

IS THE CONSULTANT'S ANALYSIS CORRECT? INVERSIONES ISTMO AND ITS CAPITAL INVESTMENT DECISION

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A few days before the country closed its borders due to COVID-19, Pedro Martinez, Chairman of the Board of Inversiones Istmo S.A., and member of the Investment Committee, received the consultant's report he had commissioned from Rodriquez Consulting S.A. Four years' prior, Istmo acquired a sugar mill, and while the exportation of sugar and its byproduct molasses was profitable, the molasses could alternatively be used as the key raw material to diversify into other business lines. Pedro was aware that the sugar mill industry had been interested in the production of ethanol, but competitors had been waiting for over a decade after the passage of the Law for the Production and Consumption of Biofuels for the National Congress to approve the governmental regulations that were expected to grant sugars mills government subsidies for ethanol production. Given the length of time that had transpired, the Investment Committee had no expectations that the law would be implemented. The committee believed that the distillery operations should be evaluated to assess if the project met Istmo's minimum ROE threshold of 25% without government support.

The timing of the diversification had been in question, but Pedro viewed the project through a different lens since the sugar mill was in Honduras, the only Latin American country without distiller operations. Upon review of the financial analysis, Pedro noticed irregularities that led him to believe the analysis was incorrect. Before Pedro could discuss the project with his partners, the capital budgeting analysis had to be recalculated. After updating the analysis, was the project worth undertaking?

Pedro Martinez and Inversiones Istmo

Pedro Martinez earned a bachelor's degree in industrial engineering from Georgia Tech and an MBA from the Wharton School of Business. Pedro worked his entire career in the textile and in the cut and sew apparel business. Pedro was the Chief Operation Officer of a family-owned business where he focused on operational efficiencies to improve profit margins in a very competitive industry. From the beginning of his career, Pedro promoted employee welfare which resulted in company-sponsored onsite medical services offered to all employees and their families. As of 2021, with 4,000 employees, Pedro's family business ranked among the top 10 largest employers in Honduras.

In the early 2000s, Inversiones Istmo was formed after Pedro's family sought to further expand into textile manufacturing by partnering with investors experienced in the field. Pedro was named Chairman of the Board of Inversiones Istmo. Twelve years after the formation of Istmo, the company sought to expand its investment portfolio beyond textiles. As Pedro explained about their investment in the sugar mill, "Our expertise is in running a business in an industry in which one has to be a low-cost producer to be profitable. Not much different than in the commodities business."

The Economy

Measured by Gross Domestic Product (GDP), the Honduran economy was the third smallest in Central America with a GDP of USD \$ 23.828 billion in 2020. Between 2017 and 2019 Honduras had the second fastest GDP growth with a GDP growth rate above the average for the region. The combined impact of COVID-19 pandemic, Hurricane Eta, and Hurricane Iota resulted in a decline in GDP of 9% in 2020 (The World Bank 2021). Refer to Exhibit 1 and 2 for the GDP and GDP growth rate in the Central American region.

Exhibit 1. GDP for Countries in the Central American Region (2011 – 2020)

Source: Created from the World Development Indicators GDP (current USD \$) data series.

