



# CFA Institute

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**CFA Institute Research Challenge**

**Hosted in**

**Mexico**

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# Industrias Peñoles, S.A.B. de C.V.

A solid foundation settled in an uncertain environment

**Current Price: \$488.01 MXN**

(as of 20/Jan/2017)

**Ticker: PE&OLES**

**Target Price (12M): \$507.65 MXN**

**Expected Return (12M): 4.02%**

**Industry: Diversified Metals and Mining**

**Recommendation: HOLD**

**Currency: MXN (Mexican Pesos)**

**Sector: Mining**

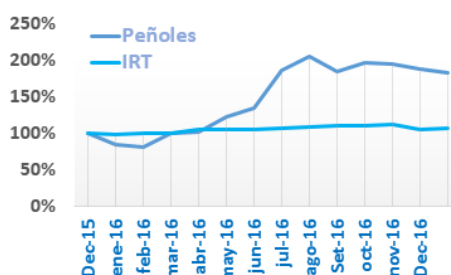
Key Financial Data	
EPS	46.95
EV/Revenue	2.84x
EV/EBITDA	9.58x
EV/EBIT	16.78x
P/E	22.52x
P/BV	3.18x
Dividend Yield	0.309%

Net Debt Equity	0.1041x
EBIT / Interests Expenses	13.75x
ROE	2.70%
ROA	6.60%

Market Data	
Market Valuation MM MXN	194063.6
EV MM MXN	216791.2
52 weeks Price Range	153.2 MXN - 610.05 MXN
Shares Outstanding	400,564
WACC	14.58%
Beta Coefficient	1.158
S&P Rating	BBB - mxAAA

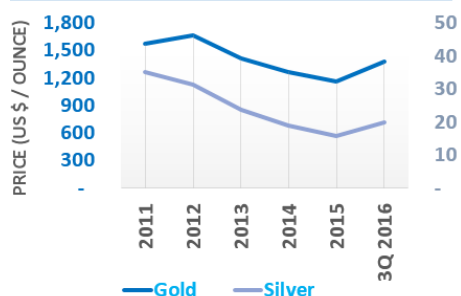
*Source: Team Estimates, Capital IQ*

**Figure 1. 12M Price Performance vs IRT**



*Source: Capital IQ*

**Figure 2. Average Gold/Silver Prices**



*Source: Monex Precious Metals*

Concept	2014R	2015R	2016E	2017E	2018E
Net Sales MM MXN	61,555.6	64,896.5	91,410.4	103,404.2	111,939.5
% Δ Sales	N/A	5.4%	40.9%	13.1%	8.3%
EBITDA MM MXN	13,619.3	21,492.4	27,709.4	20,727.6	22,588.9
% Δ EBITDA	N/A	57.8%	28.9%	-25.2%	9.0%
Net Income Margin %	1.9%	-1.3%	0.2%	7.0%	7.0%
Basic EPS	33.43x	35.17x	46.35x	118.94x	94.02x

*Source: Team Estimates, Capital IQ*

## Highlights

With reference to our valuation of Industrias Peñoles, S.A.B. de C.V. (Peñoles) we issue a **HOLD** recommendation with a 12-month target price of **\$507.65 MXN** with a projected expected return of **4.02%** from its January 20<sup>th</sup> 2017 closing price of **\$488.01 MXN**. The target price calculation is mainly supported by the following:

- **Overview** – Peñoles is a world-class Mexican company with extensive experience acquired in the mining sector during 128 years of existence within the country. It is currently the world's largest producer of refined silver and the leading Latin American gold producer. Initiating its public offering in 1968 on the Mexican Stock Exchange (BMV), Peñoles maintains a mature operation deeply aligned to the national market's growth and is in line with the global mining industry's behavior.
- **Fresnillo PLC** – the main subsidiary of Peñoles, which started trading on the Financial Times Stock Exchange (FTSE) in the United Kingdom since 2008.
- **Valuation** – the intrinsic value of the share offers slight upside in its value by operating with an Enterprise Value/EBITDA multiple of 11x times and a terminal value of 317,184.9.
- **Key Financials** – During the last 5 years, a strong investment was made in fixed assets, with the aim of increasing the production of metals in the long term. With a stable level of financial debt and an increase in the price of the products sold by Peñoles, it is expected to obtain a positive net profit, which could lead to a greater dividend distribution and/or increase in the price of the share above expected market returns (Figure 1).
- **Key Risks** – Even though Peñoles' has a solid operative and financial structure, the current global geopolitical and macroeconomic environment does not provide certainty on the variation of commodity prices (Figure 2), currencies exchange rates or demand of metals, which may greatly alter Peñoles' value from several angles. From a traditional viewpoint, a diversified portfolio of metals would prove a safe asset to invest in, but recent events such as the Chinese economic slowdown or the incoming US policies could prove that the appreciation of the dollar may represent a substitute asset to refuge, exposing Peñoles diverse risks and greater volatility.
- **Opportunities** – The Organization of Accounting and Auditing of Islamic Financial Institutions (AAOIFI), in collaboration with the World Gold Council (WGC), has approved what will be known as the Shariah Gold Standard. This set of rules that will come into effect as of January 1<sup>st</sup>, 2017, will expand the range and use of gold-based products for the Islamic population (25% of the world's population), which may result in a higher demand of gold and other metal goods.

**Figure 3. Top 10 Silver Producing Mines**

Rank		Mine	Output (Moz*)	
			2014	2015
2	1	Fresnillo plc.	40.4	43.0
1	2	KGHM Polska Miedz S.A. Group	40.4	41.6
3	3	Goldcorp Inc.	36.8	40.4
4	4	Glencore plc.	35.5	36.6
6	5	Polymetal International plc.	28.7	32.1
7	6	Pan American Silver Corp.	26.1	26.1
8	7	Volcan Cia. Minera S.A.A.	22.5	24.8
11	8	Cia. De Minas Buenaventura S.A.A.	19.7	22.3
9	9	Corp. Nacional del Cobre de Chile	20.4	21.3
10	10	Tahoe Resources Inc.	20.3	20.4

\* Million ounces

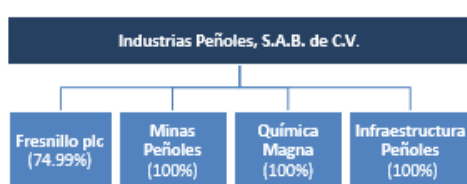
Note: highlighted is the main subsidiary of Peñoles

Source: GFMS, Thomson Reuters

**Figure 4. Mines Location and Production**


#	Mine	Location	Milling Capacity (tons per year)	Metals
1	Velardeña	Cuencamé, Zacazonapan,	2,000,000	Zinc
2	Tizapa	Estado de México	800,000	Zinc - lead - copper - silver - gold
3	Francisco I. Madero	Morelos, Zacatecas	3,000,000	Zinc
4	Bismark	Ascensión, Chihuahua	800,000	Zinc and copper
5	Saucito	Zacatecas	2,000,000	Gold and silver
6	Fresnillo	Zacatecas	3,000,000	Gold and silver
7	Herradura	Sonora	22,000,000	Gold

Source: Annual Report (2015)

**Figure 5. Corporate Structure**


Source: Annual Report (2015)

## Business Description

**Industrias Peñoles, S.A.B. De C.V** (Peñoles) is a Mexican company founded in 1887, its main business are exploration, extraction and sales of refined minerals, especially gold and silver. In addition, produces non-ferrous metals and chemicals products as sodium sulfate. Through the time, the company has become one of the largest exporters of Mexico and is also the world's top producer of refined silver (Figure 3), metallic bismuth and refined zinc. Peñoles main mines are Fresnillo, Velardeña, Tizapa, Francisco I. Madero, Bismark, Saucito and La Herradura (Figure 4). Peñoles has the 100% ownership of Velardeña, Francisco I. Madero and Bismark and the 51% of Tizapa and Saucito. La Herradura and Fresnillo are owned 100% by Fresnillo. Peñoles has been listed on the Mexican Stock Exchange (BMV) since 1968 under the code PE&OLES and Fresnillo plc is listed on the London Stock Exchange (MSE) since 2008.

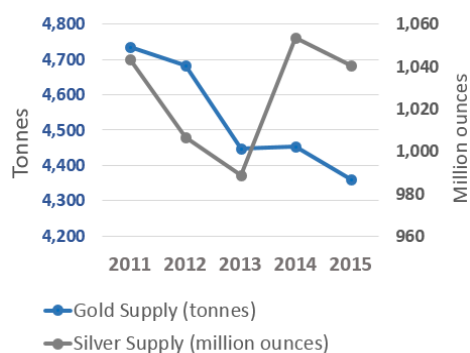
**Business Model.** The operations of the company are vertically integrated (exploration, exploitation, and commercialization). Their main focus is to be a low-cost producer based on costs control and efficiency in operations. The 95% of the company's sales are denominated in US\$ dollars, while 50% of production costs are denominated in Mexican pesos, situation that generates a competitive advantage against the movements between the two currencies. The strategy growth of Peñoles depends of the investments in exploration of polymetallic and copper deposits in Mexico. Its investments have the purpose to prospect, detect and develop new mining projects, as well as managing the allocation and increase of reserves in operating mines. In 2015, Peñoles invested US\$ 188 million in exploration projects. The company has partially generated self-sufficient energy with renewable sources, which has generated significant savings in production costs of more than US \$ 550 million in the last 10 years.

**Products.** Industrias Peñoles mainly participates in the trade of precious and industrial metals such as: gold (41.2%), silver (27.5%), zinc (12.0%), lead (6.1%) and copper (4.4%). As a mining company, the prices of its products are established in the global market. Peñoles has sales in 35 countries, where 17.8% remain in Mexico and 82.2% are exported. The main countries Peñoles exports to are: United States with 88.6%, Europe with 6.0% (represented by 12 countries), South America with 1.1% (represented by 9 countries) and other countries that represent 4.3% of the total exports.

**Strategy.** Peñoles's growth Plan, called Vision2020, has increased since its implementation in 2009 the grinding capacity by creating new mining units such as Velardeña for zinc production; the new gold and silver mines in Fresnillo, were Saucito stands out, and an enhancement in La Herradura mine for gold extraction through dynamic lixiviation. In addition, sodium sulfate production capacity has been expanded, and renewable energy sources have been developed at a lower cost. Investments in fixed assets and exploration in the last six years amount to US \$5.7 billion.

**Corporate Structure.** The structure of Peñoles consists in four subsidiaries (Figure 5). The Board of Directors is integrated by 14 proprietary directors and 13 alternate directors elected by the General Shareholders' Meeting. The chairman of the Board is Alberto Baillères Gonzáles who received the Belisario Domínguez Medal in 2015 (the highest decoration awarded by the Senate of Mexico to the most eminent citizens). He is also Chairman of the Board of Grupo Bal, which includes businesses in the sectors of commerce, mining, metallurgy, insurance and finance, among them are GNP, Peñoles and Palacio de Hierro.

Figure 6. Gold and Silver Supply

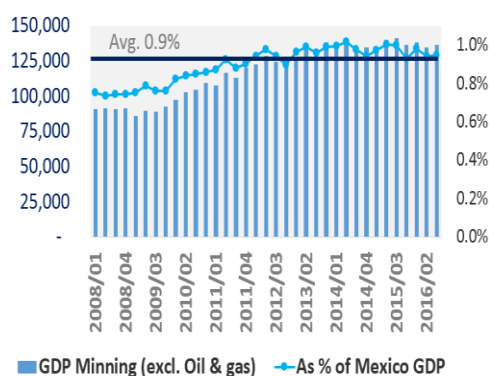


Source: PWC's Mine 2016 report

## Industry Overview & Competitive Positioning

**International Outlook.** Given the market-driven nature of mineral and metal pricing, the global mining industry is affected by ongoing global economic uncertainty. The geopolitical environment will be affecting global dynamics in 2017 as a result of the increasing nationalism appeared in 2016 (this posture first appeared in the UK with the "Brexit" referendum and US presidential elections). Since 2015, the mining sector showed a fragile tendency mostly related to Chinese demand's lower growth than previous years (Appendix 1A), causing a cascading negative impact on mining companies (Appendix 1B). According to PwC, the revenues of a top 40 companies sample declined from \$678 billion in 2014 to \$539 billion in 2015, a significant reduction of \$139 billion and an acceleration of the downward trend that began in 2012. Copper, coal, iron ore and gold account for 83% of the top 40's revenue. Aside from the gold and silver supply (Figure 6), revenue by commodity was down across the board, with the biggest reductions in iron ore (-30%) and coal (-26%). Companies with the best operating track record in this sector have substantial mine reserves, extensive pipeline of viable projects, relatively steady production, and strong financial profiles.

