# COST OF CAPITAL ANALYSIS IN EMERGING MARKETS: CASE OF A PERUVIAN BREWERY

# ANÁLISIS DEL COSTO DE CAPITAL EN MERCADOS EMERGENTES: EL CASO DE UNA CERVECERÍA PERUANA

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**RESUMEN**

Este documento aborda el cálculo del costo de capital para empresas de mercados emergentes en forma de un estudio de caso. El objetivo principal de este trabajo es proporcionar una metodología para estimar el Costo Promedio Ponderado de Capital (WACC), aplicándolo a Backus S.A.A., compañía cervecera peruana. El caso presenta una breve descripción de la industria, los antecedentes y operaciones de la compañía, estrategia comercial y financiera y el marco teórico y análisis del valor de mercado de la empresa, dificultades financieras y WACC, evaluando cada componente. Finalmente, los estudiantes tienen la tarea de calcular WACC y redactar el informe.
**Palabras clave:** costo de capital, mercados emergentes.

**ABSTRACT**

This paper addresses the calculation of the cost of capital for emerging market companies in the form of a case study. The main objective of this work is to provide a methodology to estimate the Weighted Average Cost of Capital (WACC), applying it to Backus S.A.A., a Peruvian brewery company. The case presents a brief industry description, the company's background and operations, business and financial strategy and theoretical framework and analyses of the market value of the firm, financial distress, and WACC, assessing each component. Finally, the students are left with the task of calculating WACC and drafting the report.
**Keywords:** cost of capital, emerging markets

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# INTRODUCTION

Backus S.A.A. is the largest beer producer company in Peru. Its market share rounds about 94.98%. On September 20, 2014, the Chief Financial Officer (CFO) of the company, Mr. Jack, instructed one of his most qualified senior analysts, Mr. Jin, to prepare a report describing how discount rates, used to evaluate projects nationwide by the company's multiple divisions, should be calculated.

Mr. Jin spent several days researching to gather information from different sources and prepared a file. Then, I called a meeting with Mr. Jack to discuss the way that information should be organized to be used as an input to estimate the cost of capital of the different divisions' projects.

During that meeting, Mr. Jack provided Mr. Jin with additional information about the brewing industry regulations and the new selective tax, here onwards abbreviated as ISC (*Spanish: Impuesto Selectivo al Consumo*), a brand-new tax burden that came into force on May 2013 and had a negative impact in the company sales.

# THE BEER INDUSTRY IN PERU

The companies within the industry develop specific markets for each of the brands of their portfolio.

The brewing process comprises the transformation of water, malt, hops, and other additives are used. What really strikes a difference regarding beer flavor is the growing of the hop plant, which occurs in the wild depends deeply on climatic factors.

The Peruvian beer industry included the following three major companies:

- Backus Group: Anglo-South African subsidiary of SABMiller Group
- AmBev Peru: subsidiary holding company of Brazilian origin American Belgian InBev Anheuser Bush
- AjeGroup: Añaños owned enterprise group

### COMPANY BACKGROUND AND OPERATIONS

Mr. Jin was aware of the importance of understanding a firm´s financial situation within the context of the business activities and strategic planning.
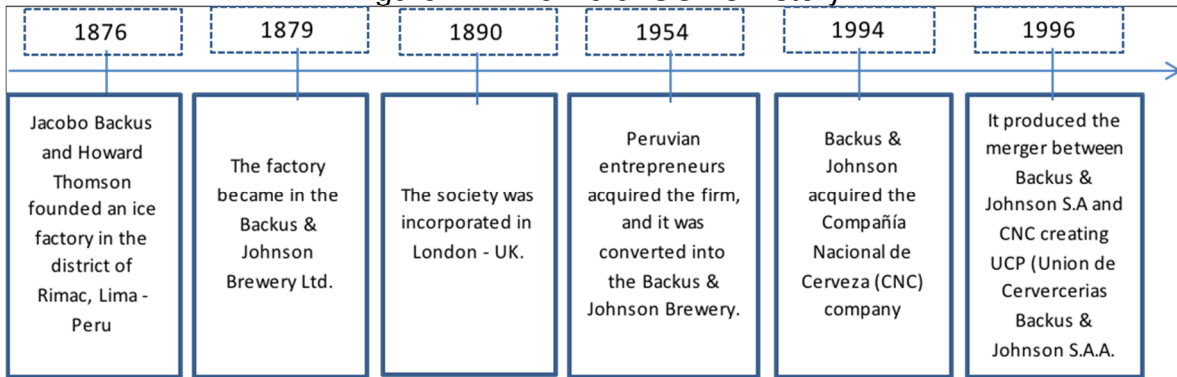
Union of Peruvian Breweries Backus and Johnston (*Spanish: Unión de Cervecerías Peruanas Backus y Johnston S.A.A.*), **here onwards referred to as UCP**, is the largest Peruvian brewery, and was founded as an ice factory by two North American businessmen, Jacob Backus and John Johnston. The company was originally named Backus & Johnston Brewery Ltd. but changed its name to Backus & Johnston Brewery S.A. (*Spanish: Cervercería Backus & Johnston S.A.*) back when it was acquired by a group of Peruvian investors led by Ricardo Bentin Mujica on May 10,

