

A low-angle, upward-looking photograph of several modern skyscrapers with glass facades, reaching towards a pale, overcast sky. The perspective creates a sense of height and scale. The buildings are dark, and some windows are illuminated from within.

# MARKET RISK

---

Group 4



# Meet Our Team

---



Fiana  
Quiroz Caro

Economía  
Pública

UNMSM



Jossue  
Cueto Ninaja

Administración

UNJBG



Leslie  
Surco Rajo

Economía

UNDAC



Gabriel  
Ramos Obregon

Economía  
Internacional

UNMSM



Mishell  
Condori Diaz

Ingeniería  
Económica

UNAP





01





# **Executive Summary**

# Executive Summary


## Macroeconomic Environment


Slowdown in economic growth


Preference for long-term bonds


-  Inflation rate
-  Monetary policy rate
-  High return for 1y equity
-  Attractive view for commodities.

## Investment Strategy




 **Profile:** Moderate

 **Duration:** 5 years

 **Issuers:** Latin American




 **Strategy:** Mixed

## Portfolio

- Equity
-  Unacem
  -  WEG
  -  Engie
  -  Petrobras
  -  Alpek
  -  Embraer
- Fixed Income
-  Gloria
  -  Telefónica
  -  MiBanco

## Portfolio Risk Factors

- Equity
- Fixed Income

-  Price
-  FX
-  Rate

## Risk Quantification

- VaR -2.776%
- CVaR -3.735%
- Stress VaR -26.7114%

## Risk Mitigation Strategy

- Stop - Loss
- Designation of appetite, tolerance and total return
- Average risk appetite threshold



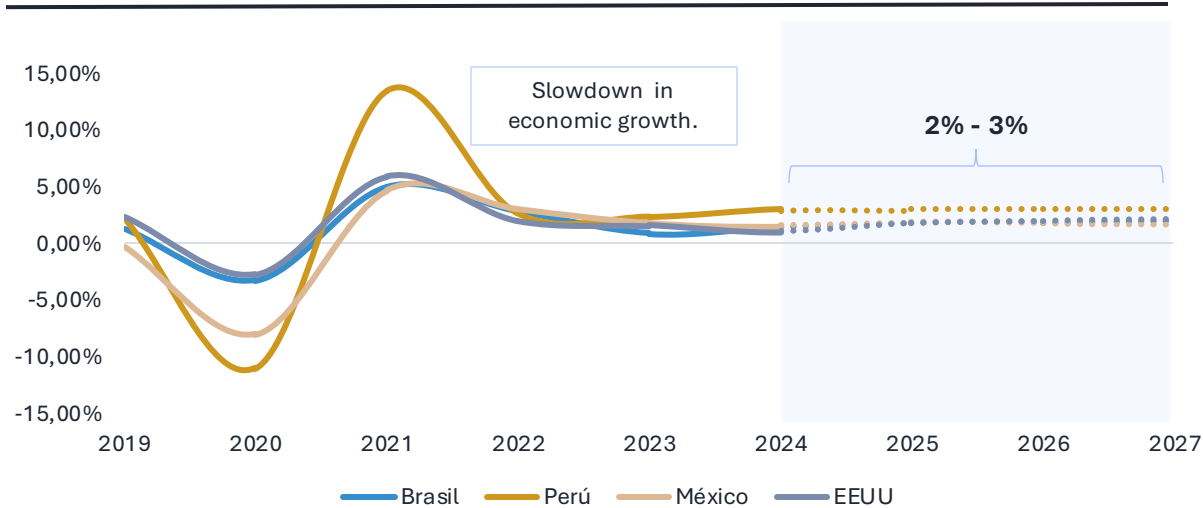


02

# **Macroeconomic Environment**

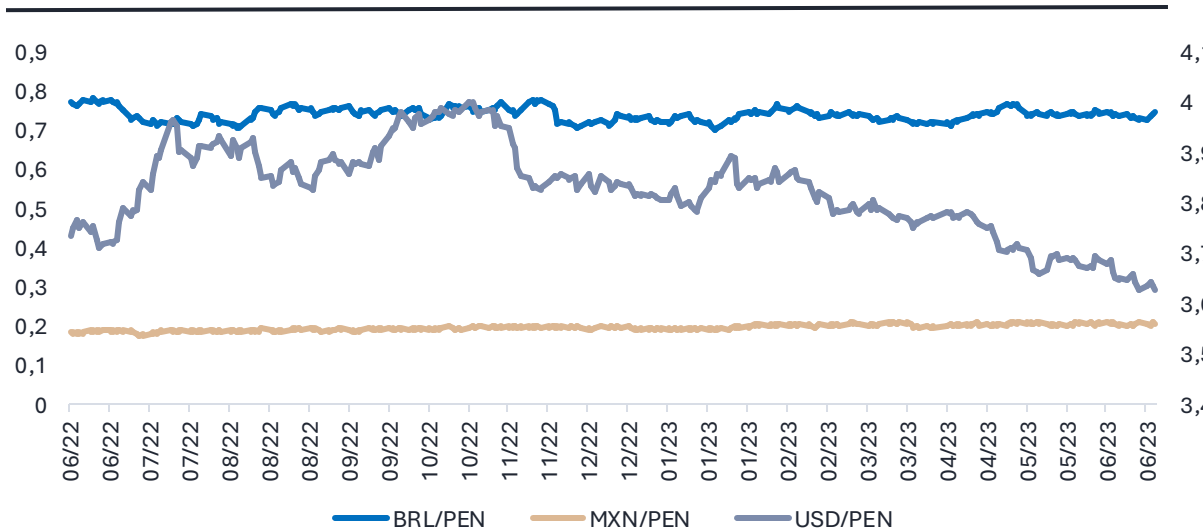
# LatAm: Optimistic outlook for key macroeconomic indicators