Figure 7. GDP Mining and Contribution

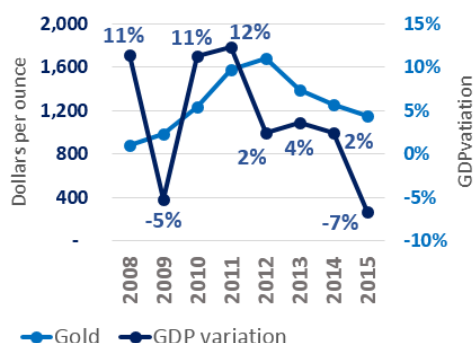


Source: INEGI

**Mexico's Overview.** In Q316 the mining sector represented 6.2% of the Mexico's GDP and 0.9% excluding oil and gas figures, according to the Mexican Institute of Geography and Statistics (INEGI) data; Figure 7 shows the share of mining excluding oil and gas on Mexico's total GDP. As the trend shows, the sector is growing into the economic activities with more emphasis since 2008, achieved by an increasing efficiency in operations and workforce, reducing costs, and promoting greater innovation that originated new processes of operation. Also in 2015 there were investments amounting 32.8 million dollars of foreign direct investment (FDI) in the metallic minerals sector, according to statistics from the Mexico Ministry of Economy (Appendix 1D). The Mexican Mining Chamber (CMMIMEX) explains the decreased in the sector during 2015 due to: (i) metal pricing, (ii) new governmental duties, (iii) the inability of tax deductions on pre-operating exploration expenses in the same year (Appendix E).

**"After the Gold Rush".** According to the Gold Global Survey<sup>1</sup> figures, gold is yet the common refuge for investors (Appendix 1Ca). Even though the biggest global players are China, India and USA, they demanded less gold from Q315 to Q316 (a downside of 51% to 42% respectively) due to: i) year-to-date retail investment demand for bars and coins at its lowest level since 2009, ii) high gold prices as a major weakness cause across most markets, and iii) a weak demand in India, compounded by the government's focus on curbing cash transactions. India's demand represents 20% of total gold demand in Q316 and according to GDP OECD forecasts, India's projected annual growth rate is 7.5% up to 2018, which may increase in further years. The study estimates a growth rate based in a hike in wages and pensions, both increasing the disposable income of India due to domestic consumption patterns like gifting gold as a deeply ingrained part of marriage rituals — which generate approx. 50% of annual gold demand (Appendix 1Cb).

Figure 8. Global GDP versus Gold Price



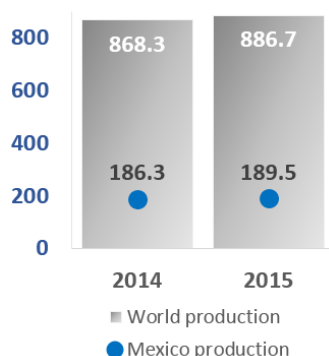
Source: "Global Precious Metals Market" Report

**A Pot of Gold.** According to the World Gold Council<sup>2</sup>, Mexico's domestic demand is 90% related to jewelry, and 10% is bar and coin related, while the CAGR demand of gold has been 4.4% between 1985 and 2015. In 2017, Peñoles will initiate operations like the "San Julián" gold and silver mine in Chihuahua, also related to Fresnillo PLC. (Appendix 1Cc). CMMIMEX reported that Peñoles and Cobre Sur (subsidiary of Grupo México) participate in the domestic gold refining business amounting 1.5 million ounces in 2015; Mexico is the main gold refiner producer in LATAM.

<sup>1</sup> Held by PwC.

<sup>2</sup> The World Gold Council is an organization with 19 members, the biggest mining companies in the world, whose purpose is to offer detailed analyses on the gold market.

Figure 9. Global Silver production (Moz)



Source: CAMMIMEX

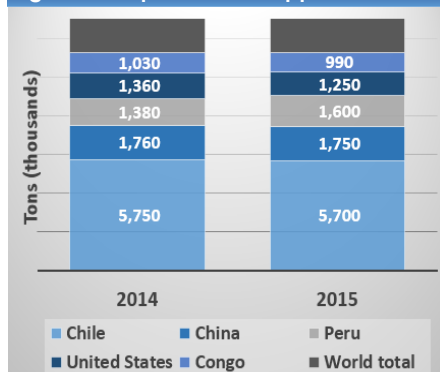
**Every Dark Cloud has a Silver Lining.** According to World Silver Survey Worldwide, silver production increased for a 13th consecutive year to a record high of 27,579 tons, although the growth rate of 2% was less than half of the previous three years. Notable country-level increases included Peru, Argentina, Russia and India. The survey mentioned that Chinese production dipped by 3%, and it is likely that policy announcements of 2016 (Appendix 1F) will drive reductions in small scale production and enhance demand for imported silver-rich concentrates globally.

**Star of the Silver Screen.** The World Silver Survey stated that the most significant production gain in the primary silver industry was seen in Mexico, with the ramp-up of Saucito II contributing 6.6 Moz of additional production and lowering the global average Total Cash Costs + Capex by \$0.39/ oz. In 2015 (Appendix 2), mine supply from Mexico rose by 3.2 Moz or 2%. The case of Mexico in a global context (Figure 9) represents 21% of total silver production in 2014-15, considering that Peñoles and Fresnillo represent approximately 29% of total domestic silver production for both years (Appendix 1F).

**Copper: Still Essential.** Copper primary uses are electrical wiring, roofing, plumbing, and for industrial machinery. According to the U.S. Geological Survey, Chile is the biggest producer in the world, having four of the world's top five mines (the other one located in Arizona, US). Chile, accounting 30% of the world total production, is followed by China with 9.3% and Peru with 8.5% (Figure 10). Mexico ranked 10<sup>th</sup> with 2.9% (Appendix 1G).

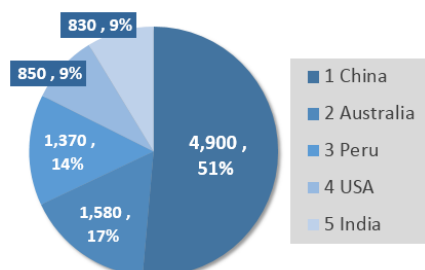
**Gotcha Copper?** According to INEGI, in 2015 the national copper production increased 15.4%. Sonora is the main producer of copper in Mexico with a share of 81.3% of total production. The second place in production is Zacatecas with a share of 7.1%. Mexico's Copper/Zinc evolution (Figure 12) shows the historical level of both metals compared to the mining industrial activity, which are less related to speculation (Appendix 1G).

Figure 10. Top 5 Global Copper Producers



Source: "Mining Sector: Mexico" Report. Euromoney Inst. Investor Co.

Figure 11. Top 5 Global Zinc Producers in 2015 (in Tons/Thousands)

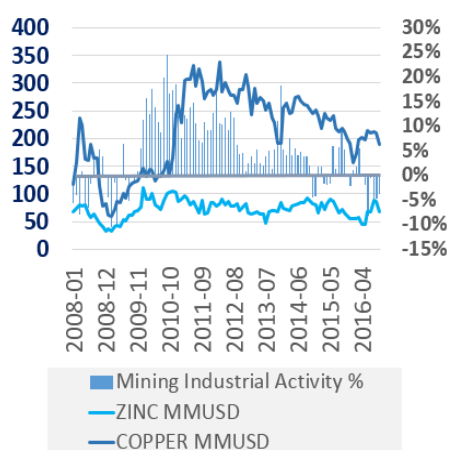


Source: ILZSG Report

**From A to Zinc.** According to the International Group of Lead and Zinc Studies (ILZSG), after the deficit in 2015, the zinc market reported a surplus of just over 190k tones. According to the USGS, seven countries represent 79% of zinc mining output (total 11,490k tones): China is the largest producer with an approximate share of 37% in the world, followed by Australia and Peru, with 12% and 10% respectively; United States and India contributed each with 6%, while Mexico ranked sixth with a 5% share (Figure 11).

**It is AmaZinc!** According to INEGI, in 2015 the national zinc production increased by 19.2% over 2014, reaching a volume of 786,774 tons and according to CAMMIMEX the start of projects such as Rey de Plata in Guerrero in 2018 (which will contribute 40 thousand tons of zinc) as well as forecasted increases in Saucito II (adding a potential expansion of Fresnillo in Zacatecas) will maintain the domestic market of zinc concentrates in surplus in the short and medium term.

Figure 12. Mexico's Copper/Zinc Evolution



Source: INEGI

**Competitive Positioning.** According to Behre Dolbear Group's report "Where to Invest 2015", Mexico is the 5<sup>th</sup> place for investing in the mining sector, between Chile and Peru, position that has been maintained for three years in a row given its roles in gold and silver (Appendix 1D). In 2015, four metals represent 78.8% of total domestic production level: gold reached a notable share of 34.1%, copper with 19.7%, silver with 18.5% and zinc with 6.5% (which are part of Peñoles production). Fresnillo PLC is the most important national (and global) silver producer, 2<sup>nd</sup> is Goldcorp, and 3<sup>rd</sup> is Pan American Silver; which contributed with 42.6% of the total domestic silver production as of 2015. In the case of gold, these companies contributed with 53.2% of the production: 1<sup>st</sup> Goldcorp, 2<sup>nd</sup> Fresnillo PLC and 3<sup>rd</sup> Minera Frisco (Appendix 1H). Peñoles has positioned itself as the biggest zinc producer due to the start of "Velardeña", 2<sup>nd</sup> Goldcorp with "Peñasquito" mine, and 3<sup>rd</sup> Minera Frisco.



Figure 13. Valuation Summary

Valuation Method	Value
DFCF Model (70% Weight)	\$ 504.40
Multiples(EV/EBITDA) Analysis (30% Weight)	\$ 515.22
Weighted Average (70/30)	\$ 507.65
Current Price (20-Jan-2017)	\$ 488.01
DFCF % Inc/Dec	3.36%
Multiples % Inc/Dec	5.58%
General % Inc/Dec	4.02%

Source: Team Estimates

Figure 14. Gold Price Projection



Source: Team Estimates

Figure 15. Scenario Simulation 2017-21

Concept	Average Exchange Rate MXN to USD	Share price MXN	Prob.
Pessimistic	22.5	454.7	32.0%
Conservative	24.5	507	62.0%
Optimistic	26.5	540	6.0%

Source: Team Estimates

## Investment Summary

Valuation Price Target: \$507.65 MXN

Recommendation: HOLD

We issue our recommendation for the end of 2017, estimating an increase of 4.02% compared to its current price of 488.01 MXN as of January 20<sup>th</sup>, 2017. The increase is related to the consistent increase in the value of the dollar and a reasonable upgrade to the sales of commodities. Two different methodologies were employed to estimate the target value of the stock: a Discounted Free Cash Flow (DFCF) and the Multiples Method using comparable companies. The final target price was a result of the weighted results on the first two models, an empirical proportion of 70% and 30%, respectively (Figure 13), and supported with an additional reference provided by an ARIMA (Autoregressive Integrated Moving Average) model on statistical behavior of the price of gold.

**DFCF Model.** Based on the projections of the distinct metals and the behavior of the sector, using a Dupont analysis we estimated a perpetual growth (g) of 6.47% and discounted cash flows with a 14.6% rate obtained from WACC, delivering a price of \$504.4 MXN as the main component of our target price of \$507.6 MXN.

**Multiples Method.** a EV/EBITDA multiple was used as a relative measure calculated from a group of peers from different parts of the world. The median of the group was 11x, which is higher than Peñoles (7.9x), and used as a reference towards which Peñoles and the industry tend to go. With this method, we obtained a target value of 512.2 MXN.

**Facing Global Challenges.** Even though the recommendation estimates the stock price to have a slight upside potential, it must be considered that the landscape of global economy exposes Peñoles to several risks that may greatly alter our estimation. We obtained through an ARIMA model a trend (Figure 14) that confirms a potential but merely representative decrease in the price of gold, used as our main commodity reference for Peñoles commodities portfolio. Therefore, considering risks of potential downsides that may impact sales and prices of commodities and currencies into our estimations, we preserve a conservative stance (a HOLD recommendation) until the market settles with more certainty to the current geopolitical scenarios.