1955. Since 2005, UCP was incorporated into the SABMiller Group (part of ABInbev since 2015).

The company is engaged in the processing, packaging, distribution, and commercialization of beer and other kinds of drinks such as malt beverages, soda, and water. Up to 2013, the company had five beer production plants in Ate (Lima), Huarochiri, Motupe, Arequipa, Cusco, and an additional malt production facility in Ñaña. UPC is the matrix of six subsidiaries divided into two business lines. Out of these, Backus and San Juan Brewery S.A. (*Spanish: Cervercería San Juan S.A.*) concentrate in the Group's core business: beer production; whereas the other four focus on distribution and complementary activities (BVL, 2014; CENTRUM, 2013). **Figure 1** shows the history of the company from 1876 to 1996.

Figure 1. Timeline of UCP's history



| 1876 | 1879 | 1890 | 1954 | 1994 | 1996 |
|---|---|---|---|---|---|
| Jacobo Backus and Howard Thomson founded an ice factory in the district of Rimac, Lima - Peru | The factory became in the Backus & Johnson Brewery Ltd. | The society was incorporated in London - UK. | Peruvian entrepreneurs acquired the firm, and it was converted into the Backus & Johnson Brewery. | Backus & Johnson acquired the Compañía Nacional de Cerveza (CNC) company | It produced the merger between Backus & Johnson S.A and CNC creating UCP (Union de Cervercerias Backus & Johnson S.A.A. |

Source: Self elaboration, information from PCR (2013, 2014)

## BUSINESS STRATEGY

Among other relevant information, Mr. Jin identified the key elements of Backus' business strategy as follows:

- **Headquarter's Support:** Backus operations management, logistics and strategic planning are supported by the constant advice of its parent company SABMiller, the second largest brewing company worldwide, with operations in over 75 countries (BVL, 2014; CENTRUM, 2013).
- **Implementation of the New Commercial Model (NMC, Spanish: Nuevo Modelo Comercial):** The new model seeks to foresee the clients and consumers' needs, maximizing the given value. This model made the company more efficient in terms of cost and expense management, partially thanks to the implementation of a "Telesales channel" (Sales by call centers), improving its direct sales and favoring the entry of new distributors to its customer base. Also, under the new model, the company has optimized its supply chain, improving sales, distribution, and manufacturing (BVL, 2014; CENTRUM, 2013; Backus & Johnston, 2011).

## FINANCIAL STRATEGY

In recent years, UCP has incurred in increased financial leverage. However, its financial statements report the company has satisfactory coverage and solvency ratios. These measures are in line with the liquidity policies of the company and guarantee it is capable of meeting its short-term compromises loosely. The company uses the Discounted Cash Flow method to evaluate its investment projects. The discount rate, used for different projects is based on their specific risk, on market-determined interest rates and the market risk premium. New investment projects, such as the construction of new distribution centers, warehouses, etc., enable the company to serve new customers and strengthen its marketing strategy. In recent times, the company improved its financial performance through the implementation of its new business model, which has reduced its production and distribution costs considerably, and the value-added chain optimization has led to a growth in sales.

Probably, the only negative factor for UCP in the environment in recent times has been the implementation of the new scheme of ISC, which has affected sales growth.

