columbia Journal of Transnational Law*, 47 (3), 2009, pp. 491-536 (CLEX-22).

⁷⁷ See Abdala, M, Lopez Zadicoff, P. and Spiller, T. "Invalid Round Trips in Setting Pre-Judgment Interest in International Arbitration". *Institute for Transnational Arbitration*. 2011. Volume 5, No.1 (CLEX-23).

VI. DECLARATION

114. We declare that:

- a. We understand that our duty in giving evidence in this arbitration is to assist the arbitral tribunal decide the issues in respect of which expert evidence is adduced. We have complied with, and will continue to comply with, that duty.
- b. We confirm that this is our own, impartial, objective, unbiased opinion which has not been influenced by the pressures of the dispute resolution process or by any party to the arbitration.
- c. We confirm that, at the time of providing this written opinion, we consider it to be complete and accurate and constitute our true, professional opinion.



Pablo Lopez Zadicoff
June 25, 2018

Sebastian Zuccon
June 25, 2018

APPENDIX A LIST OF EXHIBITS

Exhibit N°	List of Cited Documents
CLEX-01	Letter of Instructions
CLEX-02	CL Valuation Model
CLEX-03	Curriculum Vitae of Pablo D. Lopez Zadicoff
CLEX-04	Curriculum Vitae of Sebastian Zuccon
CLEX-05	Texto único de la Ley 22 de 27 de junio de 2006, que regula la contratación pública con las reformas aprobadas por la Ley 35 de 2006, Ley 2 de 2007, Ley 21 de 2008, Ley 41 de 2008, Ley 69 de 2009, Ley 80 de 2009, Ley 12 de 2010, Ley 30 de 2010, Ley 66 de 2010 y Ley 48 de 2011 (Public Procurement Law)
CLEX-06	Omega Historical Bids
CLEX-07	INEC. GDP Statistics for Panama
CLEX-08	Hausmann, Ricardo, Luis Espinoza and Miguel Angel Santos. 2016. "Shifting Gears: A Growth Diagnostic in Panama." <i>Center for International Development at Harvard University</i> . CID Working Paper No. 325
CLEX-09	RoP's Fiscal Budgets for the period 2009-2014
CLEX-10	Ripinsky, Sergei, and Kevin Williams. 2008. <i>Damages in International Investment Law</i> . London: British Institute of International and Comparative Law
CLEX-11	Wöss, Herfried, Adriana San Román Rivera, Pablo T. Spiller, and Santiago Dellepiane. <i>Damages in International Arbitration Under Complex Long-Term Contracts</i> . Oxford: Oxford University Press
CLEX-12	American Society of Appraisers. 2001. <i>International Glossary of Business Valuation Terms</i>
CLEX-13	Lieblich, William C. 1991. "Determining the Economic Value of Expropriated Income-Producing Property in International Arbitration." <i>Journal of International Arbitration</i> 8, no. 1 (March): 59-80.
CLEX-14	Brealey, Richard A., Stewart C. Myers, and Franklin Allen. 2006. <i>Corporate Finance</i> . Boston: McGraw-Hill/Irwin.
CLEX-15	Omega Potential Bids 2015-2016
CLEX-16	Omega Job Costs Reports
CLEX-17	Escher, Susan and Kurt Krueger. 2003. "The Cost of Carry and Prejudgment Interest." <i>Litigation Economic Review</i> 6, no.1: 12-16
CLEX-18	Gotanda, John Y. and Thierry J. Sénechal. 2009. "Interest as Damages." <i>The Columbia Journal of Transnational Law</i> 47, no. 3: 491-536

CLEX-19	Abdala, Manuel A., Pablo D. Lopez Zadicoff, and Pablo T. Spiller. 2011. "Invalid Round Trips in Setting Pre-Judgment Interest in International Arbitration." <i>Institute for Transnational Arbitration</i> 5, no.1
CLEX-20	Damodaran, Aswath. 2001. <i>Corporate Finance: Theory and Practice</i> . John Wiley & Sons
CLEX-21	Omega Potential Bids 2015-2016
CLEX-22	Omega Job Costs Reports
CLEX-23	Escher, Susan and Kurt Krueger. 2003. "The Cost of Carry and Prejudgment Interest." <i>Litigation Economic Review</i> 6, no.1: 12-16
CLEX-24	Damodaran, Aswath. 2001. <i>Corporate Finance: Theory and Practice</i> . John Wiley & Sons
CLEX-25	Damodaran - ERP by month
CLEX-26	Damodaran - Cost of Capital - Jan 2015
CLEX-27	Blume, Marshall E. 1971. "On the Assessment of Risk." <i>Journal of Finance</i> 26, no. 1 (March): 1-10
CLEX-28	Brealey, Richard A., Stewart C. Myers, and Alan J. Marcus. 2001. <i>Fundamentals of Corporate Finance</i> . McGraw-Hill
CLEX-29	Damodaran - Country tax rates
CLEX-30	Financial Times, Definition of EMBI
CLEX-31	IMF. World Economic Outlook Database – October 2014

APPENDIX B COST OF CAPITAL

115. In this appendix, we provide a detailed methodology as to how we have computed the cost of equity (“CoE”) capital that would be applicable to an equity investment in the construction sector in Panama as of the valuation date of December 23, 2014. We provide the detailed calculations of the CoE in the following sections.