## Economic growth (annual % change)



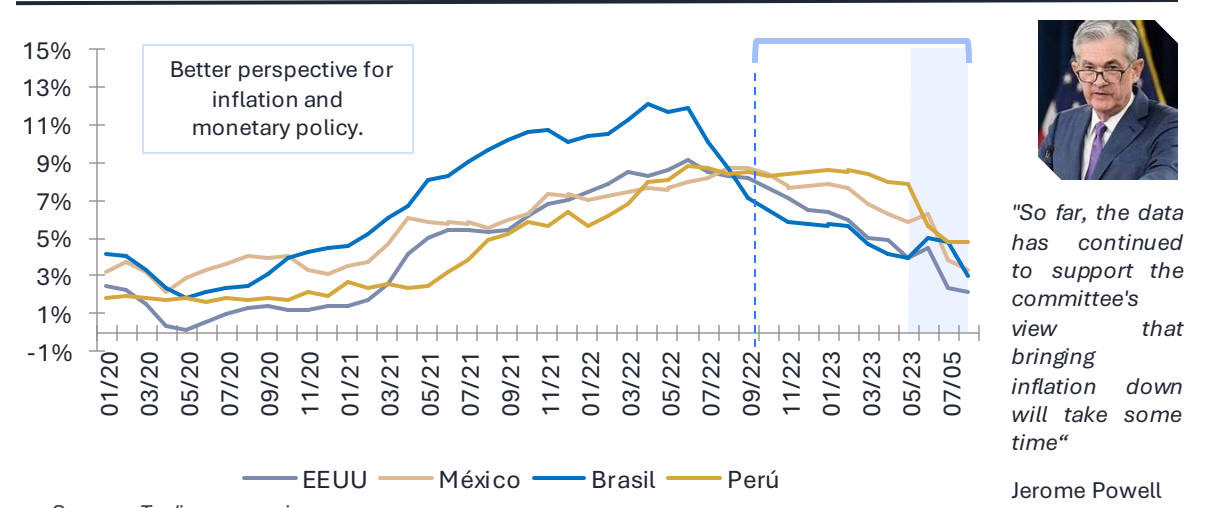
Source: WEO

## Exchange Rate (soles)



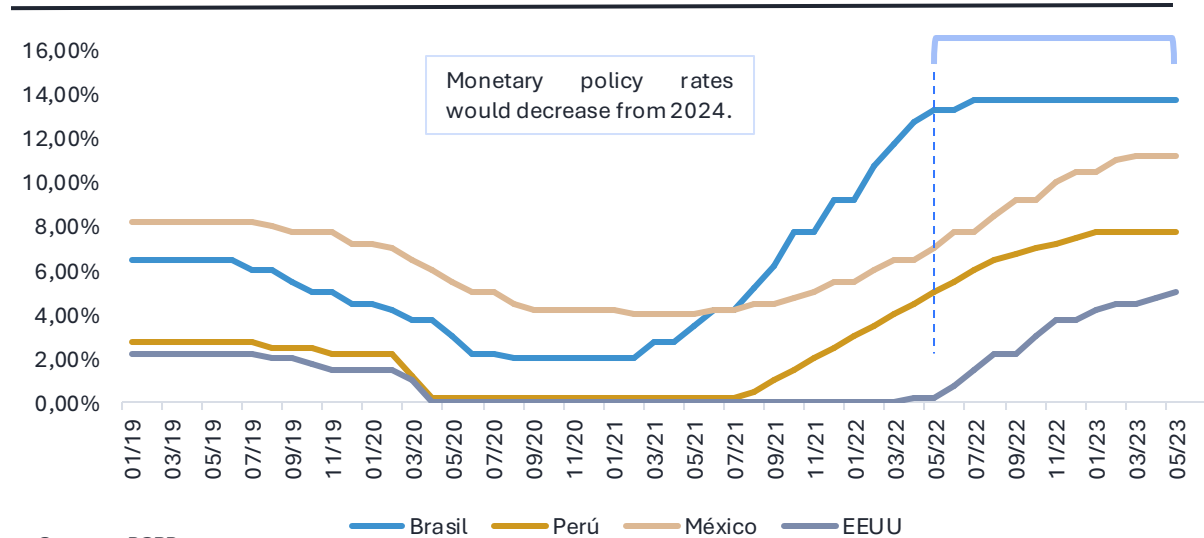
Source: BCRP

## Inflation



Source: Trading economics.