## VALUE OF THE FIRM

Theoretically, the value of a firm can be visualized as the sum of its debt and equity at market values:

$$V = D + E$$

Where:

V: Value of the company

D: Market value of debt

E: Market Value of equity

Thus, the market value of a company is obtained by adding the market value of the debt, usually represented by the bonds outstanding value, and the market value of equity, obtained by multiplying the current price of the stock times the number of shares outstanding. For Backus S.A.A., first, as the financial debt was acquired through commercial banks mainly, the book value shall be used for calculations rather than the market value. Second, regarding the market value of equity, as the company has different series of stocks outstanding, the MVE is obtained by multiplying the number of shares outstanding of each series and their correspondent price.

**Table 1** details the number of shares outstanding for each series, as well as their ongoing price per share on November 30th 2013:

Table 1: Price of shares to Backus S.A.A. (November 30$^{th}$ 2013)

| Share | Number of shares outstanding | Current Price (in S/.) |
|---|---|---|
| BACKUAC1 | 76,046,495 | 120.50 |
| BACKUBC1 | 2,025,707 | 123 |
| BACKUSL1 | 569,514,715 | 12.30 |

Source: BVL public information, with data recovered on November 30$^{th}$, 2014.

$$Equity\ Value = Number\ of\ shares\ outstanding * current\ share\ price$$

Equity Value of the firm was calculated in 30/11/2014.

**- BACKUAC1**
$Equity\ Value = 76,046,495 * 120.50 =$ S/. 9,163,602,647.50

**- BACKUBC1**
$Equity\ Value = 2,025,707 * 123 =$ S/. 249,161,961.00

**- BACKUSL1**
$Equity\ Value = 569,514,715 * 12.30 =$ S/. 249,161,961.00

Equity Value of the company:  S/. 16,227,679,365.50

Debt Value (from balance sheet): S/.436, 210,000

***Market Value of the firm:***

$$Value\ of\ the\ firm = Debt + Equity = S/.\ 16,663,889,365.5$$

**FINANCIAL DISTRESS**
Historically, the company has had a stable sales growth due to its almost absolute leadership in the Peruvian beer market, even though the new ISC scheme imposed by the Peruvian Government in May 2013 has affected its sales volume. The stability of the company's revenue is also explained by the wide variety of brands that it markets, and by the implementation of their new commercial model or NMC (*Spanish: Nuevo Modelo Comercial*) which allowed costs reductions.

It can be said, that, in general terms, the company has:

- Good business model
- Efficiency in production, low costs, etc.
- Few competitors entering market

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- High barriers to entry to the market

However, liquidity levels have followed a downward trend since December 2009. That trend can be explained by the accumulation of inventories, and loans to the company's dealers (which also has prompted an increase in debt levels). However, in recent years, liquidity has marginally, due to a reduction in accounts receivable and an improved bargaining power *vis à vis* its suppliers and distributors.

## COST OF CAPITAL
## WEIGHTED AVERAGE COST OF CAPITAL (WACC)
According to Bravo (2011) the Weighted Average Cost of Capital measures the average cost of both equity and debt. It's a key element in capital budgeting decisions and the assessment of a company's value (Boyer, Lim & Lyons, 2017). The WACC is frequently used to discount the future economic flows of companies and projects, and is calculated with the following formula:

$$k_{WACC} = k_E \frac{E}{V} * ke + kd * (1 - t)$$

Where:

$k_{WACC}$: weighted average cost of capital after taxes.

$k_E$: cost of capital adjusted by the risk.

$kd$: cost of debt before taxes

$t$: Marginal tax rate

E: equity market value of the company

D: debt market value of the company

V: total market value of the company securities (D+E)

Backus used the WACC to determine its cost of capital as a whole. To determine the cost of capital of the company, Mr. Jin has to calculate four important inputs: the debt and equity relative weights, plus the debt and equity funds cost.