B.1 COST OF EQUITY

116. To estimate the CoE it is standard practice to use the Capital Asset Pricing Model (“CAPM”).⁷⁸ In essence, the CAPM postulates that the opportunity cost of equity is equal to the return on risk-free securities plus the beta, which represents a company’s or and industry’s systematic risk,⁷⁹ multiplied by the market price of risk (i.e., market risk premium).⁸⁰ The idea behind the CAPM is that investors need to be compensated for both the time value of money and risk. The risk-free rate compensates the investors for immobilizing money in any investment, which could be yielding the risk-free rate. The other components of the formula account for the compensation the investors need for assuming the additional risk of the target asset. This is estimated using a measure of the asset’s sensitivity to the market (beta or β) applied to the market risk premium ($E(r_m) - r_f$).

117. The equation for the CoE is as follows:

$$\text{CoE} = R_f + \beta * [E(r_m) - r_f] + \text{CRP}$$

Where:

⁷⁸ See Damodaran, A. 2002. *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*. 2nd ed., John Wiley & Sons, Chapter 4, pp. 13-18 (CLEX-15)

⁷⁹ This is the non-diversifiable risk of an asset, which is measured by the covariance of its return with returns on market indices. This is normally called the asset’s beta.

⁸⁰ See Damodaran, A. 2002. *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*. 2nd ed., John Wiley & Sons, Chapter 4 (CLEX-15).

- a. CoE is the cost of equity;
 - b. rf is the risk-free rate of return;
 - c. β is the systematic risk of the stock;
 - d. $E(m)$ is the expected rate of return of the overall market portfolio;
 - e. $[E(m) - rf]$ is the market risk premium; and
 - f. CRP is the country risk premium.
118. In applying the CAPM, we use data from U.S. capital markets as such data provides more reliable information than analogous data from Panamanian capital markets, to the extent that such Panamanian data exist. However, a CoE estimated from U.S. data fails to account for the fact that operations take place outside the U.S. To address this, we include a country risk premium to account for the different political and macroeconomic risks in a host country like Panama as compared to the U.S.
119. We estimate a CoE of 11.65% for December 2014.

B.1.1 Risk Free Rate

120. The risk-free rate is the return on a security or portfolio of securities that has no default risk and no reinvestment risk.⁸¹ Thus, the risk-free rate would be the return on a zero-beta portfolio that contributes no additional risk to the investor.
121. We use the 10-year U.S. Treasury Bonds as a proxy for the risk-free rate because they are liquid and their price is less sensitive to unexpected changes in inflation than are prices of 30-year Treasury bonds.⁸²

⁸¹ See Damodaran, A. 2001. *Corporate Finance: Theory and Practice*. John Wiley & Sons, p. 188 (CLEX-24).

122. We have estimated the average yield of 10-year Treasury bonds for 2014. The resulting average risk-free rate for the period is 2.54%.

B.1.2 Market Risk Premium

123. The market risk premium represents the additional return over the risk-free rate that an investor expects from holding a market portfolio of riskier securities. We adopt the market risk premium that is estimated in Damodaran's historical data at 5.78% as of January 1, 2015 (trailing 12 months).⁸³

B.1.3 Beta

124. In the CAPM, the market risk premium is multiplied by the beta coefficient, which measures a security's (or a group of securities') exposure to general market risk.⁸⁴ Since the beta of a company reflects the systematic risk of holding its equity, information on betas is derived from stock market analysis. To increase the robustness and precision of the beta estimate, it must be derived from a relatively large sample of comparable firms. It can be very difficult, however, to find several comparable companies in the Panamanian stock exchange.

125. Thus, it is more appropriate to estimate betas, and the CoE, using U.S. comparable companies, and then adjust them to reflect the return that investors require for (a) investing in the local economy and (b) specifics such as tax regimes that affects the company's risk.

⁸² See Copeland et al. 1994. *Valuation. Measuring and Managing the Value of Companies*. John Wiley & Sons, pp. 259-260 (CLEX-16).

⁸³ See Damodaran - ERP by month (CLEX-25)

⁸⁴ A security with a beta equal to 1.0 has the same risk as the overall market, while a beta less than 1.0 means that the security is less risky than the market. Within the CAPM framework, the market compensates only for systematic or non-diversifiable risk. The beta parameter captures this effect. See Brealey, R., Myers, S. and Allen, F. 2006. *Principles of Corporate Finance*. 8th ed. New York: McGraw-Hill, p. 189 (CLEX-14).