Supporting the afore-mentioned risk analysis, we ran a simulation process (Figure 15) considering different levels of exchange rates. The outcomes were classified in three scenarios: 1) the pessimistic scenario, considering an average of the exchange rate for the next 5 years in MXN\$22.5, obtaining a share price of MXN 454.7 with a probability of 32%. 2) the conservative scenario, based on an average of the exchange rate for the next 5 years of MXN\$24.5, having a stock price of MXN\$507 with a probability of 62%. 3) the optimistic scenario, where the average of the exchange rate for the next 5 years was considered in MXN 26.5, delivering a stock price of MXN 540 with a probability of 6%. Our target price of MXN\$507.65 falls in the conservative scenario (Appendix 11).

### Holding to the soundness of a long experience

**Profitable growth plan.** With the **Vision2020** plan, established in 2009, Peñoles has strengthened the presence of the company through an aggressive expansion with an average annual increase in revenues of 7.8%. It has executed the plan according to expectations and the results are already incorporated in the market price of the stock.

**Avant-garde projects and initiatives.** There are two new mining units, “Rey de Plata” with an investment of US\$ 296 million, which will produce zinc, silver, copper and gold; and the second is located in Chihuahua, a mine of silver and gold called “San Julián de Fresnillo plc” that started operations in 2016 with an investment of US\$ 515 million. They have also an important progress in the new leaching plant for pyrite concentrates

in Zacatecas that will increase the recovery of gold and silver, and there's a project to increase the production capacity of zinc of 120,000 annual tons that will end in 2017 (with an estimated investment of US\$327 millions). Currently, Peñoles is currently evaluating the exploration projects, such as the copper-gold "Racaycocha" mine in Peru.

**Focus on the key business and company health.** Peñoles decided to divest in some companies that were unrelated to mining and metals operations, particularly related to treatment and commercialization of water, in order to focus in the key business.

**Old, but with a Young Mind.** Peñoles made an effort to reduce operation costs through new technologies and enhancements to continue adding value with the following:

- Tizapa and Madero: decreased the consumption of explosives and steel, improved cost and purchasing efficiencies, resulting in annual savings of 844 MM USD.
- Bismark: increased recovery of zinc, implying additional incomes of 370 MM USD.
- Sabinas: cost control for key items, with annual savings of 240 MM USD.
- Velardeña: cost control for key items, with annual savings of 1.5 MM USD.
- Milpillas: increased recovery of copper, with an annual benefit of 1,500 tons.

These savings have already been incorporated to our model.

**Playing along with a market that knows better.** Peñoles share price (Figure 16) evidences how a mature company works in line with the behavior of the global market, adjusting to compensate price variations with operating efficiencies.

Figure 16. Peñoles Share Price



Source: S&P Capital IQ. Company's data

## Valuation

Two different techniques of valuation were applied: a DFCF model based in the forecast of the company's cash flows and a EV/EBITDA analysis using comparable companies. A number of assumptions were used for the projection of the main financial statements, used for the DFCF, with a cost of capital based on the capital structure and risk of the company, particularly regarding the sales and the USD/MXN currency. The multiples analysis was used to incorporate the perspective of the market based in the comparison of similar companies around the world. Additionally, we made a projection of the price of gold using an ARIMA model to obtain a trend, which we find useful since the price of Peñoles stock has a positive correlation with the price of gold since 1991 (Appendix 9).

We highlight the following points of our valuation and analysis:

**Thriving sales in uncertainty times.** Peñoles has a steady 6.47% nominal growth rate, calculated by reconciling the Dupont indicator to equal ROE (Net Income over Capital). This rate is sustained by an increase in the installed capacity of existing mines (such as

**Figure 17. WACC Analysis**

Concept (in MM MXN)	2015	2016
Debt	25,891.04	32,085.25
Average Debt	24,961.77	28,988.14
Financial Expenses	977.53	1,015.33
Cost of debt ( $r_d$ )	3.92%	3.50%
$r_d \cdot (1-t)$	2.74%	2.45%
Risk-Free Rate ( $r_f$ )	4.31%	3.59%
Beta ( $\beta$ )	1.144	1.158
Risk Premium ( $r_m - r_f$ )	12.02%	11.45%
Country Risk	232 BP	304 BP
Cost of Capital ( $r_c$ )	18.06%	16.84%
Debt (MM MXN)	25,891.04	32,085.25
Market Cap (MM MXN)	70,440.65	172,023.53
Debt + Market Cap (D+C)	96,331.69	204,108.77
D/D+C	26.88%	15.72%
C/D+C	73.12%	84.28%
WACC	13.95%	14.58%

Source: Team Estimates

**Figure 18. DFCF Analysis**

DFCF (millions MXN)	2017E
Firm Value	210,167.7
Cash	20,571.1
Total Debt	30,250.4
Equity Value	200,488.4
Weight Avg. Share Out. (000)	397.5
Price estimated	504.4
Current price (20/01/2017)	488.0
Variation (%)	3.36%

Source: Team Estimates

**Figure 19. EV/EBITDA Analysis**

Concept	Value
EBITDA	\$ 20,727.6
EV/EBITDA (x)	11.0
EV	\$ 228,003.1
Total Debt	\$ 30,250.4
Minoritary Interest	\$ 13,534.6
Cash and Temporary Investments	\$ 20,571.1
Shareholder's Value	\$ 204,789.2
Number of Shares Outstanding	397.5
Share Price	\$ 515.2

Source: Team Estimates

Velardeña and Saucito II), the opening of new mines ("San Julián de Fresnillo plc" and "Rey de Plata"), and other potential growth projects.

An estimate annual growth rate for the mines production were defined as follows: 1) Gold: 6%. 2) Silver: 3%. 3) Zinc: 2%. 4) Lead: 2%. 5) Copper: 2%. We consider this growth rate does not reflect an extraordinary upside in proportion to new businesses since Peñoles, as a mature company, expects to behave along with the market's movements.

**Forecasting diversification.** By having diverse kinds of minerals and commodities, Peñoles can distribute and minimize the effects of their prices volatility. Given the complexity and inaccuracy of forecast methods to estimate the price of these metals, we used a conservative approach and employed the current price of metals.

**Dollar appreciation increases revenues.** Peñoles has exposure to the USD/MXN currency as sales are denominated in dollars. We expect that the dollar price at the end of 2017 will increase to a \$23 USD/MXN currency, based on the estimations performed by specialists. One of Peñoles' major export destinations is the United States, its revenues are in US dollars and the costs are in Mexican pesos. This will help the company to increase the EBITDA and the final cash flow at the end of 2017.

**Fair WACC.** To provide a better estimation of the discount rate, the WACC (Figure 17) was structured with the following components: 1) 10-year M bonds as a risk free premium reference in Mexico. 2) a Beta estimation based on the calculation of a 6-year linear regression slope on the logarithmic returns of Peñoles share price and the Composite Total Return Index ("IRTCompMx" for its acronym in Spanish), which represents the return of the stock market as a function of the price variations from a sample of the 60 most representative companies in the Mexican stock market; and consequently adjusting it with the industry's global betas from 2011 onwards (historic US betas were used previous to year 2011). 3) a Mexican average risk premium obtained from the "IRTCompMx" indicator over the 10 year M Bond. 4) a cost of debt based on a ratio of financial expenses over a moving average debt of 2 years (based on monthly interest payments from bonds held to maturity between 2020 and 2023).

**Steady CAPEX.** Considering the historical growth of Capital Expenditures, we calculated an annual increase of 5%, below the growth rate of 6.47% estimated for sales, which reflects the efficiency of current operations and the positive impact of incoming projects. It worth mentioning that Peñoles, in line with the mining sector, requires a high level of CAPEX.

**Heads on Volatility.** Even though the recommendation estimates the stock price to land slightly above the current price, the volatility of the price in 2016, which ranged between 153.2 MXN and 610.05 MXN, complicates providing a close estimate of the stock price. We estimate a continuous improvement on operating efficiency with Peñoles incoming projects that will support sales, compensating on commodity prices volatility.

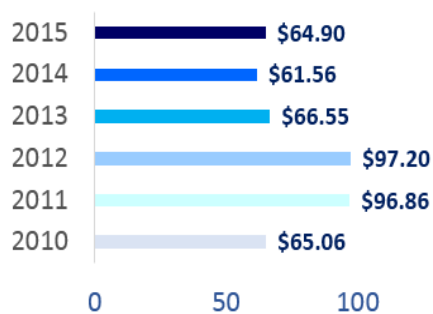
**Multiple with value.** The value of the share price was calculated through the comparable companies method (Figure 19) by obtaining the projections of 2017 EV/EBITDA and of other 9 globally relevant mining companies, where the median of the group is estimated as a multiple of 11x. This estimation contributes to 30% of our integrated valuation.

**Conclusions:** our **HOLD** recommendation is mainly based on the historical behavior of the company's financials and reflecting risks on the time value of money in our projections (Figure 18), considering that it is necessary to keep steady with the current price of the share until the geopolitical environment settles to avoid an unexpected twist in the global mining sector trends.



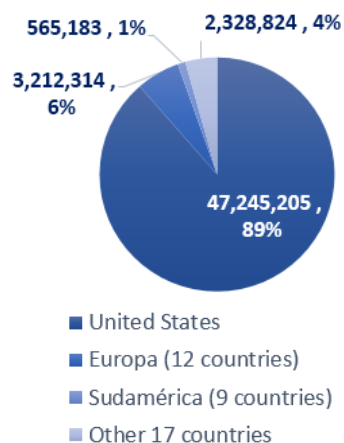
## Financial Analysis

Figure 20. Net Sales (MM MXN)



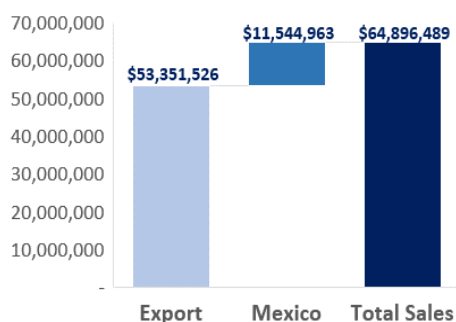
Source: Company's data

Figure 21. Export Sales (in 000's MXN)



Source: Company's data

Figure 22. Total Sales 2015 (in 000's MXN)



Source: Company's data

**Compensating with the strategy.** Sales at the end of 2015 were MXN \$ 64,896 million; an increase of 5.43% compared to the MXN \$ 61,556 million reported in 2014, most of which are from precious metals (Figure 20). The sale of gold in 2015 represented 41.2% of the total, in 2014 they represented 32.6%; achieving a significant annual increase of 33%. We hope that it will not have the same exponential growth of 2016; as Peñoles being a mature company will have a limited growth margin. Sales of silver in 2015 accounted for 27.5% of the total; and reported at the close of fiscal year 2014 was 31.9%, which reflects an annual decrease of 9%. These results were highly supported by an increase in the volume of production in the main projects; in order to compensate for the drop in the international prices of precious metals of the last 3 years.

**Discipline is Key.** The production of ounces of gold in 2015 was 799 thousand ounces compared to the 633 thousand recorded in 2014; representing an important increase of 26%. Production of silver; reported at the close of 2015 was 55 million ounces compared to 54 million ounces reported in 2014, achieving an increase of 1.8%. In the year 2015, the sale of non-ferrous metals (zinc, lead, copper and others) accounted for 31.3% of total sales, compared to 35.4% in 2014, due to lower fluctuations in the international prices of these products.

**Riding Waves of Opportunity.** At the close of 3Q of 2016; sales in 2016 amounted to MXP \$ 60,084 reflecting a 23% increase compared to the same period in 2015. The increase is due to the fact that during 2015 most of the products produced and sold by Peñoles had an increase in prices. Most of the products produced and sold by the company showed significant increases in prices, with the following increases: silver (27.7%), zinc (22.2%), gold (18.8%) and lead (9.3%). Copper was the only product that showed a negative trend when registering a decrease of 9.1%.

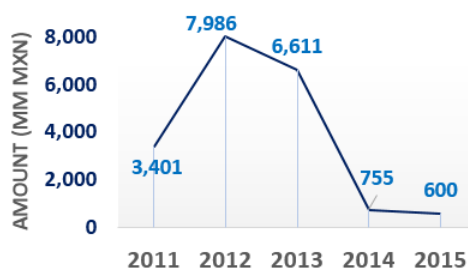
**Satisfying Big Clients.** Export sales during the year 2015 were MXN \$ 53.351 million and represented 82.2% of total sales, by the end of 2014 was 80.9%. The remaining sales were 18.8% and are made in Mexico, to meet domestic demand. Export sales are made to the United States and accounted for 89% of total sales by the end of 2015 and 2014, in Europe it was 6% and 2% respectively.