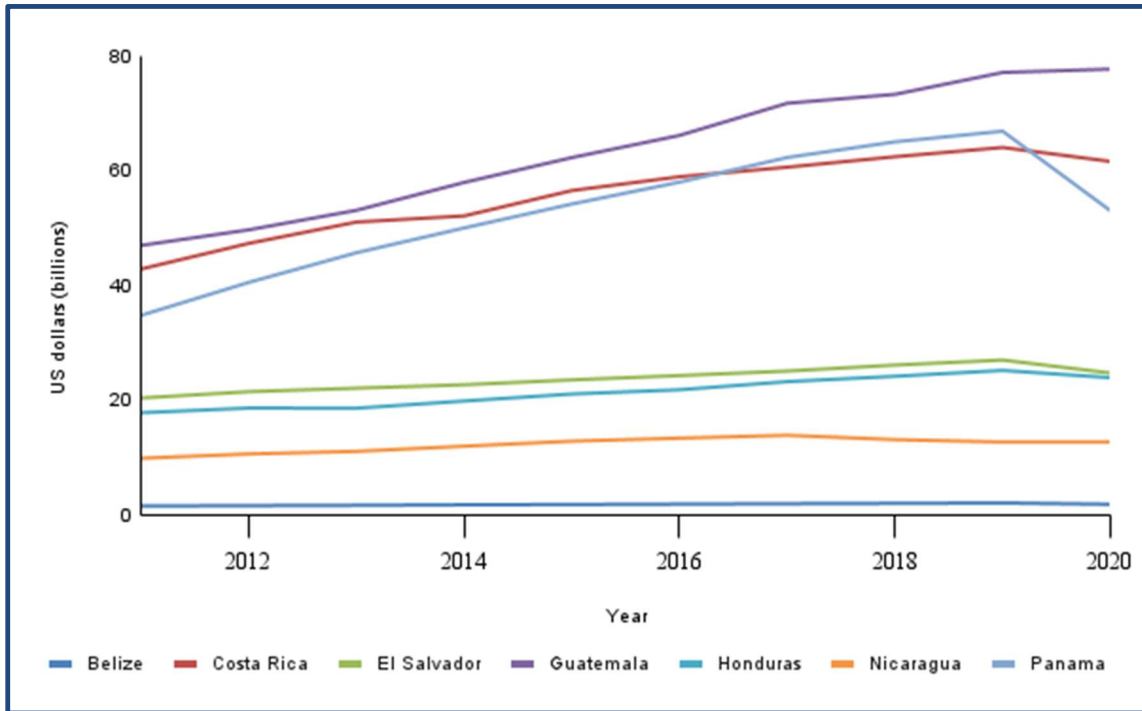
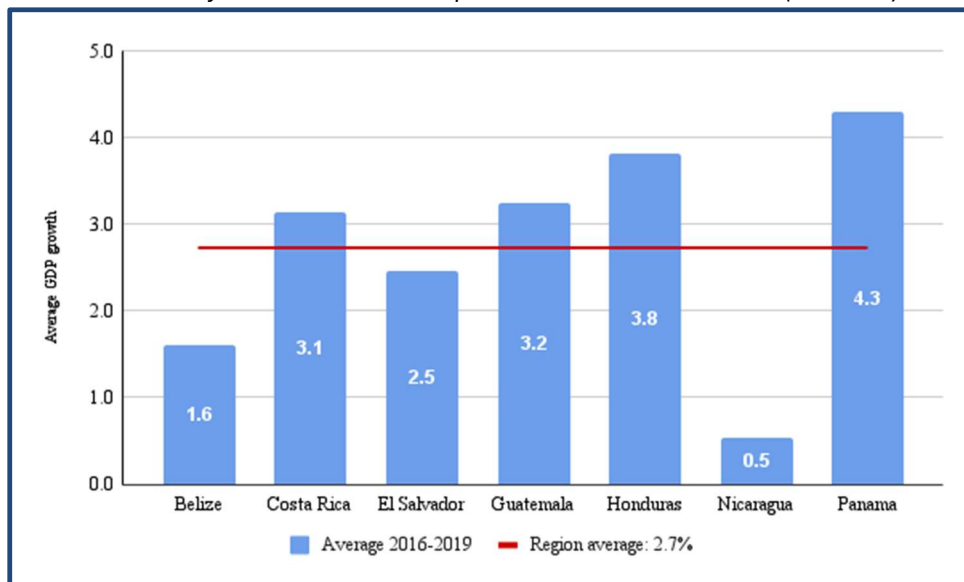


Exhibit 2. Average GDP Growth for Countries in Central America

Source: Created from the World Development Indicators GDP Growth (annual %) data series.



Consequently, the unemployment and property rates in Honduras worsened during 2020. The unemployment rate almost doubled between 2019 and 2020. The percent of individuals who worked less than 36 hours but wished to work more (Visible Subemployment) increased 16.7 percentage points. During the same period, individuals who worked 36 hours or more but did not earn minimum wages (Invisible Subemployment) decreased by 6.7%. Overall, 81.6% of labor market participants were unemployed or underemployed (INE 2019: 6, INE 2020: 2). Refer to Exhibit 3 for Honduras employment indicators.