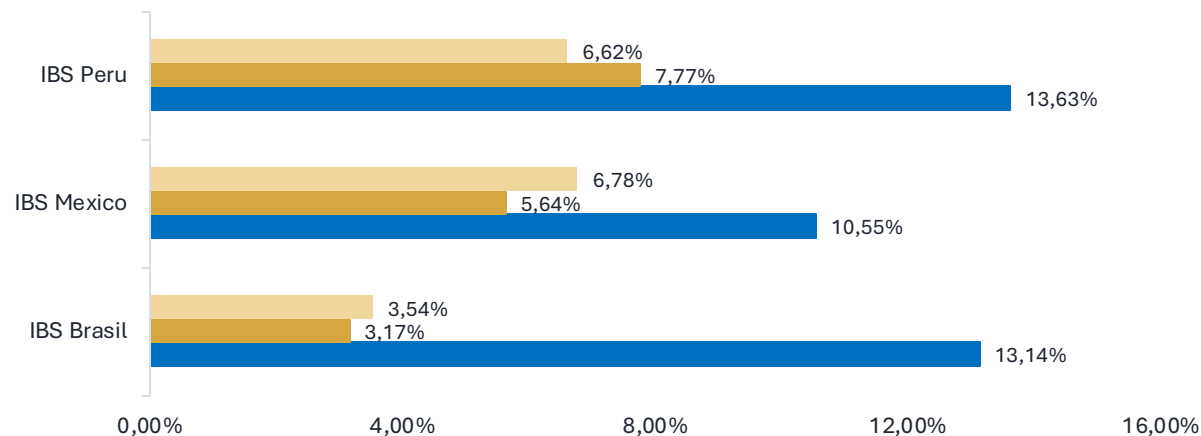
## Monetary Policy Rate



Source: BCRP

# Financial Market Behaviour

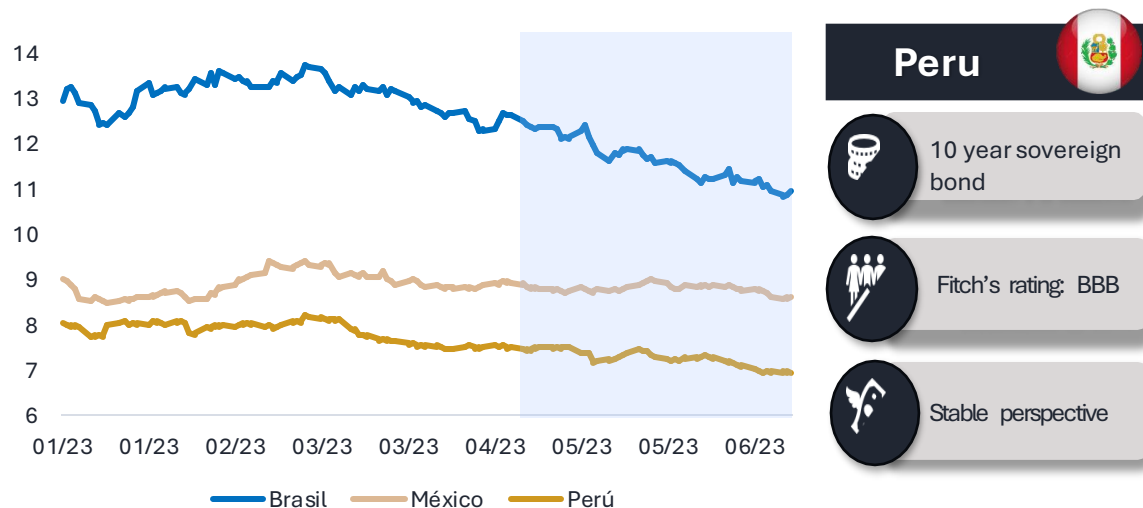
## Sovereign Bond Indexes (Rate of Return)



Source: S&P Dow Jones Índices

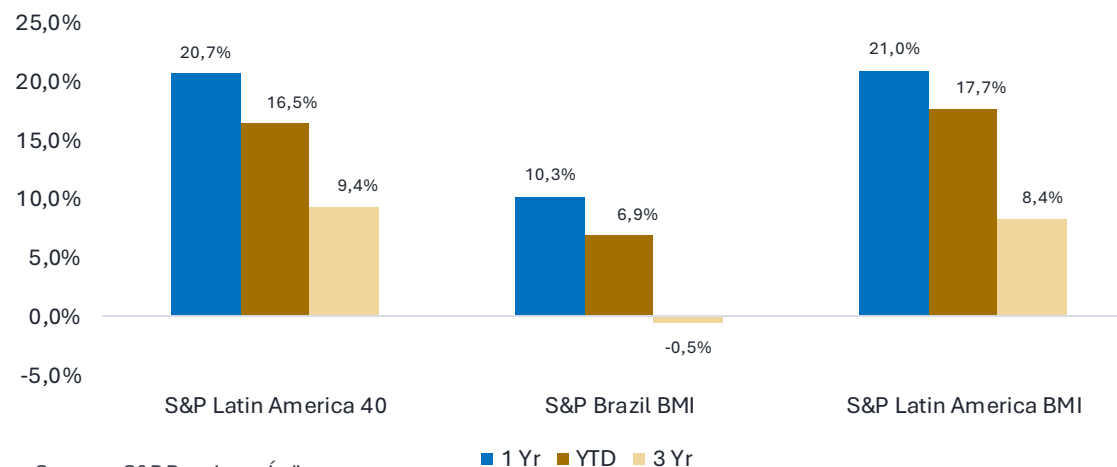
5 Yr YTD 1 Yr

## 10-Year Sovereign Bond Yield - Peru



Source: Bloomberg.

