The Colombian Approach to International Reserves Management

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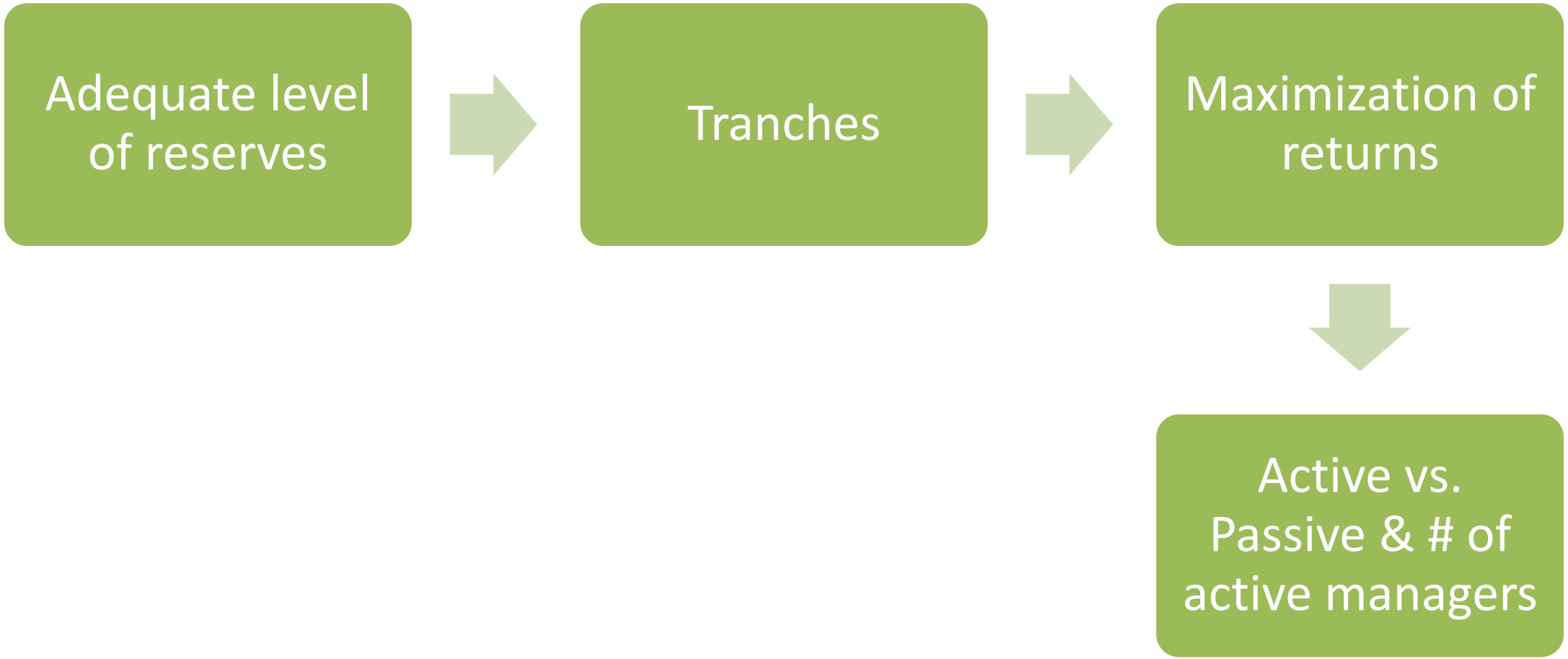
*All opinions are from the author, and do not compromise the Banco de la República or its Board.

Topics


Adequate level of reserves
Tranches
Maximization of returns
Active vs. Passive & # of active managers

Adequate level of international reserves

- International reserves + FCL > current account deficit + next year external amortizations + estimated outflows from non-residents and residents in a stressed period (depreciation of COP + low local prices)

2 tranches since 2015
Objetive: increase returns with a medium-term tranche

Short-term tranche (56%)

- Size: potential needs in the next year (adapted IMF´s ARA methodology for Colombia considering the variables together: not treating them as independent)
- Currency composition: reserve currencies* that replicate the import price index + external debt payments
- Objective: maximize returns. Subject to: probability of losses in the next year <= 5%; CoVaR<=1 %; currency composition.

Medium-term tranche (44%)

- Size: reserves – short-term tranche
- Objective: maximize returns in USD. Subject to: probability of losses in the next 3 years <= 5%; CoVaR<=1 %;

* With positive interest rates, the BR should be able to invest directly, constrained to the BR not being a big player in the market (participation < 5%).