Exhibit 3. Employment Indicators

Source: INE's 2019 and 2020 Household Surveys

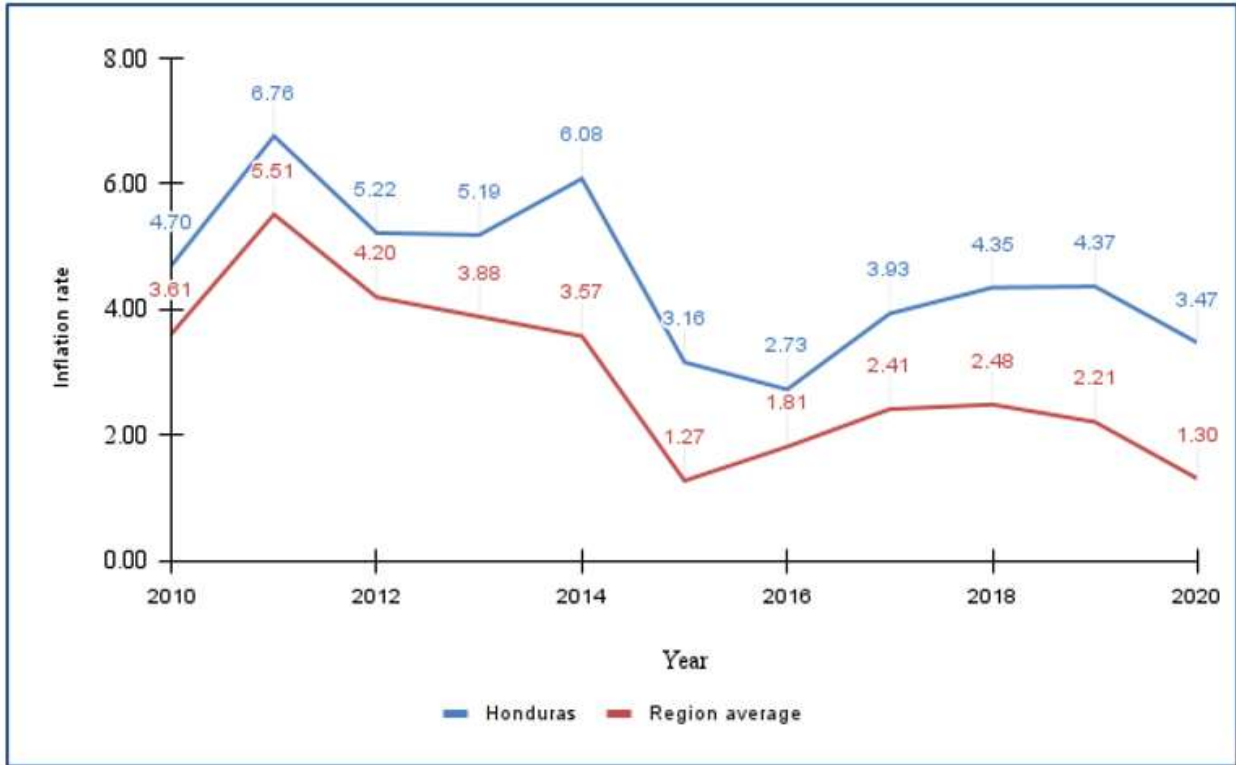
Indicators	2019	2020
Labor Market Participation Rate (15 years and older)	57.3%	59.5%
Unemployment Rate	5.7%	10.9%
Visible Subemployment Rate	10.6%	27.3%
Invisible Subemployment Rate	50%	43.4%
Sum of Unemployment, Visible and Invisible Subemployment	66.3%	81.6%

Honduras was the second poorest country in Latin America and the Caribbean region behind Haiti (CIA 2021a).¹ In 2019, the Honduran government estimated that close to 60% of households lived in poverty, while 36.7% of households lived under extreme poverty conditions. (INE 2019: 11). As unemployment and underemployment increased in 2020, the poverty rate rose to 70%. Extreme poverty was estimated at 53.4% (Universidad Autónoma de Honduras 2021: 1). With increased poverty, income inequality, which has been prevalent in Honduras for decades, was expected to widen. In 2018, Honduras was ranked as having the 10th largest income inequality in the world among 174 countries ranked (CIA 2021b). Honduras has had one of the highest inflation rates in Central America. Except for 2015, inflation in Honduras had been in the range of 3% to 6.7% per year. (World Economic Outlook Database 2021). Refer to Exhibit 4 for the Honduras inflation pattern compared to that of the region.

¹ The literacy rate for individuals 15 and older was 88.5% with an average of 8 years of schooling (INE 2019: 4).

Exhibit 4. Honduras Inflation Rate Versus the Average inflation for Central America

Source: Created from World Economic Outlook Inflation Data Series for Central American Countries



Politics and Corruption

For most of the 1960's and 1970's, Honduras was under military rule. Since ratification of a new constitution in 1982, Honduras has held free elections. Elected by simple majority of votes cast, presidents until 2017, were restricted to a single 4-year term. In 2009, President Manuel Zelaya, who had less than a year to complete his term in office, was removed from office after he engaged in a series of actions that led members of national congress and supreme court to believe that Zelaya’s initiative was an “attempt to suspend the Honduran constitution and remain in office beyond his 4-year term”. The president of the national congress, Roberto Micheletti, served out the remainder of President Zelaya's term after which the newly elected President Porfirio Lobo took office (government accountability office (GAO 2011: 4-5). Dissatisfaction with the 2015 Supreme Court's decision that invalidated the constitutional provision limiting presidents to one term in office resulted in increased political tensions (Bow

2015). Hence, in 2017, three political parties formed the Alliance Against the Dictatorship, a coalition that nominated a single candidate for the 2017 Presidential Election to defeat the incumbent President Juan Orlando Hernandez who was running for a second term (Salvador Nasralla 2017). The election was highly contested leading to claims of voter fraud that resulted in some violent mass protests when President Hernandez was declared the winner with 1.6% vote differential over the coalition candidate (El Gobierno de Honduras 2017).