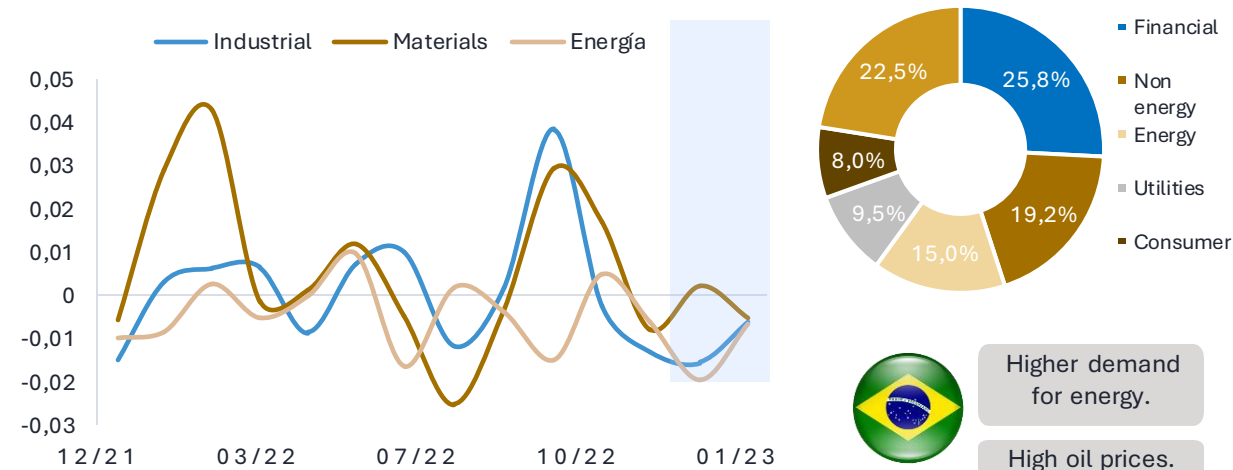
## Equity Benchmark Indexes (Rate of Return)



Source: S&P Dow Jones Índices

1 Yr YTD 3 Yr

## Equity Sectorial Index Brazil (Rate of Return)



Source: Bloomberg.



03

# **Portfolio Overview and Risk Factors**



# Portfolio Overview

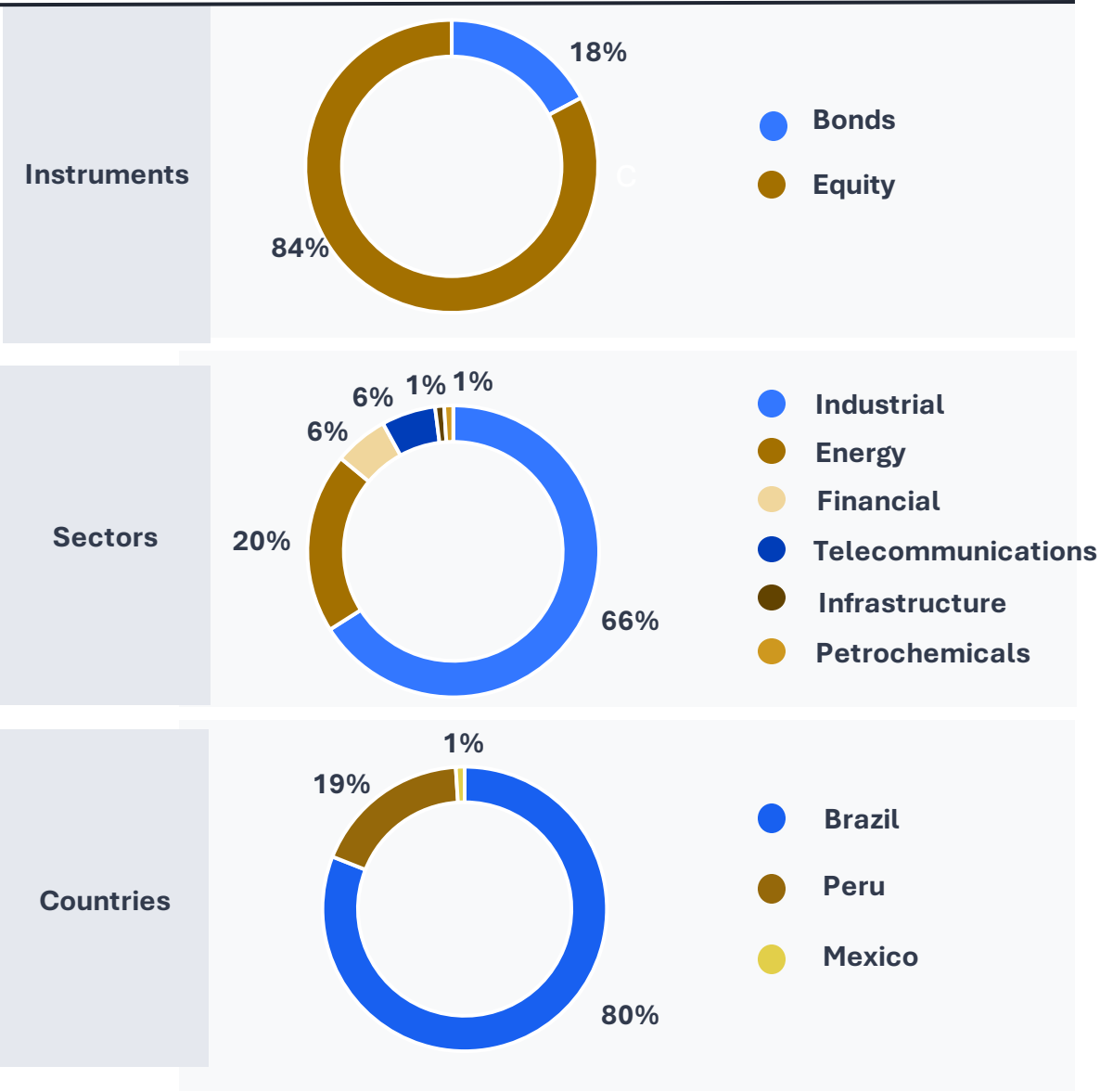
## Equity Strategy (84%)