**Keeping the Machinery Working.** The cost of sales of 2015 at the end of the period was MXN \$ 51,501 and represents 79.36% of total sales; in 2014 the amount was MXN \$ 45,484 representing 73.89% of sales. When comparing these figures; we observed a 13.23% increase in cost. This is due to the exploration in new projects, it demands an increase in the material consumption and the increase of the payroll, which generates a downward pressure on the profit on the gross profit.

At the close of 3Q of 2016; the cost of sales was MXP \$ 54,665 and represented 68.24% of sales; during the same period of 2014 the cost was MXP \$ 50,469 and represented 78.62% of sales. In comparing figures; An important decrease was observed for MXP \$ 4,195, a variation of 8.31%.

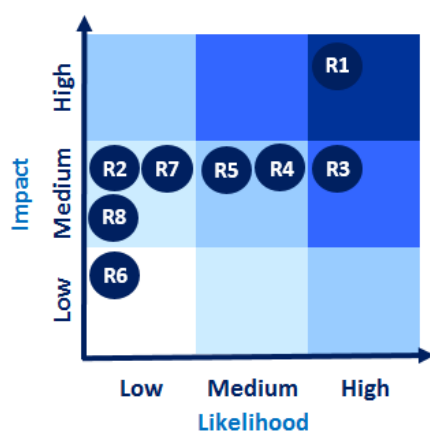
**Income Survival 101 Lessons.** At the end of 2015 Peñoles registered a net loss MXN \$496 and a year earlier registered a net income MXN \$1,713, registered a decrease of MXP \$2,209, with a variation of 129%, as a consequence of the sharp drop in the international prices of precious metals in the last 3 years; thereby limiting sales growth. The net income presented to Q3 of 2016 was MXP \$ 4,522; and in the same period of the previous year, MXP \$ 2,137 was registered. The variation is MXP \$ 2,386 (111.67%) and is due to the fact that during the year the following factors were combined:

Figure 23. Annual Dividends Paid



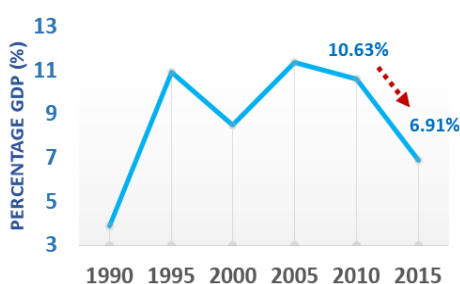
Source: Company's data

Figure 24. Investment Risks Heat Map



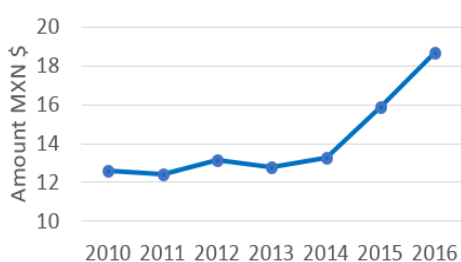
Source: Team Estimates

Figure 25. China Annual GDP Growth



Source: The World Bank

Figure 26. Exchange Rate Average



Source: Banco de México

a significant increase in the prices of the most important products of the company; as well as a favorable exchange rate for the strengthening of the dollar during 2016. Cost of sales remained low, derived from the strategy established by Peñoles.

**A Healthy Debt.** As of December 31, 2015; Peñoles reported a financial debt of MXN \$ 23,872 million, registering an increase of 17% compared to the figure of MXN \$ 20,399 recorded at the end of 2014, due to the need to invest more in strategic assets. Peñoles still maintains an acceptable level of debt; Since it shows a behavior similar to previous years. Peñoles has debt maturities between 2020.

**Hopeful on Compensation.** Based on the dividend policy; Peñoles determines the dividend to be paid by its shareholders based on the results obtained in the last completed and also based on future financing needs. During the last 5 years, the decreed dividends have shown a downward trend (Figure 23).

## Investment Risks

We designed a Heat Map to classify potential risks to Peñoles Financial Health according to our estimations of their possible impact and the likelihood for these events to materialize. Each risk is allocated in the map for its analysis (Figure 24).

### Market Risk

**[R1] - International commodity prices.** A downward variation in commodity prices such as gold, silver, lead and copper, are characteristics of their cyclical nature and influence in a similar way in all companies in the mining-metallurgical sector, could negatively impact the company's sales and profits, and potentially the economic viability of the projects.

**[R2] - Slowdown of the Chinese economy.** China, the world's second largest economy, recorded the slowest growth of its economy in 25 years in 2015. Growth was 6.9% compared to 7.3% a year earlier (Figure X). This fact is a prime factor since the second world economy; it is the world's largest consumer of commodities, this can have a significant impact worldwide. This could again lead to a fall in the price of commodities affecting sales down.

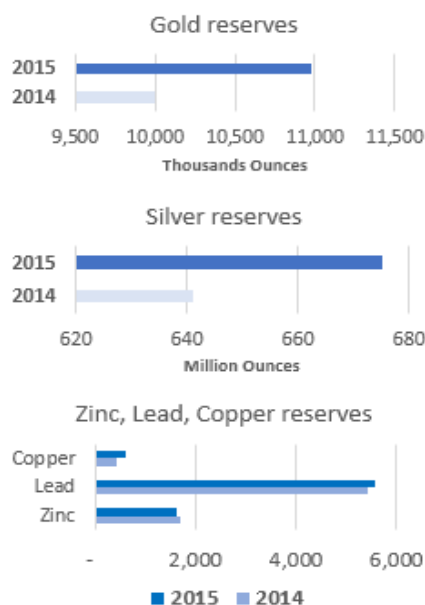
**[R3] - Economic policies implemented by Donald Trump during his mandate.** The new president of the United States, Donald Trump, has stated that through an expansionary fiscal policy, they will rebuild roads and railways throughout the country. Given this, growth in other financial products other than precious metals can be expected. This would significantly pressure down the price.

**[R4] - Exchange rate.** Peñoles performs most of its operations in dollars; therefore, the results may reflect movements in the Mexican peso/US dollar exchange rate. A reverse movement can negatively impact the results. This could materialize if the anti-trade policies proposed by the president of the US doesn't happen as expected.

### Operational Risk

**[R5] - Union relations.** The relationship with the unions has not been cordial in recent years; which represents a risk of union action in some projects. In the "Fresnillo" project (one of the most important mines in Peñoles) there is strong pressure from several mining unions that request to take the work contract, which would have a negative impact on operations, as it would halt the production of metals and result in a decrease in reported sales.

Figure 27. Commodity Reserves 2014-15



Source: Company's data

Figure 28. Peñoles Committees



Source: Annual Report (2015)

**[R6] - Potential actions by the government.** There is a constant risk of creating new regulations (environmental, fiscal or penal), which would negatively impact operations. At the end of 2015; a judicial decision was pending by the Supreme Court of Mexico on the subject that analyzed the merit and ownership of the right of indigenous communities to mining concessions. If there is an adverse decision; would be creating a negative precedent for the mining industry as for the future granting of concessions. This could significantly limit sales; as well as the expansion of the new projects required for the operation.

### Strategic Risk

**[R7] - Projects.** The search for new exploration and development projects entails financial viability risks and uncertainties related to mining projects; such as complicated terrain, fluctuations in the amounts of material initially calculated.

**[R8] - Uncertainty in the calculation of reserves.** Although estimates of proven and probable reserves are considered adequate; the company cannot guarantee that these estimates will not differ from the amounts of mineral resources recovered over time, which could affect Peñoles results.

### Corporate Governance

Peñoles for 128 years has been consolidated as one of the most important Mexican companies in Mexico, it has a diversified structure which contains 13 mines, including the world's largest silver and second gold producer in Mexico; and has more than 20 operating plants, including Met-Mex, which is one of the most important non-ferrous metallurgical complexes worldwide in terms of production. Additionally, Peñoles is in a constant acquisition of stake in various companies such as "Fresnillo" with 75% of ownership, being the largest primary silver mine in the world.

Peñoles jointly with its committees has made the corporate governance system transparent with solid organizational values thanks to the implementation of different internal projects, such as the Anti-Money Laundering programs, a robust Code of Ethics and the Comprehensive Security Program that guarantee that the Peñoles structure is at the forefront as a trusted metals supplier. These values are reflected in an excellent track record of no fraud scandals and an excellent management of labor relations.

One of Peñoles' main objectives is to be recognized by their staff as the best job choice, a clear example is the situation in the Naica mine in January 2015, where activities were suspended at the mining unit indefinitely due to a force majeure, but Peñoles compromised with the community to continue supplying the population with clean water. The 330 workers from the Naica mine were liquidated and re-contracted in the mine of Fresnillo, in order to preserve the workers' source of employment. These decisions were performed in agreement with the "Don Napoleon Gomez Sada (El Frente)" National Mining Metallurgy Union, accomplishing its commitment to maintaining its social and labor compromises.

Peñoles is constantly seeking renewable energy sources and reducing costs, currently with two wind farms in Coahuila and Istmo which supply more clean self-sufficiency energy to Peñoles' operations with renewable sources.

Thanks to all these actions in 2011 Peñoles was chosen to be part of the first sustainable IPC of the Mexican Stock Exchange (BMV) and received the seal of Sustainable Companies endorsed by the Mexican Stock Exchange (BMV).

## Appendices

### Appendix 1: Industry Overview Studies

Figure A1. Gold Supply/Demand



Figure A2. China's GDP Annual Growth

Year	Rate
2010	10.6%
2011	9.5%
2012	7.9%
2013	7.8%
2014	7.3%
2015	6.9%

Source: GFMS, Thomson Reuters

Figure A3. Selected CAGR indicators

Concept	Rate
<b>Mexico KPIs</b>	
Total demand	3.0%
Private sector's demand	2.8%
Exports's demand	4.0%
Mexico GDP	3.8%
<b>Global GDP</b>	
	5.4%

Source: INEGI BIE and World Bank Database

Figure A4. Global Gold Demand and top consumers

Tons	Q3'15	Q3'16	Var
China	233.8	182.5	-22%
India	271.2	194.8	-28%
USA	57.3	43.6	-24%
Rest of world	542.6	571.9	5%
World total	1,104.8	992.8	-10%

Source: Gold Global Survey

**A.** According to PWC's Mine 2016 report, China accounts more than 40% of global copper demand, nearly 70% of global iron ore demand and host 12 of the Top 40 mining companies in world.

**B.** Ernst and Young Mining Risk Study comment about the global mining and metals sector during 2015 and categorize it as some kind of "cycle-correction" of the market, with an extended period of lower and volatile commodity prices, resulting in unprecedented impacts on earnings, balance sheets and investor perceptions of the sector. As a result, mining and metals companies remain focused on margin, cash flow and capital returns. The aforementioned is reflected in a stagnation of Mining industrial activity as well as their lower growth expectations.

**a.** According to several studies 2015 was a challenging year for Mining Industry and some pessimists compared this stage as the ones presented during the Great Recession in 2008 and the Asian Financial Crisis in 1997.

**b.** The negative impact on global commodities, impairments, capital returns, market capitalizations, accounting losses and finally in ratings adjustments due to the demand's contraction

**C.** In the case of gold the "Global Precious Metals Market" Report is considering that pricing has been rising over the last five years (started at 2010) due to the demand for metal (which is exceeding the supply). The report attributed the raising demand because of the dynamics of trading during volatile economic environment.

**a.** The global Gold supply/demand in tons chart shows the period 2014, 2015 and LTM 2016, with their respective average Gold price (USdollar/oz); in this case 2015 level affect Gold prices amounting to \$1,160 dollars which means \$56 dollars below the average of the period, on the other hand the LTM16 period is \$5 dollars above the average.

**b.** The Global's gold Demand in Selected countries shows a decrease in global demand of 10%, the three main drivers of global demand present a contraction of 22%, 28% and 24% in China, India and USA respectively.

**c.** The table "Selected CAGR indicators" to the left shows selected CAGR rates for México's demand (includes Private and Public demand), Private sector, exports and finally Global and Mexico's GDP rate for 1993 to 2015, as it shows the Calculated Gold CAGR of 4.4% is above of any other KPI like total Mexico's Demand or Mexico GDP growth rate. The period considered is since 1994 to 2015.