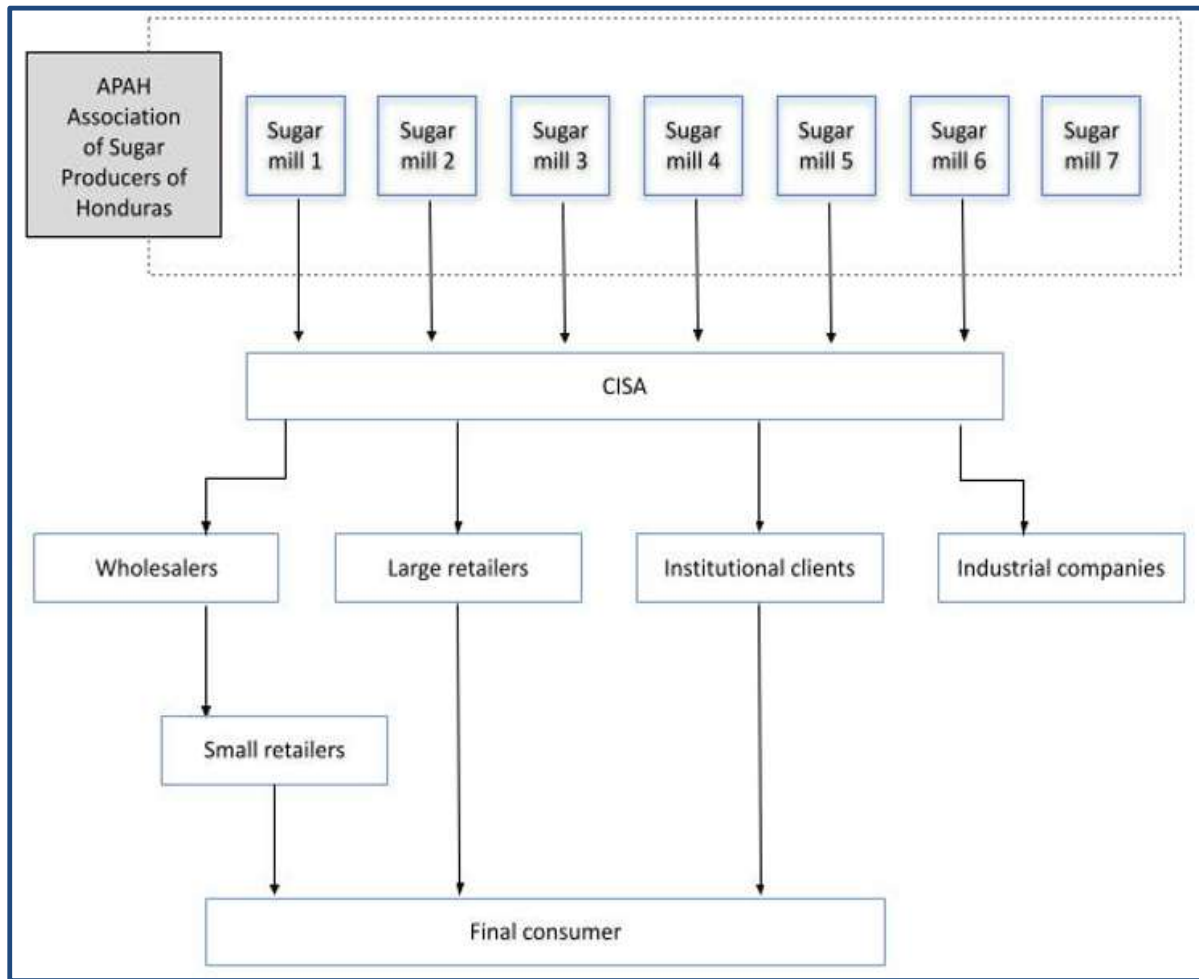
Corruption, defined as the intentional misuse of public resources for personal gain, was pervasive in Honduras. In 2020, Transparency International, which conducts corruption perception surveys, gave Honduras a transparency score of 24 out of 100. The ranking placed Honduras in the bottom 15% of the 180 countries surveyed. (Transparency International 2020). After the 2015 corruption scandal of the Honduran Institute of Social Security (IHSS) where government officials were accused of embezzling USD \$300 million, the Government of Honduras entered into a collaborative agreement with Organization of American States (OAS) to combat corruption and impunity. The collaboration also focused on improving the credibility of authorities and the political system. During 2016–2019 The Mission in Support of the Fight Against Corruption and Impunity in Honduras (MACCIH) brought 11 cases and prosecuted 112 individuals. Seventy one percent of individuals prosecuted were elected officials, cabinet members, and politicians. (Myers 2020). As the agreement approached expiration, the National Congress in December of 2019 took a nonbinding vote against renewal (Rodriguez, 2019). However, a month earlier, a poll showed that 75% of the population supported the continued collaboration with the OAS (Un 75 porciento 2019). In January 2020, President Hernandez, announced that Honduras would not renew the collaborative agreement. Without OAS oversight, the courts dismissed several of the cases that the MACCIH was prosecuting, and the National Congress revised the penal code to reduce sentences for corruption and drug trafficking cases. (Sampong 2021).