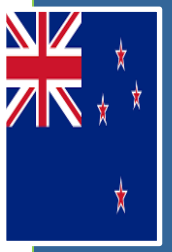
Eligible assets for the index

US

- Treasury notes and bonds
- TIPS
- Agencies MBS

Australia

- Treasury notes and bonds



New Zealand

- Treasury notes and bonds

Canada

- Treasury notes and bonds

Norway

- Treasury notes and bonds

UK

- Treasury notes and bonds

Korea

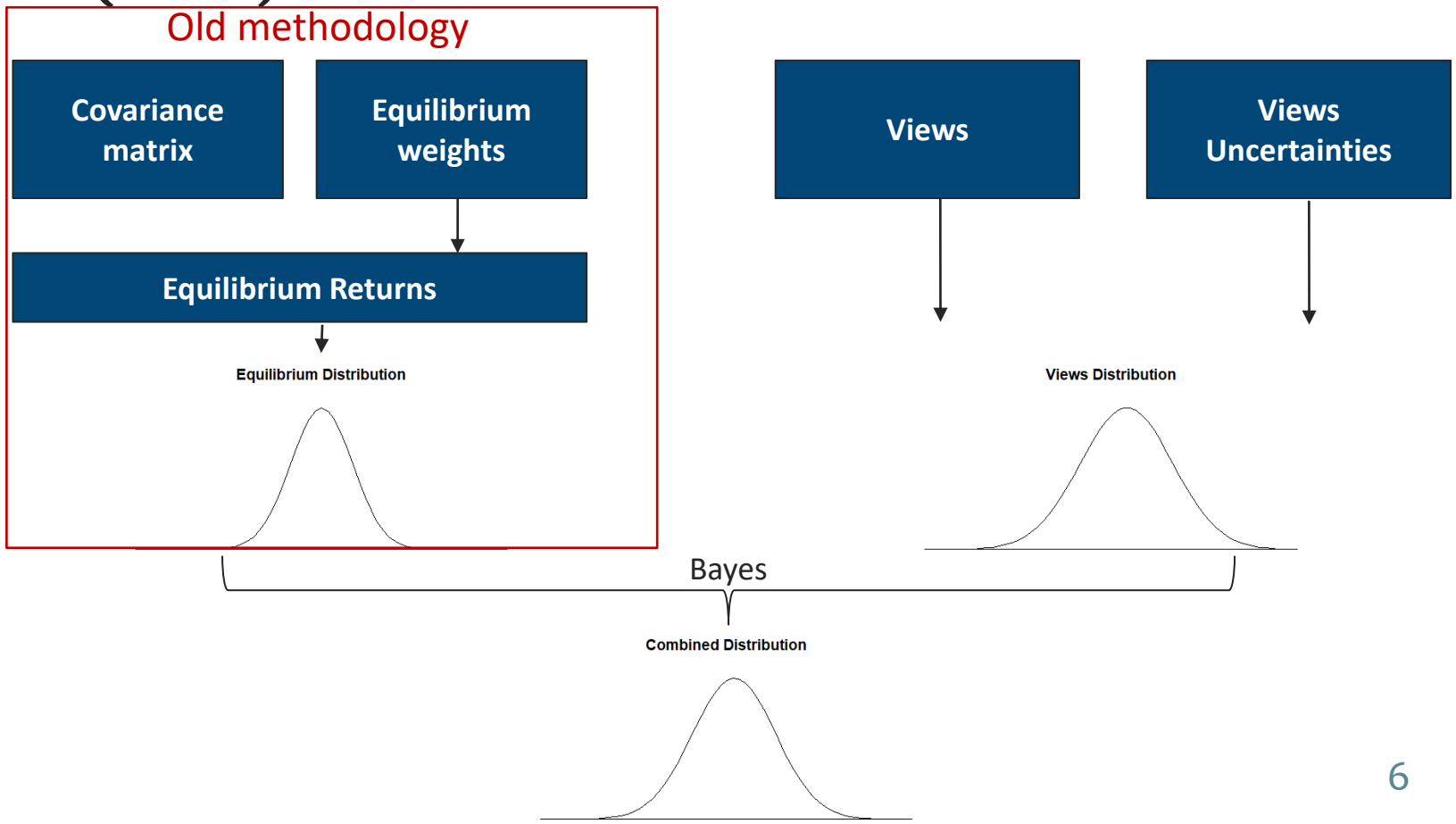
- Treasury notes and bonds

Others

- Supra and government´s agencies bonds
- Gold

Maximization of returns

- Black Litterman
- Phase 2: expectations for interest rates derived from derivatives contracts (2021)