Cyclical			Defensive		
Industrial			Energy	Infraestructure	Petrochemicals
Embraer	WEG	Petrobras	Engie	UNACEM	Alpek
42%	14%	4%	20%	1%	1%
AAA (bra)	-	AAA (bra)	AAA (bra)	AA+ (pe)	-
Bb+	-	Bb-	Bb	-	Bb-
Stable		Stable	Stable	Stable	Stable

## Fixed Income Strategy (18%)

Telecommunications	Industrial	Financial
Telefónica	Gloria	MiBanco
6%	6%	6%
AA (pe)	AA (pe)	AAA (pe)
MY: 1,6	MY: 11,9	MY: 8,8
Cupón: 8.5	Cupón: 3.5	Cupón: 4.5

## Portfolio



## Highlights



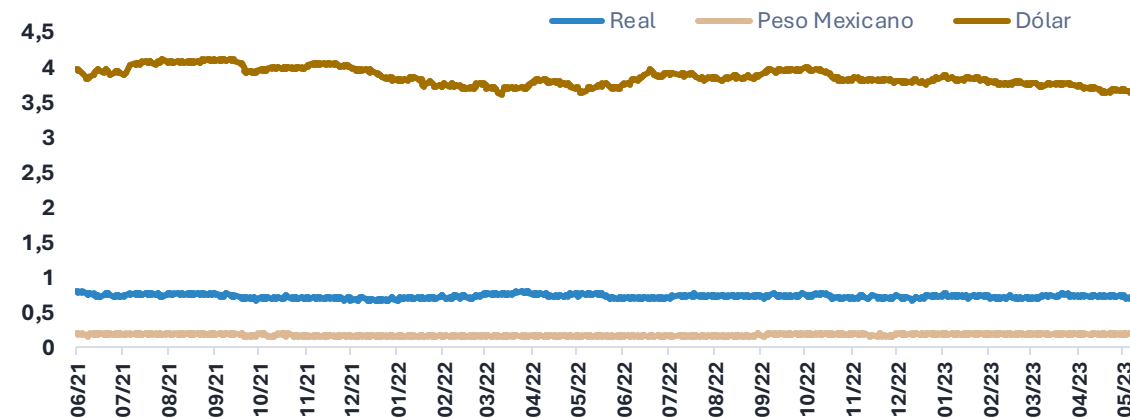
Source: S&P country risk rating

## Sovereign Curve



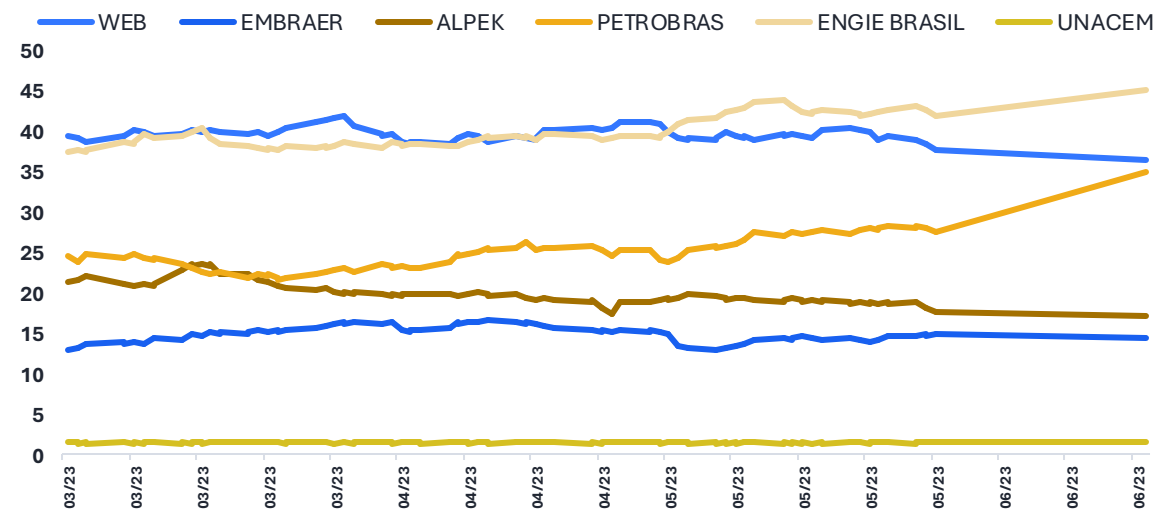
Source: Superintendencia de Banca, Seguros y AFP