The Sugar Mill Industry

Since 1976 Honduras has had seven sugar mills, one of which sold its entire production under contract to a single client. In 1980, the six sugar mills that sold their product in the open market formed Sugar Mill Central S.A. (CISA) for the purpose of commercialization and distribution of sugar nationally (CISA 2016). Exhibit 5 explains the industry's structure.

Exhibit 5. Sugar Mill Industry Structure

Source: Created from industry description provided by Pedro Martinez



In 2011, after an examination of the industry's activities during 2006-2008 period, the Commission for the Defense and Promotion of Competition (CDPC), the enforcement organization for the legislation of the same name, fined the six sugar mills for price collusion. The CDPC found that despite the different cost structure, production capacity and other factors, all mills sold sugar to CISA at the same price for each type and quality grade of sugar. Mills were expected to take corrective actions to reestablish a competitive environment. The ruling made it clear that the sugar mills directly or indirectly through the CISA and the Association of Sugar Producers of Honduras (APAH) were not to be involved in any discussions with government agencies regarding endorsement of uniform sugar pricing policies for the sugar sold to CISA (Con 61 millones de lempiras 2011). In the aftermath of the ruling, sugar mills and CISA restored independent price negotiations. Since 2007, consumer prices for sugar and other products included in the Basic Food Basket have been monitored and controlled by the Secretariat of Economic Development (Decreto Ley No. 113-2007).

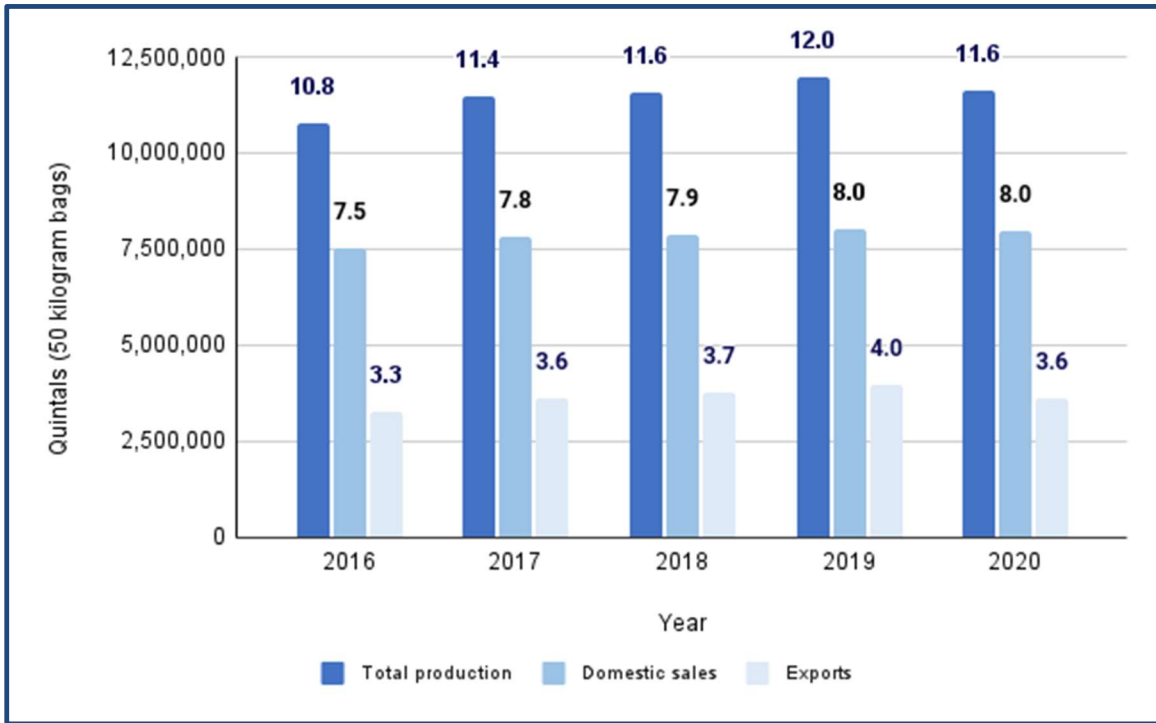
Between 2016-2020, approximately 70% of the yearly sugar production was sold domestically with the remainder sold under free trade agreements. The largest trading partners under these agreements were the United States and the European Union, which collectively purchased between 8% to 9% of the total annual sugar production and accounted for approximately 24% to 28% of the industry's exports. APAH placed the value of exports at approximately USD \$70 million (APAH 2020a, 2020c). Exhibit 6 references domestic sales and export totals.²

According to the 2021 forecast, sugar production was expected to decline by 13% to around 4.76 million metric tons after adjusting for the impact of Hurricanes Eta and Iota, and COVID-19 (FAS 2021: 2). In 2019, the industry generated 1.2% of the country's USD \$25.09 billion GDP or USD \$301 million (APAH 2020a, World Bank 2021).