**D.** Since 1999, Behre Dolbear has annually compiled political-risk assessments in the global mining industry. The 25 countries considered in this survey were ranked based on seven criteria. (Political system, Economic System, Currency Stability, Social License Issues, Permitting, Competitive Taxation and Corruption). Each criterion was rated on a numeric scale that reflects the relative conditions that impact investment growth. A score was calculated from the collective results of all seven criteria; this led the relative rankings. The lower the numerical ranking, the lower the risk.

**E.** Wells Fargo stated on its International Economic Report related to Mexico's Economy that Mining sector is "the worst performing sector" with a 2016 output shrink of 0.5% versus April and 4.7% versus May of last year. In Mexico the most representative mining goods present different perspectives

## Appendix 1: Industry Overview Studies (continued)

- F.** The silver segment has some growth prospects, which are mainly attributed to the expectation of new silver mines due to start at 2018 (source: CAMMIMEX) calculated CAGR is rounding 3.2% from 1985 to 2015. The chart Mexico's production and Peñoles share shows the Peñoles and Fresnillo participation in Mexico's silver production.
- Silver total physical demand rose to a record high of 1,170.5 Moz (36,405 t) in 2015, up 3% from the previous year.
  - The largest silver item contributor to total demand growth was coin and bar investment, which surged 24% last year to reach a record high of 292.3 Moz (9,092 t), on the back of strong North American and Indian purchases.
  - China. All the silver prices quoted on the domestic futures Exchanges in China are inclusive of 17% Value Added Tax (VAT)
- G.** On the other hand, Euromoney Institutional Investor Company comment on its report "Mining Sector: Mexico" that copper output estimation will remain steady at CAGR 2.3% for a forecasted 2018).
- According to U.S. Geological Survey, Mineral Commodity Summaries. In 2015, the COMEX spot copper monthly average price increased to \$2.89 per pound of copper in May from \$2.65 per pound in January. In August, however, it fell to \$2.33 per pound, the lowest month average since June 2009. The decrease in the copper price was in large part owing to reduced demand growth from slower economic growth in China. At the end of August, domestic stocks of refined copper were 12% lower than those at yearend 2014. The International Copper Study Group (ICSG) projected that in 2015, global refined copper production would exceed consumption by about 40,000 tons. Global production of refined copper was projected to increase by 1.0% and consumption was projected to decrease by 1.2%.
- H.** Fresnillo shows an average margin of 43% as of 2015 excluding Soledad Mine which remain suspended as a result of the court ruling to vacate the area at the site of the mine. The chart Gross Margin by Mine shows Peñoles silver current operating mines, the most representative is Saucito amounting a 63% of Margin (Higher production at Saucito accounted for the majority of the growth in the country, supported by the ramp-up at Saucito II, ahead of schedule), the lower performer is the Noche Buena mine with only 14.7%. The less profitable is Fresnillo with a 11.9% margin contraction which means MxP\$141.8 mm pesos.

Figure A5. Mexico's Production and Peñoles Share

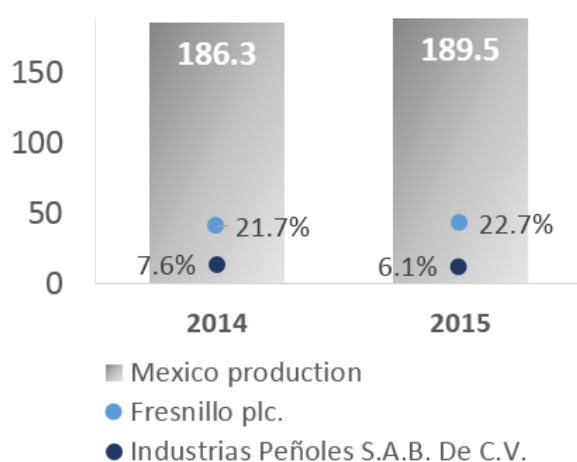
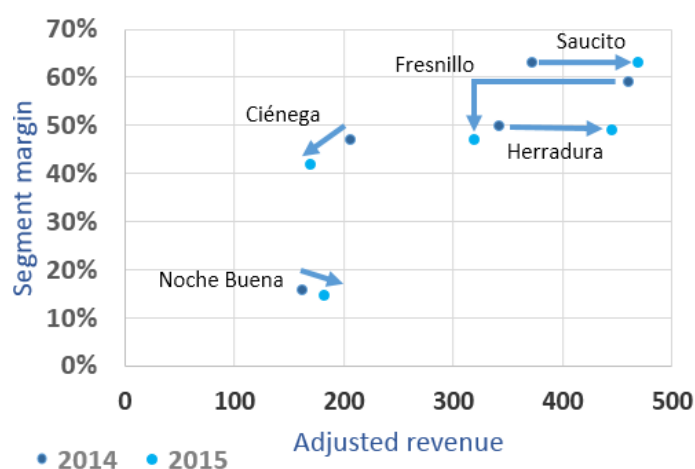


Figure A6. Gross Margin per Mine





## Appendix 2: Key figures and Industrial End Uses

Metal	Uses
Gold	Cutting edge of medicine, environmental management and advanced electronics, as a catalyst it is effective in reducing hazardous vehicular emissions, efficiency of solar cells, gold and palladium catalyst which removes chlorinated compounds from water in laboratory conditions and jewelry
Silver	Contacts in switches and circuit breakers, Silver contacts in membrane switch panels are now standard in control panels for machinery, chemical industry processes, railway traffic controls, silver oxide and zinc batteries have twice the capacity of lead-acid batteries, radiography, the use of photo film to evaluate the internal condition of materials, elevator buttons and jewelry.

Figure A7. World Silver Supply and Demand

(million ounces)	2011	2012	2013	2014	2015
<b>Supply</b>					
Mine Production	757.6	790.8	823.7	868.3	886.7
Net Government Sales	12.0	7.4	7.9	0	0
Scrap	261.5	255.5	192.1	168.3	146.1
Net Hedging Supply	12.2	-47.1	-34.8	16.8	7.8
<b>Total Supply</b>	<b>1,043.30</b>	<b>1,006.60</b>	<b>988.9</b>	<b>1,053.30</b>	<b>1,040.60</b>
<b>Demand</b>					
Jewelry	187.9	185.4	217.8	224.0	226.5
Coins & Bars	210.4	160.5	242.1	236.1	292.3
Silverware	47.2	43.7	58.8	60.7	62.9
<b>Industrial Fabrication:</b>					
Electrical & Electronics	290.8	266.7	266.0	263.4	246.7
Brazing Alloys & Solders	62.7	60.6	63.2	66.1	61.1
Photography	61.2	54.2	50.5	48.5	46.7
Photovoltaic*	75.8	62.9	62.5	63.2	77.6
Ethylene Oxide	6.2	4.7	7.7	5.0	10.2
Other Industrial*	179.4	165.8	169.3	165.1	146.4
<b>Physical Demand</b>	<b>1,121.80</b>	<b>1,004.60</b>	<b>1,137.90</b>	<b>1,131.90</b>	<b>1,170.50</b>
Physical Surplus/Deficit	-78.5	2.0	-149.0	-78.6	-129.8
Silver Price, \$ per oz.	35.12	31.15	23.79	19.08	15.68

Source: WorldSilverSurvey2016

Figure A8. Gold Silver Supply and Demand (tonnes)

	2014	2015	Q1'16	Q2'16	Q3'16
<b>Supply</b>					
Mine production	3,152.5	3,226.1	755.4	791.0	846.8
Net producer hedging	104.5	13.5	52.3	27.4	-15.0
<b>Total mine supply</b>	<b>3,256.9</b>	<b>3,239.6</b>	<b>807.7</b>	<b>818.4</b>	<b>831.8</b>
Recycled gold	1,196.1	1,121.3	363.7	337.7	340.9
<b>Total supply</b>	<b>4,453.0</b>	<b>4,360.9</b>	<b>1,171.4</b>	<b>1,156.1</b>	<b>1,172.7</b>
<b>Demand</b>					
<b>Fabrication</b>					
Jewellery <sup>1</sup>	2,497.4	2,431.6	476.0	448.5	506.8
Technology	348.4	331.1	75.8	79.8	82.4
Sub-total above fabrication	2,845.7	2,762.7	551.8	528.2	589.1
<b>Total bar &amp; coin demand</b>	<b>1,039.1</b>	<b>1,051.6</b>	<b>260.6</b>	<b>213.5</b>	<b>190.1</b>
ETFs & similar products <sup>2</sup>	-183.8	-128.3	342.3	237.1	145.6
Central bank & other inst. <sup>3</sup>	583.9	566.7	108.1	81.3	81.7
<b>Gold demand</b>	<b>4,284.9</b>	<b>4,252.7</b>	<b>1,262.9</b>	<b>1,060.1</b>	<b>1,006.4</b>
Surplus/Deficit	168.1	108.2	-91.5	95.9	166.3
LBMA Gold Price (US\$/oz)	1266.4	1160.06	1,182.6	1,259.6	1,334.8

<sup>1</sup> For an explanation of jewellery fabrication, please see the Notes and definitions section in the full report.

<sup>2</sup> For a listing of the Exchange Traded Funds and similar products

<sup>3</sup> Excluding any delta hedging of central bank options.

Source: World Gold Council

### Appendix 3. Projected Income Statement

Income Statement		For the Fiscal Period Ending								
Concept	2012R	2013R	2014R	2015R	2016E	2017E	2018E	2019E	2020E	2021E
Revenue	97,199.4	66,550.9	61,555.6	64,896.5	91,410.4	103,404.2	111,939.5	121,032.1	130,718.9	141,039.0
Cost Of Goods Sold	68,544.9	48,086.8	45,483.8	51,536.0	64,901.4	82,723.4	89,551.6	96,825.7	104,575.1	112,831.2
<b>Gross Profit</b>	<b>28,654.5</b>	<b>18,464.0</b>	<b>16,071.8</b>	<b>13,360.5</b>	<b>26,509.0</b>	<b>20,680.8</b>	<b>22,387.9</b>	<b>24,206.4</b>	<b>26,143.8</b>	<b>28,207.8</b>
Operating Expenses	8,331.4	8,864.0	9,193.0	8,599.5	8,226.9	10,340.4	11,193.9	12,103.2	13,071.9	14,103.9
<b>Operating Income</b>	<b>20,323.1</b>	<b>9,600.0</b>	<b>6,878.8</b>	<b>4,761.0</b>	<b>18,282.1</b>	<b>10,340.4</b>	<b>11,193.9</b>	<b>12,103.2</b>	<b>13,071.9</b>	<b>14,103.9</b>
Net Interest Exp.	(184.3)	(153.5)	(705.1)	(879.0)	(1,096.9)	(1,240.9)	(1,343.3)	(1,452.4)	(1,568.6)	(1,692.5)
Income/(Loss) from Affiliates	152.8	102.2	23.1	38.5	365.6	413.6	447.8	484.1	522.9	564.2
Currency Exchange Gains (Loss)	30.9	184.8	(640.1)	(268.8)	457.1	517.0	559.7	605.2	653.6	705.2
Other Unusual Items	(211.6)	(402.7)	(776.9)	(80.3)	(5,961.0)	2,745.2	4,404.9	4,895.0	5,434.6	6,028.6
<b>EBT Incl. Unusual Items</b>	<b>20,111.0</b>	<b>9,330.8</b>	<b>4,779.8</b>	<b>3,571.4</b>	<b>11,719.28</b>	<b>12,726.67</b>	<b>15,068.77</b>	<b>16,292.79</b>	<b>17,596.77</b>	<b>18,986.01</b>
Income Tax Expense	5,972.4	3,387.1	3,067.3	4,067.4	4,687.71	3,181.67	3,013.75	3,258.56	3,519.35	3,797.20
<b>Earnings from Cont. Ops.</b>	<b>14,138.6</b>	<b>5,943.7</b>	<b>1,712.5</b>	<b>(496.0)</b>	<b>7,031.6</b>	<b>9,545.0</b>	<b>12,055.0</b>	<b>13,034.2</b>	<b>14,077.4</b>	<b>15,188.8</b>
Minority Int. in Earnings	(4,107.2)	(1,183.0)	(513.4)	(370.0)	(2,461.0)	(3,340.8)	(4,219.3)	(4,562.0)	(4,927.1)	(5,316.1)
<b>Net Income</b>	<b><u>10,031.4</u></b>	<b><u>4,760.7</u></b>	<b><u>1,199.1</u></b>	<b><u>(866.1)</u></b>	<b><u>4,570.5</u></b>	<b><u>6,204.3</u></b>	<b><u>7,835.8</u></b>	<b><u>8,472.2</u></b>	<b><u>9,150.3</u></b>	<b><u>9,872.7</u></b>