Size of active portfolio (30%-35%) and # of active managers (7-9)

Max

$$E[IR_{net}] = E\left[\frac{xr_{tot}^{net}}{TE_{tot}}\right] = \frac{\sum_i w_i E\left[xr_i^{gross} - fee_i(\uparrow n) - internalcost_i(\uparrow n)\right]}{TE_{tot}(\downarrow n)}$$

w_i=active portfolio size (%)/n. n: # of active managers

$$E\left[xr_i^{gross}\right] = p_{good} \cdot xr_{objetive} + (1 - p_{good}) \cdot xr_{no\ good}$$
$$= p_{good} \cdot xr_{objective} \approx 20bp$$

$xr_{objetive} = 30bp$

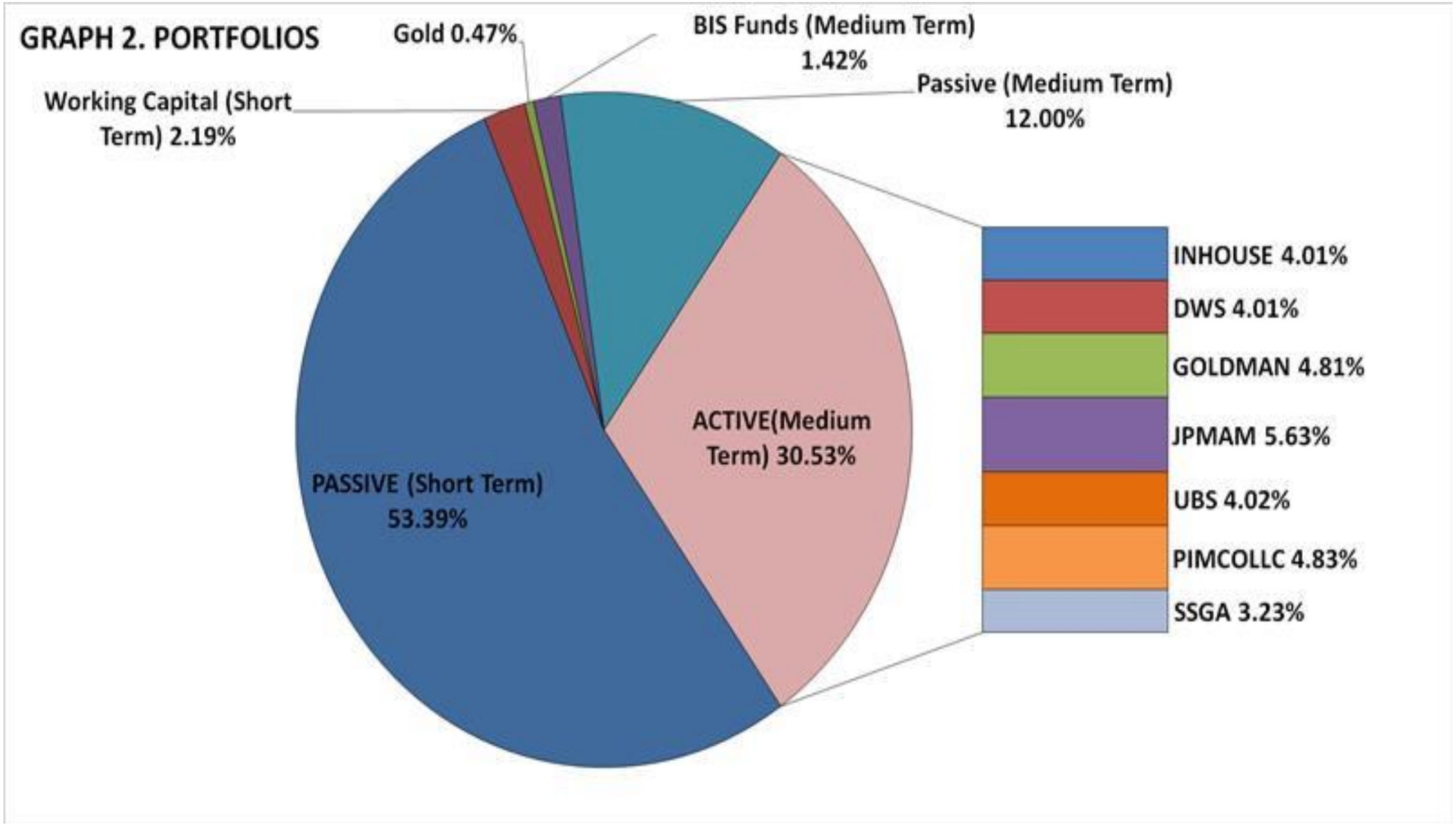
$p_{good} \approx \frac{2}{3}$

$xr_{no\ good}$= 0bp

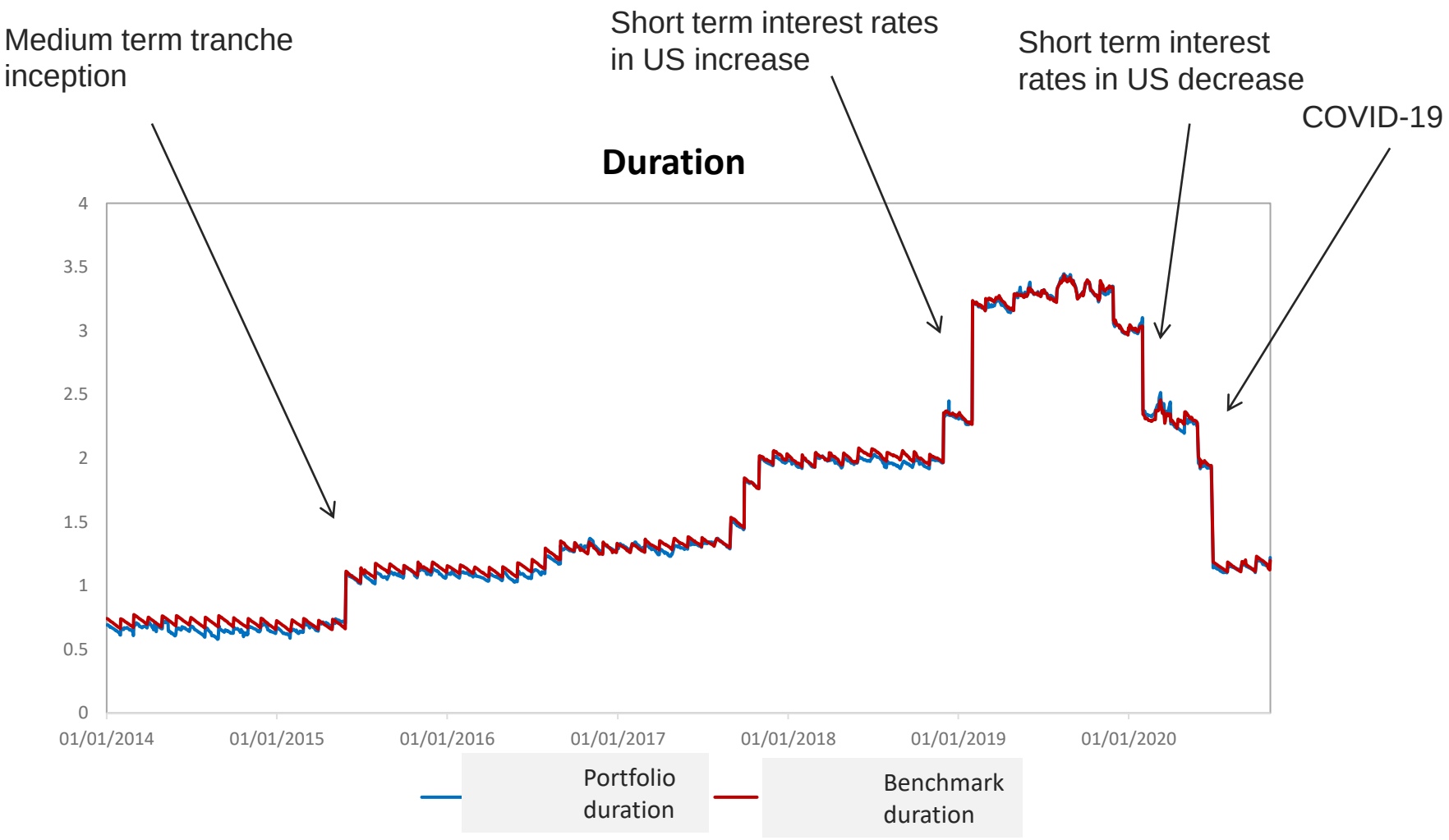
TE_{tot} given by risk taken by manager ($TE_{maxallowed}$:100 bp) and the correlation among xr ($\rho_{ij} = \rho$ for $i \neq j$). ↑n →↓TE

s.t: i) total portfolio (passive + active) loss probability < one year index loss probability, ii) active portfolio size < Kelly portfolio size