² Annex A of the Central American General Integration Treaty prohibits export and import activity of sugar within the region (Foreign Agricultural Services 2021: p. 6).

Exhibit 6. Sugar Mill Production and Sales Statistics

Source: Created from the Master Statistics Table APAH



Agrarian Reform and Its Impact on the Sugar Industry

Starting in 1962, the Honduran government passed a series of agrarian reforms designed to encourage the more equitable distribution of land among the population. The Agrarian Reform Law of 1974 established land tenancy limits for private landowners. The land ownership ceilings ranged from 100 to 2000 hectares with lower limits for land in areas considered fit for agriculture.³ Government authorization was required to obtain additional land for agriculture and agroindustry activities not grandfathered at the time of passage. The law included a provision for the expropriation and redistribution of unused privately held land considered appropriate for farming (Decreto Ley No 170/74). According to FIAN International (2000, pp 1), *"Over three decades, a total of 409,000 hectares (the equivalent of 12.3% of the agricultural*

³ One hectare is equivalent to 2.471 acres.

area of Honduras) were handed over to 60,000 peasant families (the equivalent of 13% of the rural population)."

In spring 2012, the National Agrarian Institute (INA), the agency in charge of the administration of the agrarian laws, served Azucarera del Norte, S.A. (AZUNOSA) and Compañía Azucarera Hondureña S.A. (CAHSA) expropriation notices "for failing to legally and duly apply for an extension of the landholding ceiling established under the Agrarian Reform Act". Although both companies had authorization to hold more land than the ceiling established by the law, their holdings exceeded the amount approved by a combined total of 6,613 hectares (Trucchi 2012). In December 2013, the Supreme Court of Justice ruled in favor of AZUNOSA, owned by the British firm SABMiller, citing a provision contained in the 1993 Agreement between Honduras and Great Britain and Northern Ireland that prohibited "the expropriation of invested capital unless the land was for public use" (Morales 2014).⁴

The restrictions on land tenancy affected mill operations. To operate at full capacity, mills were forced to rent land for planting, and to purchase sugar cane from independent producers. For the 2019-2020 season, the industry worked with 800 independent growers that accounted for approximately 32% of the planted sugar cane area in the country. The land tenancy restrictions propelled the industry to adopt new technology and sustainability measures to increase crop yields. Independent producers received technical support and assistance from mills they worked with (APAH 2020b; FAS 2021). In addition, the industry invested 82 million lempiras in social programs that benefited the communities where sugar mills are located. In total, the mills created 200,000 direct and indirect jobs that represented 40% of the economically active individuals in the locations where the mills operated (APAH 2020a). In 2018, with the advice of the World Wildlife Fund, the Honduran sugar cane industry became the first in Latin America to adopt the Guiding Principles of Sustainability (APAH 2020b).

⁴ No public information was found for the resolution of the CAHSA case.

Motivated by the possibility of securing land rights, landless individuals sometimes occupied sugar mill land and prevented harvesting that resulted in lost crops (FAS 2021: 7). Losses due to invasions were sometimes sizable. In 2012, CAHSA and AZUNOSA's lands were invaded after INA announced the issuance of expropriation notices. An estimated combined loss of USD \$15.3 million was expected due to the invasion of 3,000 hectares of their land (La producción de azucareras 2012). Land eviction proceedings were managed by INA.

Industry Products

Sugar is considered the principal product generated from sugar cane processing with molasses, energy, pith, and alcohol being byproducts.⁵ Exhibit 7 describes how the byproducts are obtained and reports the 2019-2020 harvest season output. Byproducts are listed in the order they are created in the sugar cane milling process.

Exhibit 7. Sugar Cane Byproducts Made in Honduras

Source: Derived from Product Description (APAH 2020c) and Honduras Sugar Industry (APAH 2020b)

Byproduct	Create From	Industry Output 2019-2020 Harvest
Clean Renewable Energy	Bagasse, the fibers that remain after crushing sugar cane to extract its juice.	340 MW generated for internal use and sale to the national electricity grid during harvesting season.
Pith	The organic residue that remains after filtration of the juices to separate liquids and solids.	- Used as manure to fertilize the fields. - When combined with bagasse ash, it is used to fuel the sugar mill boilers. For internal use. Volume unknown.
Molasses	Syrup, liquid formed in the crystallization process that produces sugar.	207,000 Metric Tons.