## Appendix 4. Projected Balance Sheet

Balance Sheet (Currency in MM MXN)								
Concept	2014R	2015R	2016E	2017E	2018E	2019E	2020E	2021E
<b>ASSETS</b>								
Cash & ST Investments	15,596.7	13,993.7	19,728.9	20,571.1	21,281.3	22,059.3	22,720.5	23,376.6
Receivables	9,538.4	8,170.5	11,508.6	13,018.7	14,093.3	15,238.0	16,457.6	17,756.9
Inventory	13,173.2	16,016.9	20,170.7	25,709.6	27,831.7	30,092.5	32,500.9	35,066.8
Other Current Assets	1,278.4	2,075.3	2,490.3	2,988.4	3,586.0	4,303.3	5,163.9	6,196.7
<b>Total Current Assets</b>	<b>39,586.7</b>	<b>40,256.4</b>	<b>53,898.5</b>	<b>62,287.8</b>	<b>66,792.3</b>	<b>71,693.1</b>	<b>76,843.0</b>	<b>82,397.0</b>
Gross Property, Plant & Equipment	86,981.3	112,350.1	124,414.4	137,081.9	150,382.8	164,348.7	179,012.9	194,410.4
Accumulated Depreciation	(33,192.4)	(47,031.6)	(56,458.9)	(66,846.0)	(78,241.0)	(90,694.2)	(104,258.6)	(118,989.7)
<b>Net Property, Plant &amp; Equipment</b>	<b>53,788.9</b>	<b>65,318.5</b>	<b>67,955.5</b>	<b>70,235.9</b>	<b>72,141.8</b>	<b>73,654.5</b>	<b>74,754.3</b>	<b>75,420.7</b>
Other Assets	5,077.1	5,284.4	9,671.7	4,617.2	2,941.0	1,714.6	(126.9)	(1,973.5)
<b>Total Assets</b>	<b>98,452.6</b>	<b>110,859.3</b>	<b>131,525.8</b>	<b>137,140.9</b>	<b>141,875.1</b>	<b>147,062.1</b>	<b>151,470.3</b>	<b>155,844.2</b>
<b>LIABILITIES</b>								
Accounts Payable	1,887.2	1,820.5	2,292.6	2,922.2	3,163.4	3,420.4	3,694.1	3,985.7
Accrued Exp.	2,278.6	2,290.6	2,336.4	2,383.2	2,430.8	2,479.4	2,529.0	2,579.6
Curr. Port. of LT Debt	2,068.4	205.5	2,774.0	3,025.0	3,342.1	3,684.8	4,055.1	4,454.5
Other Current Liabilities	3,136.8	2,634.1	2,765.8	2,904.1	3,049.3	3,201.8	3,361.9	3,530.0
<b>Total Current Liabilities</b>	<b>9,371.0</b>	<b>6,950.8</b>	<b>10,168.9</b>	<b>11,234.5</b>	<b>11,985.6</b>	<b>12,786.5</b>	<b>13,640.1</b>	<b>14,549.9</b>
Long-Term Debt	20,839.3	24,173.4	24,966.2	27,225.4	30,078.6	33,163.6	36,495.5	40,090.5
Other Non-Current Liabilities	12,299.6	15,741.9	12,178.7	18,013.7	15,521.4	12,604.6	7,826.4	1,832.3
<b>Total Liabilities</b>	<b>42,509.9</b>	<b>46,866.1</b>	<b>47,313.9</b>	<b>56,473.6</b>	<b>57,585.6</b>	<b>58,554.7</b>	<b>57,962.0</b>	<b>56,472.6</b>
<b>Total Common Equity</b>	<b>46,421.1</b>	<b>52,409.1</b>	<b>61,474.1</b>	<b>65,784.1</b>	<b>71,383.1</b>	<b>77,484.9</b>	<b>84,122.3</b>	<b>91,330.5</b>
Minority Interest	9,521.6	11,584.1	16,341.2	17,486.9	18,975.2	20,597.2	22,361.6	24,277.7
<b>Total Equity</b>	<b>55,942.7</b>	<b>63,993.3</b>	<b>77,815.3</b>	<b>83,271.1</b>	<b>90,358.3</b>	<b>98,082.1</b>	<b>106,483.9</b>	<b>115,608.2</b>
<b>Total Liabilities And Equity</b>	<b>98,452.6</b>	<b>110,859.3</b>	<b>125,129.2</b>	<b>139,744.6</b>	<b>147,944.0</b>	<b>156,636.8</b>	<b>164,446.0</b>	<b>172,080.8</b>
			6,396.58 -	2,603.80 -	6,068.83 -	9,574.65 -	12,975.63 -	16,236.64
Days Receivables	55.78398082	45.32423318	45.32423318	45.32423318	45.32423318	45.32423318	45.32423318	45.32423318
Days Inventory	104.2643635	111.8844415	111.8844415	111.8844415	111.8844415	111.8844415	111.8844415	111.8844415
Days Payables	14.93712266	12.71696318	12.71696318	12.71696318	12.71696318	12.71696318	12.71696318	12.71696318
Total Debt	24,032.51	25,891.04	27,740.23	30,250.41	33,420.68	36,848.47	40,550.60	44,545.01

## Appendix 5. Discounted Free Cash Flow

### FREE CASH FLOW

Concept	2015R	2016E	2017E	2018E	2019E	2020E	2021E
Sales	64,896.5	91,410.4	103,404.2	111,939.5	121,032.1	130,718.9	141,039.0
Cost of Good Sold	46,076.5	64,901.4	82,723.4	89,551.6	96,825.7	104,575.1	112,831.2
<b>Gross Income</b>	<b>18,820.0</b>	<b>26,509.0</b>	<b>20,680.8</b>	<b>22,387.9</b>	<b>24,206.4</b>	<b>26,143.8</b>	<b>28,207.8</b>
Operating Expenses	5,840.7	8,226.9	10,340.4	11,193.9	12,103.2	13,071.9	14,103.9
<b>Operating Income</b>	<b>12,979.3</b>	<b>18,282.1</b>	<b>10,340.4</b>	<b>11,193.9</b>	<b>12,103.2</b>	<b>13,071.9</b>	<b>14,103.9</b>
Taxes	3,893.8	5,484.6	3,102.1	3,358.2	3,631.0	3,921.6	4,231.2
<b>Net Operating Income</b>	<b>9,085.5</b>	<b>12,797.5</b>	<b>7,238.3</b>	<b>7,835.8</b>	<b>8,472.2</b>	<b>9,150.3</b>	<b>9,872.7</b>
Depreciation	8,513.1	9,427.3	10,387.1	11,395.0	12,453.2	13,564.4	14,731.1
Capital Expenditures	-11,489.8	-12,064.3	-12,667.5	-13,300.9	-13,965.9	-14,664.2	-15,397.4
Delta Working Capital	-4,062.4	-1,917.8	-2,169.4	-2,348.5	-2,539.3	-2,742.5	-2,959.0
Others							
<b>Free Cash Flow</b>	<b>6,108.8</b>	<b>10,160.4</b>	<b>4,957.9</b>	<b>5,929.9</b>	<b>6,959.6</b>	<b>8,050.5</b>	<b>9,206.4</b>
Free Cash Flow + Terminal Value		10,160.4	4,957.9	5,929.9	6,959.6	8,050.5	326,391.3

Concept	2015R	2016E
<b>Enterprise Value</b>	<b>\$ 193,588.3</b>	<b>\$ 210,167.7</b>
<b>Total Debt</b>	<b>\$ 27,740.2</b>	<b>\$ 30,250.4</b>
<b>Cash and Temporary Investments</b>	<b>\$ 19,728.9</b>	<b>\$ 20,571.1</b>
<b>Equity Value</b>	<b>\$ 185,576.9</b>	<b>\$ 200,488.4</b>
<b>Outstanding Shares Number</b>	<b>\$ 397.5</b>	<b>\$ 397.5</b>
<b>Share Price</b>	<b>\$ 466.9</b>	<b>\$ 504.4</b>

<b>Terminal Value (up to 2021)</b>	<b>317,184.9</b>
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<b>WACC</b>	<b>14.58%</b>
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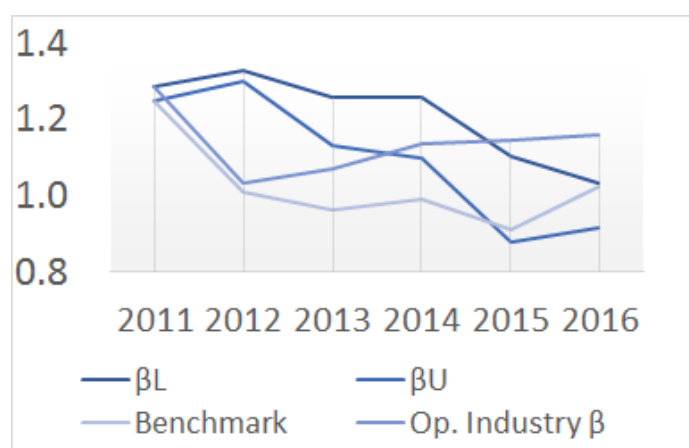
	2015R	2016E	2017E	2018E	2019E	2020E	2021E
<b>Delta Working Capital / Sales</b>	<b>-6.26%</b>	<b>-2.10%</b>	<b>-2.10%</b>	<b>-2.10%</b>	<b>-2.10%</b>	<b>-2.10%</b>	<b>-2.10%</b>
<b>EBITDA</b>	<b>21,492.4</b>	<b>27,709.4</b>	<b>20,727.6</b>	<b>22,588.9</b>	<b>24,556.4</b>	<b>26,636.3</b>	<b>28,835.0</b>
<b>EV/EBITDA</b>	<b>11.07420117</b>	<b>7.875083908</b>	<b>9.972057756</b>	<b>9.52918647</b>	<b>10.1748328</b>	<b>7.84610387</b>	<b>11.0000</b>

## Appendix 6. Beta Coefficient

Using the monthly logarithmic returns for Peñoles Share Price and for the IRT, the following calculations were performed for obtaining the Beta:

#	Start	Year	Covariance	Variance	$\beta_L$	$r^2$	Debt (D) MXN	Capital (C) MXN	D/C	$\beta_U$	Benchmark	Op. Industry $\beta$
1	1997	2003	0.004	0.008	0.52	3.37%	5,414,798,050.00	20,195,742,705.00	0.27	0.44	0.80	0.95
2	1998	2004	0.004	0.007	0.57	6.30%	5,739,091,930.00	23,848,544,820.00	0.24	0.48	0.85	0.99
3	1999	2005	0.002	0.004	0.52	8.05%	6,861,992,533.00	23,447,094,316.00	0.29	0.43	0.90	1.08
4	2000	2006	0.003	0.004	0.81	16.50%	10,695,789,205.00	39,389,846,528.00	0.27	0.68	0.96	1.14
5	2001	2007	0.002	0.003	0.86	16.18%	9,700,739,000.00	91,407,497,538.00	0.11	0.80	0.99	1.06
6	2002	2008	0.004	0.003	1.28	28.53%	11,087,812,000.00	67,066,082,791.00	0.17	1.15	1.39	1.55
7	2003	2009	0.004	0.004	1.28	31.41%	8,104,703,000.00	110,832,137,290.00	0.07	1.22	1.08	1.14
8	2004	2010	0.004	0.003	1.29	33.30%	8,359,902,000.00	178,919,732,750.00	0.05	1.25	1.21	1.25
9	2005	2011	0.004	0.003	1.28	30.71%	10,407,308,000.00	243,052,444,530.00	0.04	1.25	1.25	1.29
10	2006	2012	<b>0.004</b>	<b>0.003</b>	<b>1.33</b>	<b>34.41%</b>	7,493,403,000.00	258,728,887,990.00	<b>0.03</b>	<b>1.30</b>	1.01	1.03
11	2007	2013	0.003	0.003	1.26	31.03%	20,719,161,000.00	128,853,687,660.00	0.16	1.13	0.96	1.07
12	2008	2014	0.003	0.003	1.26	23.39%	24,032,505,000.00	114,675,727,760.00	0.21	1.10	0.99	1.14
13	2009	2015	<b>0.002</b>	<b>0.002</b>	<b>1.10</b>	<b>13.58%</b>	25,891,043,000.00	70,440,651,883.00	<b>0.37</b>	<b>0.88</b>	0.91	1.14
14	2010	2016	0.001	0.001	1.03	5.55%	32,085,246,000.00	172,023,528,540.00	0.19	<b>0.92</b>	1.02	1.16

Note: From 2011 on, Global Betas are used as a Benchmark, instead of US Betas





## Appendix 7. Mexican Risk Premium

The Mexican Risk Premium was calculated using monthly logarithmic returns for our risk-free rate (the 10 year Mexican Bond M) and using as a reference both the IRTCompMx and IRT rates.