126. In particular, we use the betas of U.S. companies provided by Prof. Damodaran for the Engineering/Construction sector. The result of this beta for 2014, is 1.31.⁸⁵

127. The betas provided by Prof. Damodaran (or any beta calculated as a simple regression between a share return and the market return) are called “raw betas”. We adjust the raw betas for the “reversion-to-one” effect according to the following formula:⁸⁶

$$\text{Adjusted Beta} = 0.67 * \text{Raw Beta} + 0.33$$

128. Both the raw and adjusted betas reflect the financial risks associated with the capital structure of each particular firm in the sample of firms. We therefore make a second adjustment to account for the optimal capital structure in the industry. This adjustment proceeds in two steps. First, we compute an unlevered beta (*i.e.*, a beta that is relevant to a firm that uses no debt funding) from the levered adjusted beta of the sample of U.S. companies of the *Engineering/Construction* sector, based on the average optimal capital structure and relevant tax rate of the companies in this sample. Then, we re-lever the beta using the optimal capital structure and the relevant tax rate of the target industry.

129. We use the following formula to un-lever the beta, and the inverse of the formula to re-lever it:

$$\beta_U = \beta_L / [1 + (1-t) * D/E]$$

Where:

- a. β_U is the unlevered beta;
- b. β_L is the levered beta;

⁸⁵ See Damodaran - Cost of Capital - Jan 2015 (CLEX-26).

⁸⁶ The reversion-to-one adjustment is a common procedure based on the understanding that in the long run, projects should tend toward the market benchmark. A security’s beta will move toward the market average (*i.e.*, beta equal to one). The first paper that published such an adjustment formula is Blume, M. 1971, On the Assessment of Risk, *Journal of Finance*, 1-10 (CLEX-27).

- c. t is the income tax rate; and
- d. D/E is the debt-to-equity ratio of the comparable companies.

B.1.4 Leverage

- 130. Leverage decisions affect the value of the beta and, therefore, the resulting cost of equity calculated with the CAPM. In order to lever the beta component, debt is defined to include both current liabilities and long-term debt.
- 131. In computing the capitalization rate, we utilize the cost of capital for a company with an optimal capital structure.⁸⁷ This implies that, if a company's debt-to-equity ratio is above the optimal debt-to-equity ratio, the company would find it difficult to borrow additional funds without raising more equity capital.
- 132. For re-leveraging the beta, we estimate the optimal capital structure of a construction company in Panama from Prof. Damodaran's data on Engineering/Construction companies in the U.S. We use the corporate tax rate in Panama of 25% to re-lever the beta.⁸⁸
- 133. By following these steps, we arrive to a levered beta of 0.98 applicable to an investment in the construction sector of Panama as of the Date of Valuation.

B.1.5 Country Risk Premium

- 134. We add a country risk premium to account for the fact that the investments are not located in the United States. This risk premium is the incremental return demanded by investors from an investment in a country or location where the investment is exposed to greater risk than would be the case in a more stable economy, such as the United States.

⁸⁷ See Brealey, R., Myers, S. and Marcus, A. 2001. *Fundamentals of Corporate Finance*, McGraw-Hill, p. 560 (CLEX-28).

⁸⁸ See Damodaran - Country tax rates (CLEX-29).

135. The sovereign debt approach is a standard approach to measure the overall country risk.⁸⁹

Under the sovereign debt approach, the country risk premium is computed as the spread between the yields of the host state's sovereign bonds and yield of a risk-free security with similar maturities, and corresponding to debt in the same currency. This is usually measured through the Emerging Markets Bond Index ("EMBI"). This traditional index measures the spread between sovereign securities of developing countries, in this case, Panama, as compared to United States securities with the same maturity.⁹⁰

136. In order to compute Panama's country risk premium for December 2014, we have estimated the average EMBI spread for 2014, which results in 1.89%.⁹¹

137. Based on the parameters detailed above, we arrive at a CoE of 11.65%. Table XVIII below summarizes the CoE calculation for an investment in the construction sector in Panama.

⁸⁹ The approach is not applicable when a country is at or near default situations. Such a situation has not been the case with Panama over the period analyzed.

⁹⁰ The family of EMBI is the most widely used and comprehensive emerging market sovereign debt benchmark. It is an indicator for external debt instruments in emerging markets, which includes instruments such as Brady Bonds, loans and Eurobonds issued by sovereign entities and sub-sovereign entities with balance pending payment exceeding US\$ 500 million. See Financial Times, Definition of EMBI (CLEX-30).

⁹¹ See CL Valuation Model (CLEX-02).

Table XVIII. CoE Applicable to the Omega Consortium's Investments in Panama

Cost of Equity as of December 2014		
Cost of Equity	$[a] = [b]+[c]*[d]+[k]$	11.65%
Risk Free Rate	[b]	2.54%
Market Risk Premium	[c]	5.78%
Panama Construction Industry Beta (Levered)	$[d] = [i]*(1+(1-[k])*[j]$	1.25
Levered Raw Beta	[e]	1.31
Adjusted Levered Beta	$[f] = (2 * [e]+1) / 3$	1.21
<i>MV Debt/Equity US</i>	[g]	27.3%
<i>US Tax Rate</i>	[h]	40.0%
Unlevered Beta	$[i] = [f] / (1+(1-[h])*[g])$	1.04
<i>MV Debt/Equity Panama</i>	[j]	27.3%
<i>Panama Tax Rate</i>	[k]	25.0%
Country Risk Premium (bps)	[l]	189

Source: Compass Lexecon based on CL Valuation Model (CLEX-02)