## Exchange Rate Risk



Source: Superintendencia de Banca, Seguros y AFP

## Equity Price Risk





**04**

# **Risk Quantification**

# Portfolio's historic VaR



## Consideraciones:

Enfoque:	VaR Histórico
Nº de observaciones:	522
Nivel de Confianza:	99%
Equity:	Riesgo de tipo de cambio y Riesgo de volatilidad de precio
Fixed Income:	Riesgo de tasa
Analysis time:	Análisis desde 31/05/2021 al 31/05/23

Equity	Moneda	Cantidad	Costo	Valor de Mercado	Utilidad %
WEGE3	BRLpen	788	S/23.972,54	S/22.034,87	-8,083%
ERJ	USDpen	-1206	- S/61.099,29	-S/65.862,77	7,796%
ALPEKA	MXNpen	382	S/1.506,80	S/1.407,96	-6,559%
PETR3	BRLpen	-284	-S/5.538,66	-S/5.831,86	5,294%
ENGIE3	BRLpen	1012	S/31.625,53	S/31.624,30	-0,004%
UNACEMC1	PENpen	1223	S/1.966,97	S/1.932,34	-1,761%

## Equity

	VaR Precio	VaR TC	VaR Precio	VaR	CVaR %	CVaR
Total	-4,65%	-0,93%	-5,57%	-S/7.172,98	-6,45%	-S/8.295,23
WEGE3 BZ	-4,64%	-1,20%	-5,85%	-S/1.288,77	-6,45%	-S/1.422,03
ERJ US	-8,17%	0,16%	-8,01%	-S/5.275,20	-10,30%	S/6.785,40
ALPEKA MF	-4.59%	-0,17%	-4,76%	-S/67,01	-7,27%	-S/102,32
PETR3 BZ	-7,03%	-0,86%	-7,90%	S/460,51	-9,76%	S/569,46
EGIE3 BZ	-2,75%	-1,94%	-4,69%	-S/1.484,30	-5,56%	-S/1.759,47
UNACEMC1 PE	-6,90%	-0,00%	-6,90%	-S/133,34	-9,38%	-S/181,28

## Fixed Income

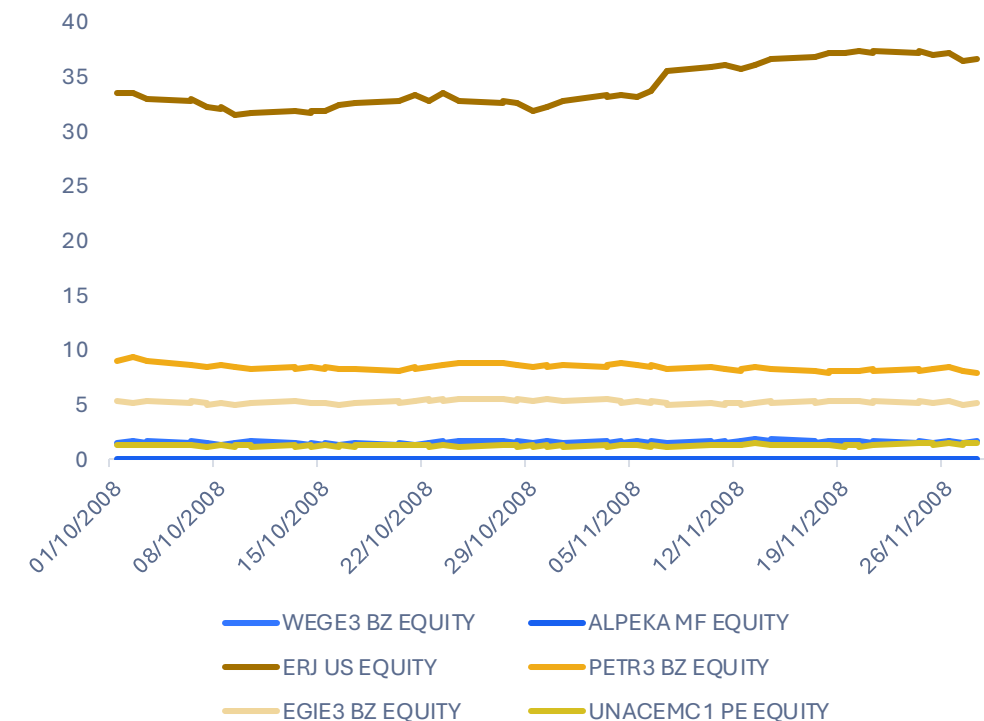
	VaR-1D	CVaD-1D	VaR-10D	CVaD-10D	CV1
Total	-2.776%	-3.735%	-8.778%	-11.812%	-0.14
PEP36100M147	-1.461%	-1.965%	-4.6192%	-6.2131%	-0.07
PEP13300D081	-1.193%	-1.610%	-1.816%	-5.0910%	-0.05
PEP70500M764	-0.439%	-0.512%	-1.3881%	-1.6206%	-0.02



# Portfolio's stressed VaR

## Stress scenario

Risk-free rate of sovereign bonds for Oct 2008 and Nov 2008 as stress period.