### Annual Closing Price

Date	Mex_Bono 10	IRT CompMx	IRT
2001	109.88		6,372.28
2002	124.46		6,160.62
2003	145.58		9,047.42
2004	153.83	100.00	13,546.81
2005	181.77	137.47	19,115.61
2006	206.85	207.27	28,872.03
2007	215.46	239.41	32,963.78
2008	237.50	182.15	25,535.78
2009	260.38	269.69	37,325.45
2010	112.86	330.22	45,390.19
2011	127.20	326.82	44,409.91
2012	148.10	397.96	53,162.78
2013	150.19	407.42	53,151.13
2014	167.87	417.47	54,209.65
2015	175.26	427.43	55,001.82
2016	181.67	466.39	60,329.18

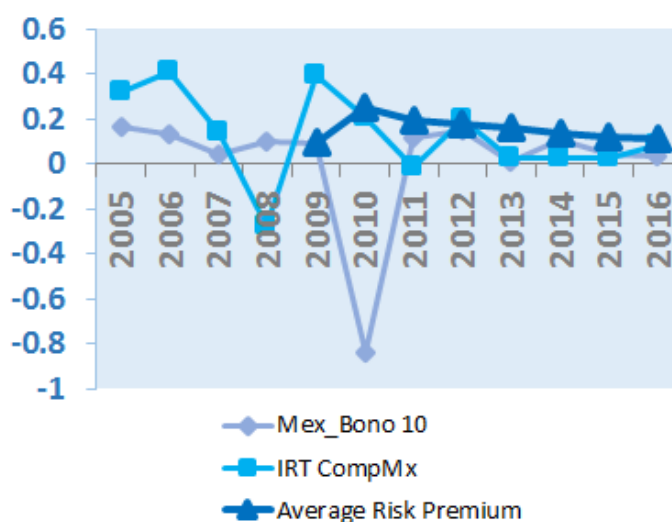
### Logarithmic Returns

Mex_Bono 10	IRT CompMx	IRT
12.465%	0.000%	-3.378%
15.670%	0.000%	38.430%
5.512%	0.000%	40.367%
16.694%	31.824%	34.435%
12.922%	41.062%	41.237%
4.078%	14.416%	13.254%
9.741%	-27.335%	-25.533%
9.195%	39.244%	37.959%
-83.598%	20.249%	19.562%
11.962%	-1.035%	-2.183%
15.210%	19.694%	17.990%
1.402%	2.349%	-0.022%
11.128%	2.437%	1.972%
4.312%	2.358%	1.451%
3.589%	8.723%	9.245%

### Difference

IRT vs Mex_Bono 10	IRTCompMx vs Mex_Bono 10
-0.158429864	
0.227600404	
0.348549279	
0.177418433	0.151299775
0.283143808	0.28139236
0.091752802	0.103371997
-0.352737895	-0.370756158
0.287641628	0.300489463
1.03159569	1.038461035
-0.141453474	-0.129969653
0.027800688	0.044846741
-0.014242174	0.009470084
-0.091555731	-0.086907212
-0.028611902	-0.019541394
0.05656234	0.051344377

Average Risk Premium	IRT	IRT CompMx
Average 2009	11.31%	9.32%
Average 2010	21.52%	25.07%
Average 2011	17.95%	19.63%
Average 2012	16.57%	17.74%
Average 2013	15.07%	15.87%
Average 2014	13.21%	13.42%
Average 2015	12.06%	12.02%
Average 2016	11.63%	11.45%



## Appendix 8. Valuation by Comparable Companies

Millions of USD

### Peers Analysis (Diversified Metals and Mining)

Company Name	Country	Total Revenues	EBITDA	EV	TEV/EBITDA
HudBay Minerals Inc. (TSX:HBM)	Canada	1,149	386	2,387	6.3x
Hindustan Zinc Limited (BSE:500188)	India	1,911	819	11,790	14.4x
Nyrstar NV (ENXTBR:NYR)	Switzerland	3,142	611	1,392	2.3x
Teck Resources Limited (TSX:TECK.B)	Canada	5,812	1,098	17,566	16.0x
Sumitomo Metal Mining Co., Ltd. (TSE:5713)	Japan	6,498	651	10,155	15.6x
Norilsk Nickel (LSE:MNOD)	Russia	7,478	3,379	30,275	9.0x
Grupo México S.A.B. de C.V. (BMV:GMEXICO B)	Mexico	8,137	3,448	26,933	7.9x
Anglo American plc (LSE:AAL)	United Kingdom	18,844	3,221	33,350	11.5x
Rio Tinto Limited (ASX:RIO)	Australia	32,359	8,453	94,754	11.0x

Minimum	2.3x
Maximum	16.0x
Median	11.0x
Average	10.4x
Std. Deviation	4.6x

EBITDA 2017E	20,727.6
EV/EBITDA Peers Median	11.0x
<b>Enterprise Value</b>	<b>228,003.6</b>
Cash and Equivalents 2017E	20,571.0
Total Debt 2017E	30,250.4
Minority Part	13,534.6
<b>Equity Value</b>	<b>204,789.6</b>
Weighted Avg. Basic Shares Out.	397.5
<b>12M FWD Share Price Estimated</b>	<b>515.2</b>
<b>EV/EBITDA Peers Median</b>	<b>11.0x</b>
<b>EV/EBITDA Industrias Peñoles</b>	<b>7.9x</b>

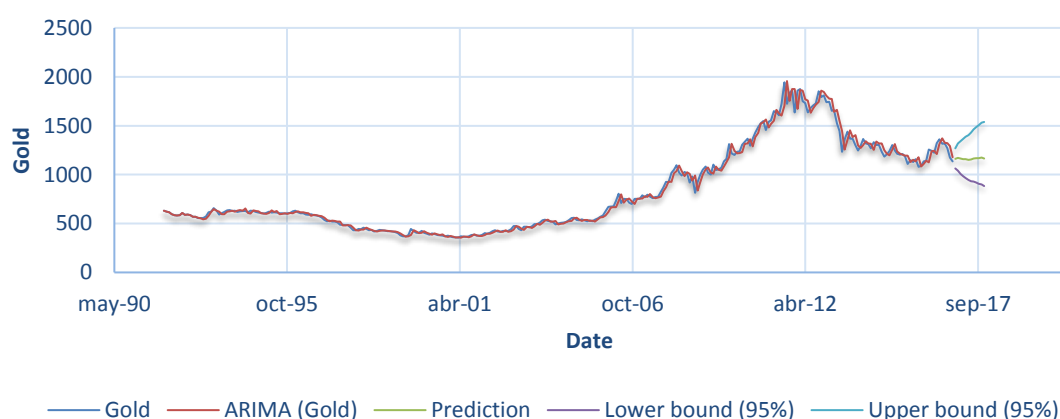
Source: Capital IQ, Company's Data, Team Estimates

## Appendix 9: Statistical Analysis

For this analysis, we took the monthly prices of gold from December 1991 to December 2016. We used the ARIMA model to project the monthly prices from January 2017 to December 2017. The ARIMA model is based on time series, it uses the temporality, trend and seasonality of the data history, the results are the following:

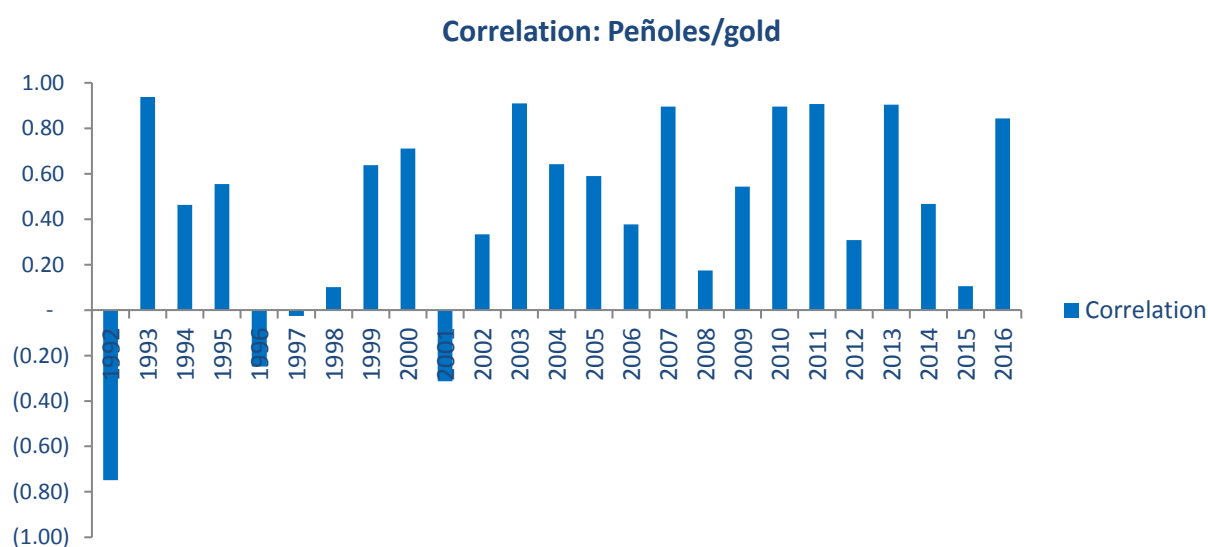
Observations	288
DF	284
SSE	0.11
MSE	0.0003
RMSE	0.0194

### ARIMA (Gold)



The price of gold that we projected for December 2017 is 1,165.56 this meaning that the price of gold is going down at the end of 2017.

The following chart shows the correlation that gold have had from 1991-2016.



Using this information, the average correlation from 2012-2016 is 0.53.

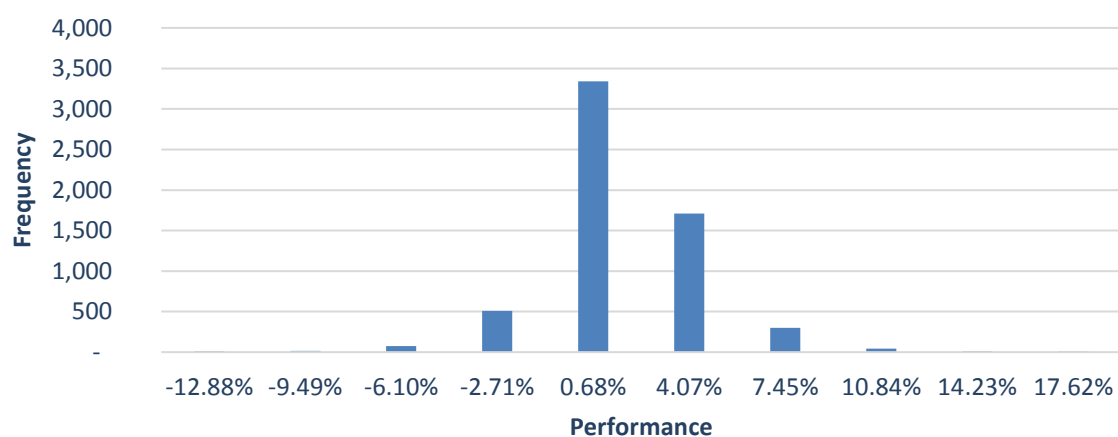
## Appendix 10. Statistical Analysis of Peñoles Share Performance

### Daily prices (1991-2016)

Average	0.09%
Standard Deviation	2.67%
CV	28.79
Skew	0.041
Kurtosis	5.044

	Probability table				Average	Variance
Market		Performance	Frequency	Probability	Performance x Probability	(Performance- Avg)^2 x Probability
Rise	>= +.005	2.47%	2,252	37.38%	0.92%	0.02%
Stable	(-.005,+.005)	-0.01%	1,649	27.37%	0.00%	0.00%
Low	<= -.005	-2.35%	2,124	35.25%	-0.83%	0.02%
					Total	6,025
					100%	
					0.09%	0.04%
					Standard Deviation	2.05%
					CV	22.14