## DEBT CAPACITY AND THE COST OF DEBT
The funding policy of the company for each of its divisions gave preference to long-term financing. In recent years, it had increased the relative importance of its liabilities, due to its flexible credit policy, which also aided to keep sales growing. The two main components of the company's debt consisted of:

- Bank Lending
- Leasing

In 2012, the solvency ratio (CA/CL) was 64%, and improved to 70% in 2013. The financing policy was defined in terms to have achieved a long term leverage ratio (Debt/Market Value of Equity: D/MVE) of 3% to 8%. The book D/E ratio increased slightly between 2012 and 2013, as the company sought to finance new investments. The increased debt levels were also used to cover the needs of funds generated by the productive and commercial activities of the business. The acquisitions made by the company included forklifts, light vehicles, and used trucks, among others.

Figure 2: Sovereign Curve in Soles September 30th, 2014
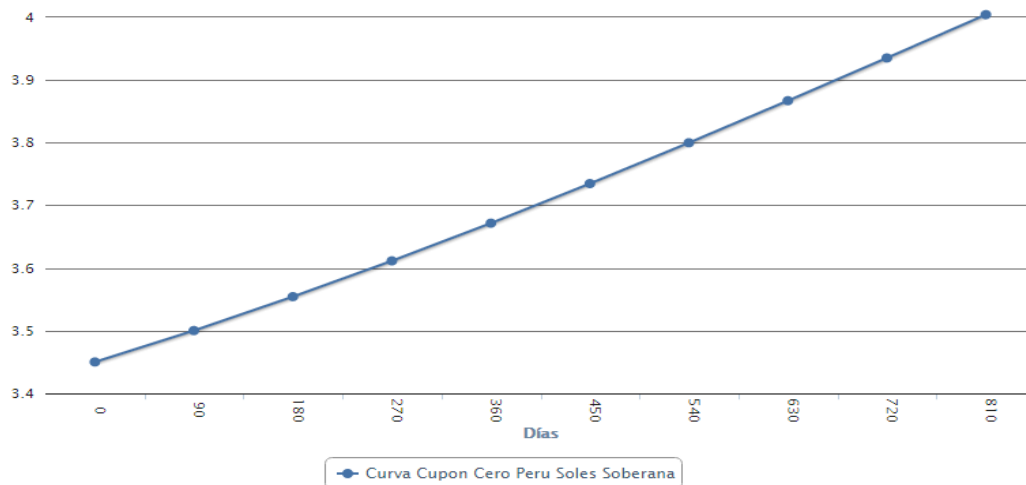


Source: SBS

The procedure to estimate the cost of debt uses the following inputs:

- Estimated interest rates (cost of debt) for the coming years.
- Estimated the proportions of the various classes of debt held by the company in the future.
- Estimated corporate tax rate.

**COST OF EQUITY**
The cost of equity is the required rate of return on the firm`s common stock. The cost of equity estimate is obtained using the Capital Asset Pricing Model, introduced by Eugen e Fama in the 1060s.

Bravo (2011) considers that "the CAPM determines the expected return that investors expect to receive on average over the medium-to-long term. It also serves as guide for the company to establish the minimum rate of return to be expected

from projects that have been fully funded with equity." Additionally, according to Walker (2016), the pricing models will depend on the level of integration of the country's financial market, this factor being likewise dependent of the openness, transaction costs and political stability of said country's market.

The following is known as the CAPM:

$$K_e = K_{rf} + \beta_j * (K_m - K_{rf})$$

Where:

$K_e$: expected rate of return (required) on the equity.

$K_{rf}$: interest rate on risk-free bonds (i.e. treasury bonds).

$\beta_j$: systematic risk coefficient for the company.

$K_m$: expected rate of return (required) on the market portfolio shares.

## THE RISK-FREE RATE (RF)
It is desirable that this parameter be measured during a stable growth period, in modern and deep financial markets (Bravo, 2011, 174).

## MARKET RETURN (RM)
According to Bravo (2011), this indicator is an index that is representative of the entire stock market. Significantly, there are two alternatives for determining this parameter:

"The first alternative is that the index contains the entire market and the second is that the index contains a largely diversified sample of stocks, enough to be representative of the evolution of the stock market." (p. 174).

To estimate Backus S.A.A., Mr. Jin considers to use the IGBVL (Lima Stock Market Global Index), which shows the performance of the largest 32 stocks in the Peruvian stock exchange.