Sugar mills supplied about 10% of Honduras renewable energy at USD \$0.09 per Kilowatt compared to \$0.25 per Kilowatt from other sources purchased by the government-owned National Enterprise of Electric Energy (ENEE) (FAS 2021: 7). APAH estimated that the use of

⁵ Due to low national demand, most of the molasses production is exported. Molasses is not subject to export quotas in any of the free trade agreements (Pedro Martinez interview).

renewal energy saved Honduras 2.583 billion lempiras in foreign currency during 2018 (APAH 2018: 17).

The Consultant's Report

With more than 20 years of experience in distillery operations, Spanish firm Rodriquez Consulting offered a complement of services that attracted Pedro. The consulting firm was capable of not only providing the technical specification, but also offered facilities construction, equipment installation and marketing services that were appealing to Pedro if Istmo moved forward with the project. Pedro was impressed with the list of Rodriquez's clients which spanned all over the globe.

The consultant's report included proposals to produce Ethanol (Alcohol 99.9%) and Extra Neutral Alcohol (Alcohol 96.3%). These products use molasses as its principal raw material. The percent reference indicates the percent of alcohol by volume the product contains. Hence, Ethanol has less than 1% water content by volume, with a high level of impurities. Ethanol is, therefore, used as an industrial solvent and in the production of fuel Ethanol. Extra Neutral Alcohol (ENA) has 3.7% water content by volume with no impurities. ENA requires more distillation cycles than ethanol to achieve its tasteless, odorless, and purity characteristics. Because it has no taste or smell, it is approved for human consumption and is used in the production of medicines, food, alcoholic beverages, and cosmetics.

The projects were classified as independent projects, but commonality in the equipment used in the production processes made the incremental investment for undertaking both relatively inexpensive, building in the flexibility of shifting production based on the prevailing market price in each of the respective market segments. Exhibit 8 contains the initial investment outlay for the individual projects, as well as the overall expenditures if both projects were implemented simultaneously, herein referred to as the global project. The focus of the Rodriquez Consulting analysis was on the implementation of the global project.

Exhibit 8. Initial Investment Outlay (U.S. Dollars)*Source: Rodriguez Consulting S. A. Report*

	Stand-Alone Extra Neutral Alcohol	Stand-Alone Ethanol	Global
Shared Equipment	\$9,250,000	\$9,250,000	\$9,250,000
Project-specific Equipment	\$1,250,000	\$1,000,000	\$2,250,000
Total Cost	\$10,500,000	\$10,250,000	\$11,500,000

The target markets for the two products were different. Based on the data provided by the consulting firm, the entire Extra Neutral Alcohol production was expected to be sold domestically as imported alcohol was meeting the nation's needs. The Ethanol production was designated for the European market where premiums are paid for sugarcane-based ethanol with International Sustainability and Carbon Certification. An added advantage of exporting Ethanol was that revenues from export products were not taxed as the country's tax system is based on the Principal of Territorial Income. Only income generated by corporations or individuals through in-country activities are taxed.

In addition to providing the technical specifications and the resource requirements for the project, Rodriguez Consulting's report contained an analysis of project profitability. Based on a quick review, Pedro initially thought the global project might not be advisable since the Internal Rate of Return (IRR) calculations for all Ethanol and two out of three sales price scenarios for ENA were below the firm's cost of capital. Exhibit 9 presents the summary of Net Present Value (NPV) and IRR sale price sensitivity analysis provided by the consulting firm.

Exhibit 9. Sale Price Sensitivity Analysis (U.S. Dollars)*Source: Rodriguez Consulting S. A. Report*

Extra Neutral Alcohol			Ethanol		
Price	NPV	IRR	Price	NPV	IRR
\$0.65	\$13,733,249	10%	\$0.60	\$13,447,493	9%
\$0.70	\$23,878,724	16%	\$0.62	\$19,365,686	13%
\$0.75	\$34,024,198	21%	\$0.64	\$25,283,880	16%

Exhibits 10 and 11 report the worst-case scenario analysis included in the consulting report. The worst-case scenarios represent the return on investment associated with undertaking the global project while only producing one product throughout the life of the project. The worst-case scenarios were used to determine the NPV, and IRR calculations reported in Exhibit 9. Pedro noticed some irregularities in the evaluation approach during a more thorough review of the analysis presented in Exhibit 10 and 11. He was concerned about the Rodriguez Consulting's derivation of cash flows and bothered by discount rate selection. He wondered how the 2% inflation rate referenced in the exhibits was incorporated in the analysis. Inflation was of concern to Pedro as the country's inflation rate had fluctuated between 3% to 6.7% per year in the past decade and Pedro expected future production costs would be impacted by inflation.

After looking at yearly cash flow estimates for the project, Pedro wondered if the approach used in real estate valuation was being applied to the global project analysis as the cash flow estimates included items that are excluded in the business finance capital budgeting; however, even then, the valuation methodology was not right. The consultant's reply to his inquiry indicated that they had done just a quick and dirty analysis, but Pedro was at liberty to adjust the analysis to meet Istmo's preferred methodology and assumptions. Based on his research and additional discussions with Rodriguez Consulting, Pedro decided to expand the price sensitivity analysis beyond the price range provided by the consulting firm and reported in Exhibit 9. Exhibit 12 contains other information relevant to the analysis.