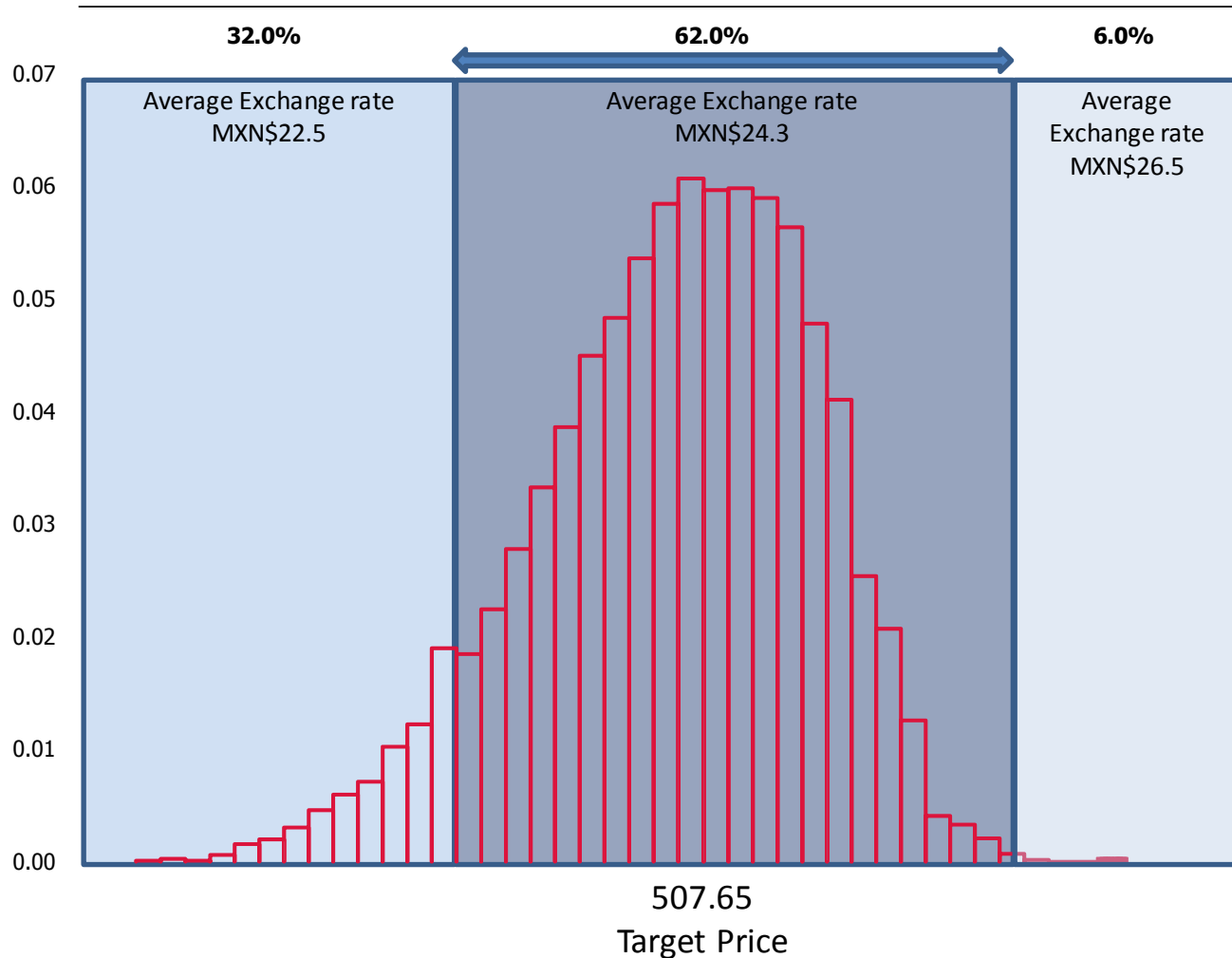
### Frequency analysis of Peñoles performance



Appendix 11. Simulation

# 12M FWD Share Price Scenarios

PROBABILITY FOR THE NEXT 5 YEARS (2017 – 2021)





## Appendix 12. Debt Structure

Stock certificates were issued through 3 issues.

On September 7, 2010, the following two issues were carried out:

- Peñoles 10D, for US \$ 130 million to five years with interest payable monthly at variable rate (monthly LIBOR) plus rate of 1.78%.
- Peñoles 10-2D, for US \$ 400 million to ten years with interest payable semi-annually at a fixed rate of 5.15% (Can be pre-paid for 5 years in exchange for a premium).

In both cases the principal is payable at maturity.

The third issue was held on June 22, 2012; as an extension of those issued in 2010:

- Peñoles 12D, for US \$ 200 million to 10 years payable at maturity, with a semiannual interest payment at a fixed rate of 4.26%. (Can be pre-paid as of the 5th year in exchange for a premium)

The unsecured bonds were issued by Fresnillo plc, on the international market on November 7, 2013, with a 10-year term, with partial payment of principal at maturity, semi-annual interest at a fixed rate of 5.50% net of taxes and without guarantees.

None of the bonds incorporate financial covenants.

At the close of 2016, the debt of the issuer is at a ratio of XX% and the share of the capitalization of XX%, the main idea of these proportions is that the company uses a greater amount of capital for the operations.

The stockholders' equity at the end of 2016 was Ch \$ 63,993 million, an increase of 14.39% compared to the previous year of Ch \$ 55,943 million, the increase was due to the adjustment of property, plant and equipment conversion.

### DEBT RATING

#### PEÑOLES

Rating Agency	S&P		
Credit Rating	BBB	mxAAA	BBB/mxAAA
Scale	Global - long term	Local - long term	Issuance of exchange traded bonds
Outlook	stable	stable	stable

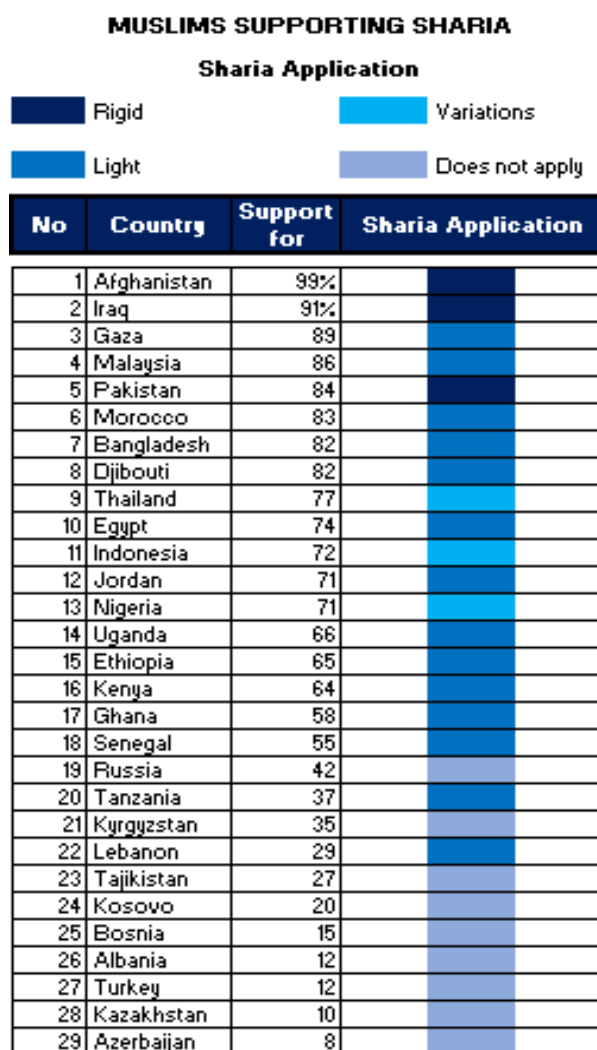
Rating Agency	Moody's	
Credit Rating	Baa3	Baa3/Aa2.mx
Scale	Global, local currency	Issuance of exchange traded bonds
Outlook	stable	stable

#### FRESNILLO

Rating Agency	S&P	
Credit Rating	BBB	Baa2
Scale	Global - long term	Global foreign currency
Outlook	stable	stable

## Appendix 13. Shariah Gold Standard

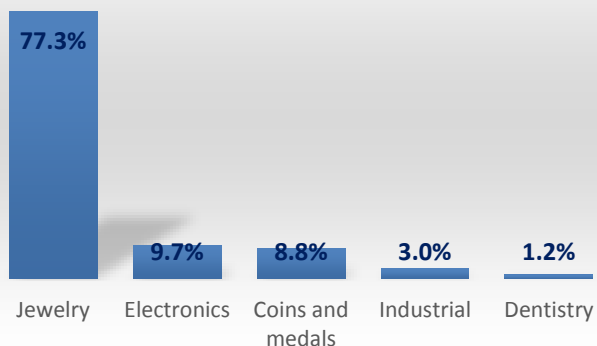
On January 1, 2017, the Accounting and Auditing Organization of Islamic Financial Institutions (AAOIFI); Has approved a set of rules will be known as the Shariah Gold Standard that will take effect and this would lead to increased demand for gold. The Islamic population accounts for 25% of the world's population.



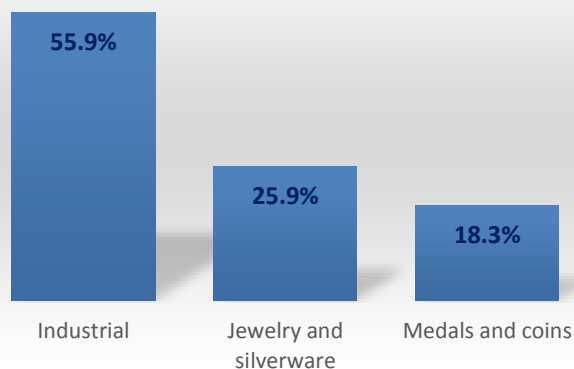
*Source: Pew Research*

## Appendix 13. Global Main Uses of Commodities (Percentage of total sales)

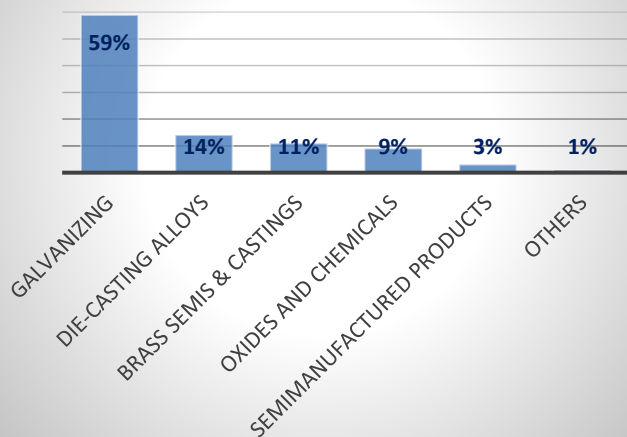
### Uses of gold



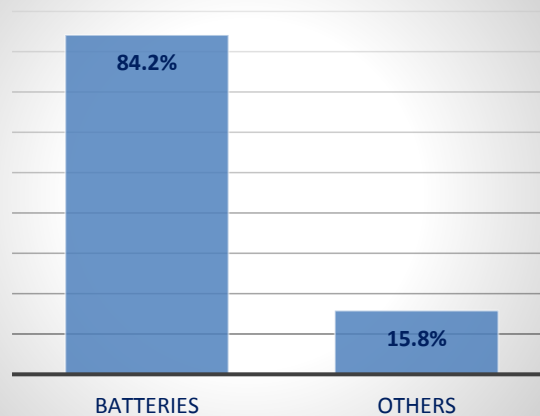
### Uses of silver



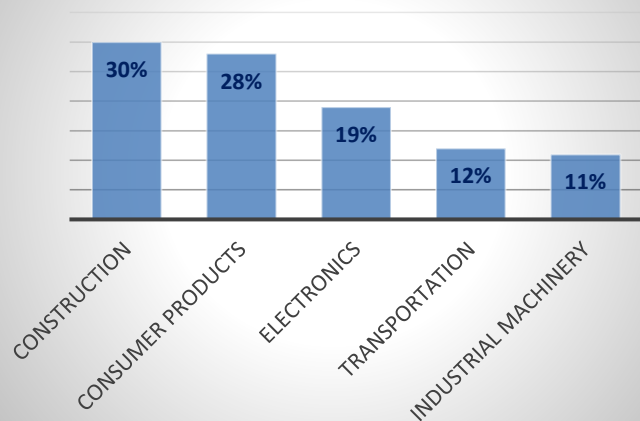
### Uses of zinc



### Uses of lead



### Uses of copper



Source: Annual Report (2015)

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