## BETA (β)
For the calculation of β, which indicates the sensitivity of a stock relative to the stock market returns, and is considered an indicator of the contribution of risk of an individual security to a diversified portfolio, one needs to find the covariance between the market index returns and the individual security returns, and divide it by the variance of the returns of the market:

$$\beta_j = \frac{\rho_{jm*}\sigma_j}{\sigma_m}$$

Where:

$\beta_j$: measure of systematic risk to the value j

$\rho_{jm}$: correlation between the value j and the market.

$\sigma_j$: standard deviation of the return above the value j

$\sigma_m$: standard deviation of the market return

**DRAFTING THE REPORT**
Mr. Jin spent some time thinking about how to prepare an economic and financial report and he concluded he needed to answer the following questions:

**QUESTIONS TO SOLVE:**
1. Based on an analysis of the company's financial statements (Table 2), what are Backus´s strengths and weaknesses?
2. Calculate de cost of capital of the firm. Explain.
3. Calculate the Weighted Average Cost of Capital (WACC). Explain.
4. Calculate a Vertical and Horizontal analysis of the company's Balance Sheet and Income Statement. From that analysis, what can be said about Backus' financial health?
5. Calculate the liquidity, solvency, activity and profitability ratios.

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## Appendix 1

Table 2. Financial History, 2009 – 2013

|  | **2009** | **2010** | **2011** | **2012** | **2013** |
|---|---|---|---|---|---|
| **Balance Sheet** | | | | | |
| Current Assets | 741,458 | 786,467 | 836,540 | 701,210 | 756,795 |
| Non Current Assets | 2,349,111 | 2,533,998 | 2,355,509 | 2,746,972 | 2,838,202 |
| Total Assets | 3,090,569 | 3,320,465 | 3,192,049 | 3,448,182 | 3,594,997 |
| Current Liabilities | 663,983 | 976,248 | 951,652 | 1,081,739 | 1,066,774 |
| Non Current Liabilities | 599,135 | 360,067 | 407,937 | 561,387 | 706,357 |
| Total Liabilities | 1,263,118 | 1,336,315 | 1,359,589 | 1,643,126 | 1,773,131 |
| Total Equitiy | 1,827,451 | 1,696,382 | 1,767,526 | 2,204,513 | 2,479,488 |
|  | | | | | |
| Financial Debt | 295,463 | 232,188 | 110,623 | 249,094 | 436,211 |
| Current | 3,280 | 231,562 | 110,623 | 115,498 | 127,362 |
| Non Current | 292,183 | 626 | - | 133,596 | 308,849 |
|  | | | | | |
| **Income Statement** | | | | | |
| Operating Incomes | 2,447,616 | 2,676,723 | 3,086,315 | 3,467,170 | 3,541,413 |
| Operating Costs | 806,977 | 847,902 | 866,410 | 948,173 | 949,185 |
| Operating Expenses | 971,997 | 1,188,261 | 1,258,643 | 1,362,817 | 1,384,948 |
| Operating Income | 668,642 | 640,560 | 961,262 | 1,156,180 | 1,207,280 |
| Other Income and Expenses | 42,363 | 53,189 | 82,132 | 163,998 | 92,256 |
| Financial Income | 6,049 | 67,131 | 97,509 | 179,371 | 134,562 |
| Financial Expenses | 29,883 | 13,094 | 15,377 | 15,373 | 42,306 |
| Net Income | 502,092 | 486,098 | 730,551 | 948,709 | 915,615 |

Source: PCR (2013)

Appendix 2
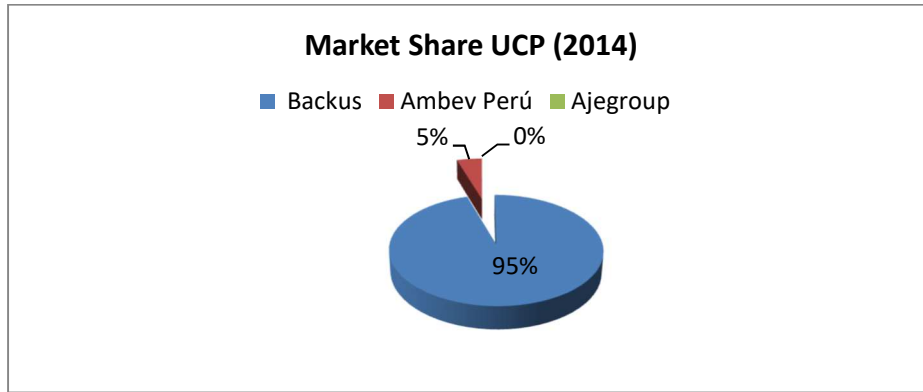
Table 3. Available lines of credit and cost of debt to UCP (2013)