Exhibit 10. Global Project
100% Production in Extra Neutral Alcohol Each Year Through Project Life (U.S. Dollars)

Source: Rodriguez Consulting S. A. Report

Sale price per liter of alcohol	\$0.65
Annual production	17,727,541 liters
Cost per liter of alcohol	\$0.483 with molasses input cost at its estimated market to reflect the opportunity cost of not selling the molasses production.
Bank loan rate	4.50%
Loan term	10 years
Tax rate	30%
Inflation rate	2%
Discount rate	2%
CAPEX	\$11,500,000
Equipment useful life	30 years
Equipment depreciable life	20 years
NPV	\$13,733,249
IRR	10%

Yr.	Revenue	CAPEX + Loan Amortization	Production Costs	Cash Flow	After-tax Cash Flows	Present Value of Cash Flows
0	\$0	\$11,500,000	\$0	-\$11,500,000	-\$11,500,000	-\$11,500,000
1	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$1,082,796
2	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$1,061,565
3	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$1,040,750
4	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$1,020,343
5	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$1,000,336
6	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$980,722
7	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$961,492
8	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$942,639
9	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$924,156
10	\$11,522,902	\$1,390,772	\$8,554,341	\$1,577,789	\$1,104,452	\$906,036
11	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,671,253
12	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,638,483
13	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,606,356
14	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,574,859
15	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,543,979
16	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,513,705
17	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,484,024
18	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,454,926
19	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,426,398
20	\$11,522,902	\$0	\$8,554,341	\$2,968,561	\$2,077,993	\$1,398,429

**Exhibit 11. Global Project
100% Production in Ethanol Each Year Through Project Life (U.S. Dollars)**

Source: Rodriguez Consulting S. A. Report

Sale price per liter of alcohol	\$0.60
Annual production	18,096,865 liters
Cost per liter of alcohol	\$0.473 with molasses input cost at its estimated market price to reflect the opportunity cost of not selling the molasses production.
Bank loan rate	4.50%
Loan term	10 years
Tax rate	0%
Inflation rate	2%
Discount rate	2%
CAPEX	\$11,500,000
Equipment useful life	30 years
Equipment depreciable life	20 years
NPV	\$13,447,493
IRR	9%

Yr.	Revenue	CAPEX + Loan Amortization	Production Costs	Cash Flow	After-tax Cash Flows	Present Value of Cash Flows
0	\$0	\$11,500,000	\$0	-\$11,500,000	-\$11,500,000	-\$11,500,000
1	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$881,323
2	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$864,042
3	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$847,100
4	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$830,490
5	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$814,206
6	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$798,241
7	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$782,589
8	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$767,244
9	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$752,200
10	\$10,858,119	\$1,390,772	\$8,568,398	\$898,949	\$898,949	\$737,451
11	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,841,538
12	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,805,429
13	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,770,029
14	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,735,322
15	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,701,296
16	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,667,938
17	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,635,233
18	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,603,170
19	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,571,735
20	\$10,858,119	\$0	\$8,568,398	\$2,289,721	\$2,289,721	\$1,540,916

Exhibit 12. Additional Information for Analysis*Source: Pedro Martinez*

Weighted Average Cost of Capital	16.55%
Depreciation Method	Straight-line
Depreciable Life	20 years
Net Operating Working Capital	10% of CAPEX value
Salvage Value of Equipment in 20 Years	15% of CAPEX value
Shipping for Ethanol	Paid by buyer from port to port
Extra Neutral Alcohol Price Sensitivity Range	\$0.65 to \$0.95 per liter
Ethanol Price Sensitivity Range	\$0.60 to \$0.95 per liter

Reworking the Analysis and Making a Recommendation

Before Pedro Martinez and his partners met to decide about investing in the global project, the capital budgeting analysis needed to be recalculated. Given the economic environment due to the pandemic, Pedro believed that it was advisable to present not only the global analysis, but also the capital budgeting analysis for the individual projects on a stand-alone basis in case the partners wanted to minimize the investment outlay under the COVID-19 environment. What were the principal inconsistencies included in the Rodriguez Consulting analysis that needed correction? What was omitted from the consulting firm's capital budgeting analysis that should have been considered and included? Assuming that there are no capital constraints, what recommendation would you make to Pedro Martinez? Is the option to produce both Ethanol and Extra Neutral Alcohol worth the additional investment? Would your recommendation change if Istmo decided to sell the entire production of Ethanol domestically without government tax breaks? What recommendation would you make to Pedro Martinez if capital investment funding is of concern and only one of the stand-alone projects can be undertaken?



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