## Equity

	VaR %	VaR	CVaR %	CVaR
<b>Total</b>	<b>-6,66%</b>	<b>-S/8.566,15</b>	<b>-7,72%</b>	<b>-S/9.933,87</b>
WEGE3 BZ	-6,00%	-S/1.321,63	-8,72%	-S/1.920,78
ERJ US	-11,87%	S/7.818,63	-12,16%	S/8.007,71
ALPEKA MF	-5,24%	-S/73,75	-6,25%	-S/87,94
PETR3 BZ	-10,54%	S/614,72	-13,33%	S/777,24
EGIE3 BZ	-5,28%	-S/1.670,48	-8,48%	-S/2.682,78
UNACEMC1 PE	-4,26%	-S/82,22	-5,91%	-S/114,16

## Fixed Income







	VaR-1D	CVaR-1D	VaR-10D	CVaR-10D
<b>Total</b>	<b>-26.71%</b>	<b>-30.87%</b>	<b>-84.469%</b>	<b>-97.611%</b>
PEP36100M147	-12.5641%	-14.378%	-39.7313%	-45.4678%
PEP13300D081	-11.1217%	-12.857%	-35.1698%	-40.6567%
PEP70500M764	-3.3454%	-3.632%	-10.5792%	-11.4869%

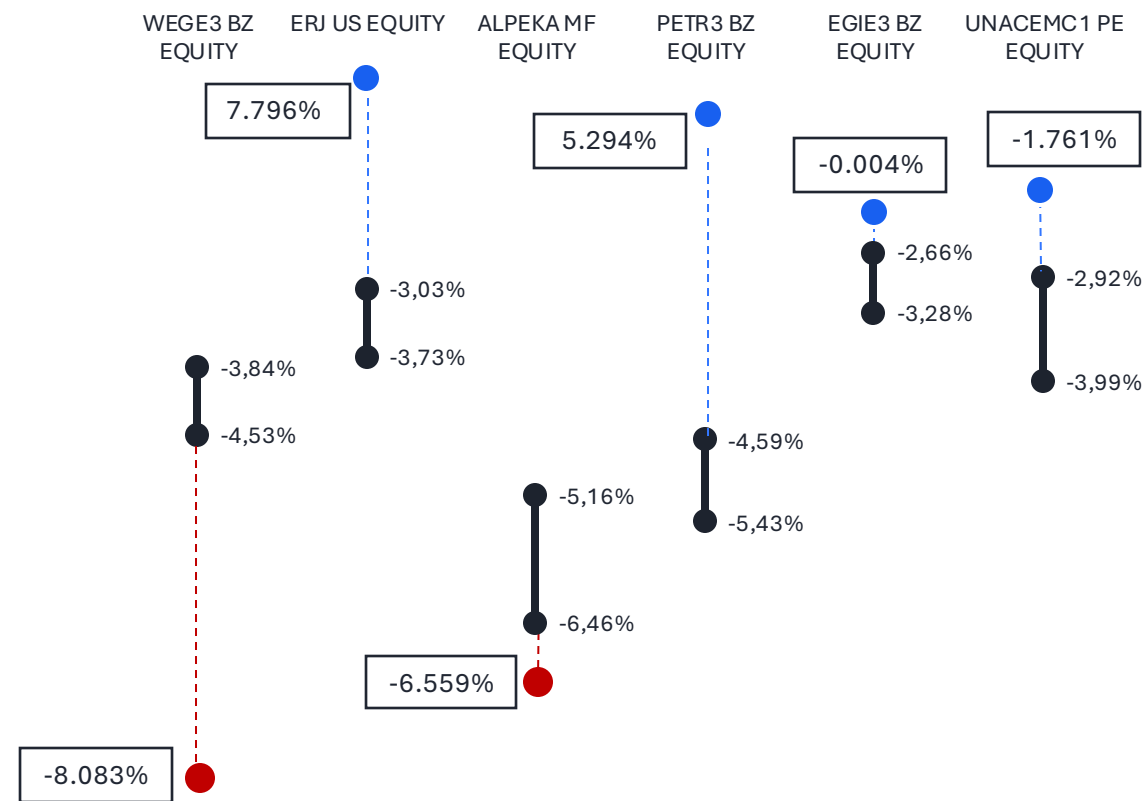


**05**

# **Risk Mitigation Strategy**

# Stop Loss

Equity	Out of appetite		Tolerance		Appetite		Total return	Result	
WEGE3 BZ	<-∞	-4,53%	-4,53%	-3,84%	-3,84%	+∞>	-8,083%		Fuera de apetito
ERJ US	<-∞	-3,73%	-3,73%	-3,03%	-3,03%	+∞>	7,796%		En apetito
ALPEKA MF	<-∞	-6,46%	-6,46%	-5,16%	-5,16%	+∞>	-6,559%		Fuera de apetito
PETR3 BZ	<-∞	-5,43%	-5,43%	-4,59%	-4,59%	+∞>	5,294%		En apetito
EGIE3 BZ	<-∞	-3,28%	-3,28%	-2,66%	-2,66%	+∞>	-0,004%		En apetito
UNACEM	<-∞	-3,99%	-3,99%	-2,92%	-2,92%	+∞>	-1,761%		En apetito