| Loans | Amount (MM) | Before - tax component cost of debt |
|---|---|---|
| BBVA (maturity June 2014) | 115 | 5.75% |
| BBVA (maturity June 2016) | 110 | 5.66% |
| BCP    (maturity August 2016) | 110 | 5.10% |
| Leasing | 101.21 | 5.50% |
| **Total** | **436.21** | **5.50%** |

Source: UCP / Self – Elaboration

Appendix 3

Figure 3. Market Share for Backus (2013)



Source: Discussion of management of Backus S.A.A. (2013)

Appendix 4

Table 4. Currently Peruvian sovereign bonds

## BONOS SOBERANOS VIGENTES
### al 30 de septiembre de 2014

| Denominación | ISIN | Nemónico | Unidades en Circulacion | Valor Nominal (Nuevos Soles) | Valor Actualizado (Nuevos Soles) | Plazo Original (años) | Tasa Cupón | Cupón (Nuevos Soles) | Fecha de Emisión | Fecha de Vencimiento |
|---|---|---|---|---|---|---|---|---|---|---|
| **Bonos en Moneda Nacional Nominal** | | | | | | | | | | |
| Bonos Soberanos 05MAY2015 [3/7/] | PEP01000CX67 | SB05MAY15 | 1,686,627 | 1,686,627,000.00 | 1,686,627,000.00 | 10.0 | 9.91% | 49.55 | 05/05/2005 | 05/05/2015 |
| Bonos Soberanos 12AGO2017 [4/7/10/17/] | PEP01000CY09 | SB12AGO17 | 2,102,936 | 2,102,936,000.00 | 2,102,936,000.00 | 12.1 | 8.60% | 43.00 | 08/07/2005 | 12/08/2017 |
| Bonos Soberanos 12AGO2020 [4/5/12/13/] | PEP01000CY33 | SB12AGO20 | 9,047,486 | 9,047,486,000.00 | 9,047,486,000.00 | 15.1 | 7.84% | 39.20 | 18/07/2005 | 12/08/2020 |
| Bonos Soberanos 12SEP2023 [16/] | PEP01000C4N3 | SB12SEP23 | 3,657,611 | 3,657,611,000.00 | 3,657,611,000.00 | 11.2 | 5.20% | 26.00 | 22/06/2012 | 12/09/2023 |
| Bonos Soberanos 04ENE2026A [15/] | PEP01000C4O1 | SB04ENE26A | 215,367 | 190,492,111.50 [18/] | 190,492,111.50 | 6.8 | 3.72% | 18.60 | 04/01/2013 | 04/01/2026 |
| Bonos Soberanos 12AGO2026 [6/8/10/12/] | PEP01000C0J9 | SB12AGO26 | 4,388,713 | 4,388,713,000.00 | 4,388,713,000.00 | 20.3 | 8.20% | 41.00 | 03/05/2006 | 12/08/2026 |
| Bonos Soberanos 12FEB2029 [17/] | PEP01000C4Q6 | SB12FEB29 | 927,982 | 927,982,000.00 | 927,982,000.00 | 15.6 | 6.00% | 30.00 | 10/07/2013 | 12/02/2029 |
| Bonos Soberanos 12AGO2031 [14/] | PEP01000C4G7 | SB12AGO31 | 4,290,157 | 4,290,157,000.00 | 4,290,157,000.00 | 23.3 | 6.95% | 34.75 | 24/04/2008 | 12/08/2031 |
| Bonos Soberanos 12AGO2037 [9/] | PEP01000C2Z1 | SB12AGO37 | 4,750,000 | 4,750,000,000.00 | 4,750,000,000.00 | 30.0 | 6.90% | 34.50 | 26/07/2007 | 12/08/2037 |
| Bonos Soberanos 12FEB2042 [11/16/] | PEP01000C4L7 | SB12FEB42 | 4,250,723 | 4,250,723,000.00 | 4,250,723,000.00 | 32.0 | 6.85% | 34.25 | 27/01/2010 | 12/02/2042 |
| Bonos Soberanos 12FEB2055 | PEP01000C4S2 | SB12FEB55 | 278,250 | 278,250,000.00 | 278,250,000.00 | 40.6 | 6.7142% | 33.57 | 09/07/2014 | 12/02/2055 |
| **TOTAL MONEDA NACIONAL NOMINAL** | | | 35,595,852 | 35,570,977,111.50 | 35,570,977,111.50 | 93.39% | | | | |