# Reweightings

PESOS	17,12%	51,18%	1,09%	4,53%	24,57%	1,50%
MEDIA	0,03%	0,01%	0,03%	0,16%	0,02%	0,11%
Varianza	0,07%	0,04%	0,11%	0,08%	0,03%	0,05%

84%	WEGE3 BZ EQUITY	ALPEKA MF EQUITY	ERJ US EQUITY	PETR3 BZ EQUITY	EGIE3 BZ EQUITY	UNACEMC1 PE EQUITY
WEGE3 BZ EQUITY	0,0005784	-0,0000069	-0,0000173	0,0001906	0,0002313	0,0000215
ALPEKA MF EQUITY	-0,0000069	0,0004142	0,0000231	0,0000073	0,0000344	0,0000066
ERJ US EQUITY	-0,0000173	0,0000231	0,0014479	0,0007038	0,0000211	-0,0000150
PETR3 BZ EQUITY	0,0001906	0,0000073	0,0007038	0,0013102	0,0002047	0,0000088
EGIE3 BZ EQUITY	0,0002313	0,0000344	0,0000211	0,0002047	0,0005271	0,0000120
UNACEMC1 PE EQUITY	0,0000215	0,0000066	-0,0000150	0,0000088	0,0000120	0,0001891

NUEVOS PESOS	11%	22%	7%	0%	11%	49%
--------------	-----	-----	----	----	-----	-----

E(Rp)	0,064%
V(Rp)	0,010%
Desv	0,988%
rf	0,000%
SHARPE	0,06506





06

# **Conclusions and Recommendations**

# Conclusions and Recommendations



## Conclusions

- In our portfolio, we have included assets with high volatility, but also high returns. However, given the moderate profile of the portfolio, it has been decided to keep positions minimal to control risk.
- The equity portfolio was rebalanced to adjust positions and take advantage of market opportunities.
- A long duration position was taken in the Peruvian corporate bond portfolio in order to avoid reinvestment risk in a looser monetary policy environment.



## Recommendations

- Given that assets that generate high volatility have been included, it is important to monitor the levels of risk assumed in accordance with the moderate profile of the portfolio. It is therefore recommended to establish stop loss limits and identify risk mitigation strategies such as rebalancing.
- Although diversified in countries and sectors, it is recommended to diversify in other asset classes such as government bonds, commodities or ETFs in order to mitigate risks due to the diversification effect and increase the potential return.
- On the other hand, it is also recommended to invest in assets of other currencies in order to reduce exposure to Latin American specific volatility.



07

# Appendixes

# Fixed Income Credit Analysis



The company's strong market position



Improved cash generation capacity



Sustained demand for services



Dairy market leadership at the national level



Stability in cash flow generation



Leadership in the MSE segment



Expansion of funding sources



Extensive network of agencies nationwide

	Debt/EBITDA	Margin EBITDA	EBITDA/financial expense	ROE	ROA
Telefonica	2,9x	19,4%	2,4%	-83.8%	-
Gloria	2,3x	8,7%	4,7%	11,0%	-
MiBanco	-	-	-	18.1%	2.7%



COMPANY	ACTIVITY	STRATEGY
EMBRAER	Embraer is one of the world's leading manufacturers of commercial and executive aircraft, with a significant and growing volume of defense and security operations.	Is strategy is based on intellectual property. Embraer currently holds some 800 patents in various countries, many of them obtained through WIPO's Patent Cooperation Treaty (PCT).
WEG	Company specialized in the manufacture and sale of electric motors, transformers, generators and automation.	WEG has sought to customize and optimize solutions, seeking flexibility, agility and supporting the requirements and applications of each mining operation.
PETROBRAS	It is a company that is dedicated to the exploration of oil and gas; production, refining, and supply of crude oil and petroleum products; and generation, transportation, and distribution of electrical energy.	Connect with your key contacts, projects, shareholders, related news and more. This company has operations in Brazil. Some topics related to its developments are: Upstream Company (Exploration and Production).

COMPANY	ACTIVITY	STRATEGY
ENGIE	Engie is a group of French capital that carries out activities in the fields of generation and distribution of electricity, natural gas, oil and renewable energy.	The renewal of our generation assets. Advance in the conversion of our long-term supply contracts (PPA) still indexed to coal. Develop a new business portfolio.
UNACEM	UNACEM is dedicated to the production and sale of cement, serving the center of Peru, being distributed by independent hardware stores and also through a network of proprietary hardware stores.	In addition to having installed a production plant in Ecuador and having purchased another in Chile.
ALPEK	It is a Mexican multinational company that manufactures chemicals and is headquartered in San Pedro Garza García, Nuevo León, Mexico. It is the largest producer of PET and PTA in the Americas and the only producer of polypropylene and caprolactam in Mexico.	Its strategic potential is seen in the acquisition of synergies and geographical diversification.