Source: MEF

Appendix 5

Figure 4. Performance of the share price Backus – BACKUAC1 (2014)
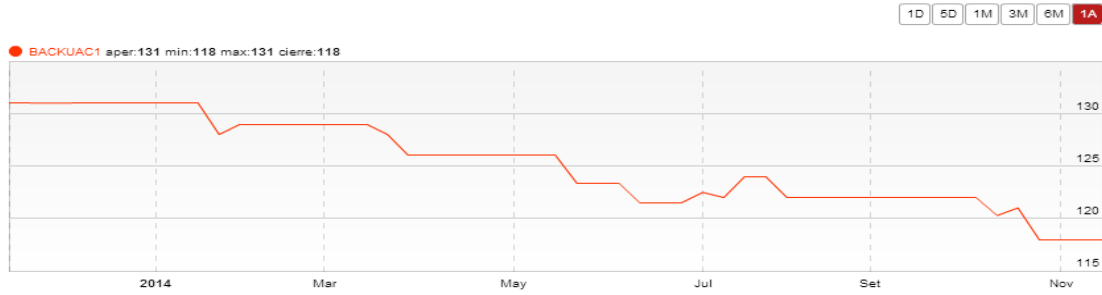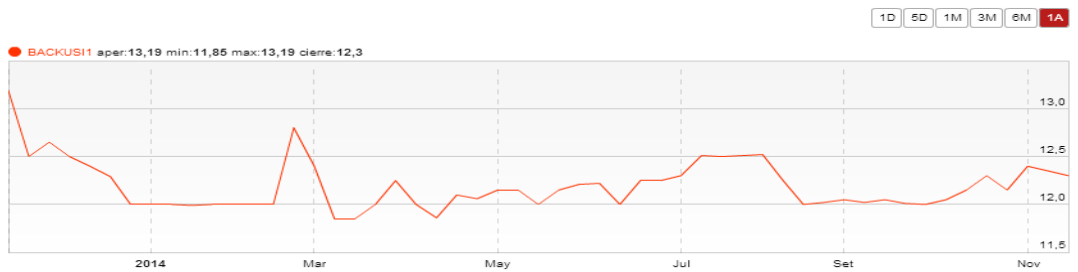


Source: BVL

Figure 5. Performance of the share price Backus – BACKUBC1 (2014)
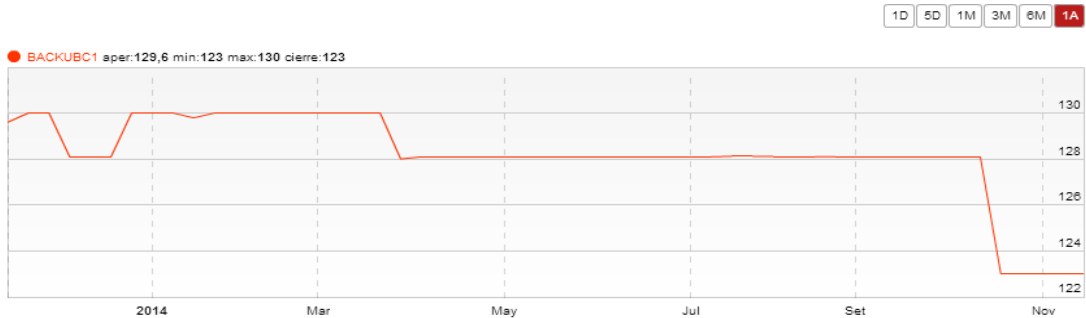


Source: BVL

Figure 6. Performance of the share price Backus – BACKUSL1 (2014)



Source: BVL