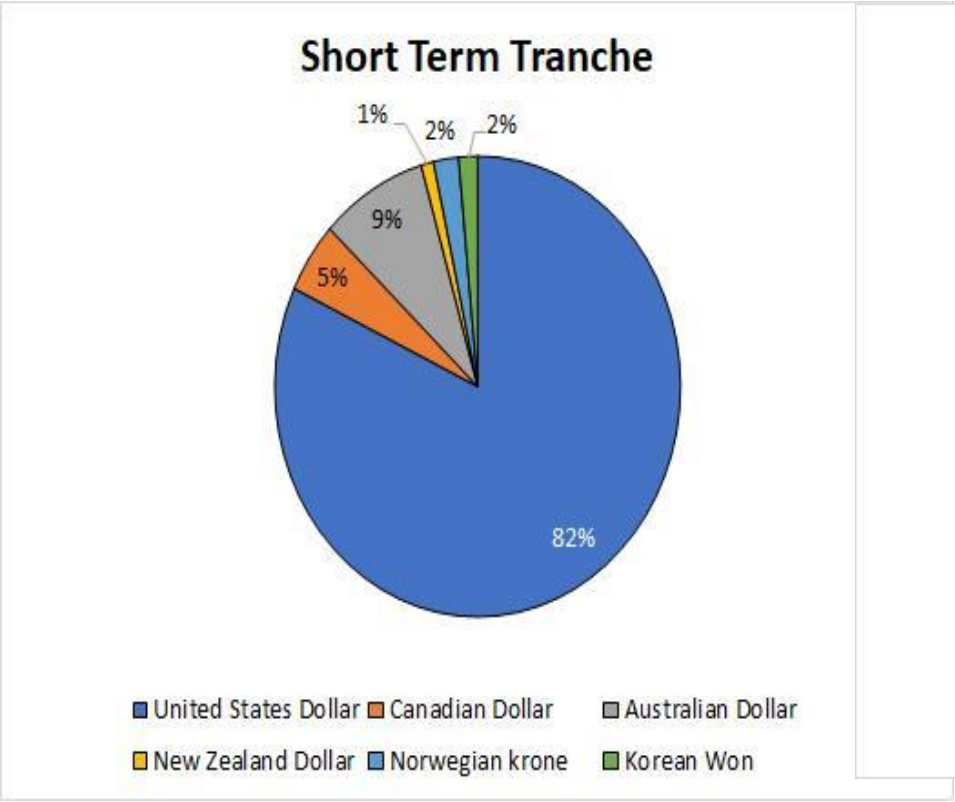
Internal and External Management

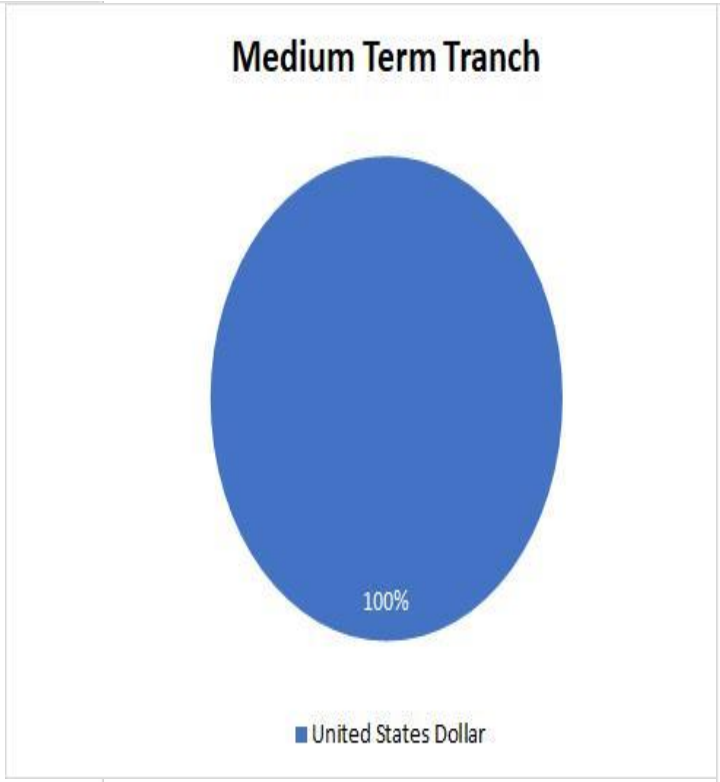


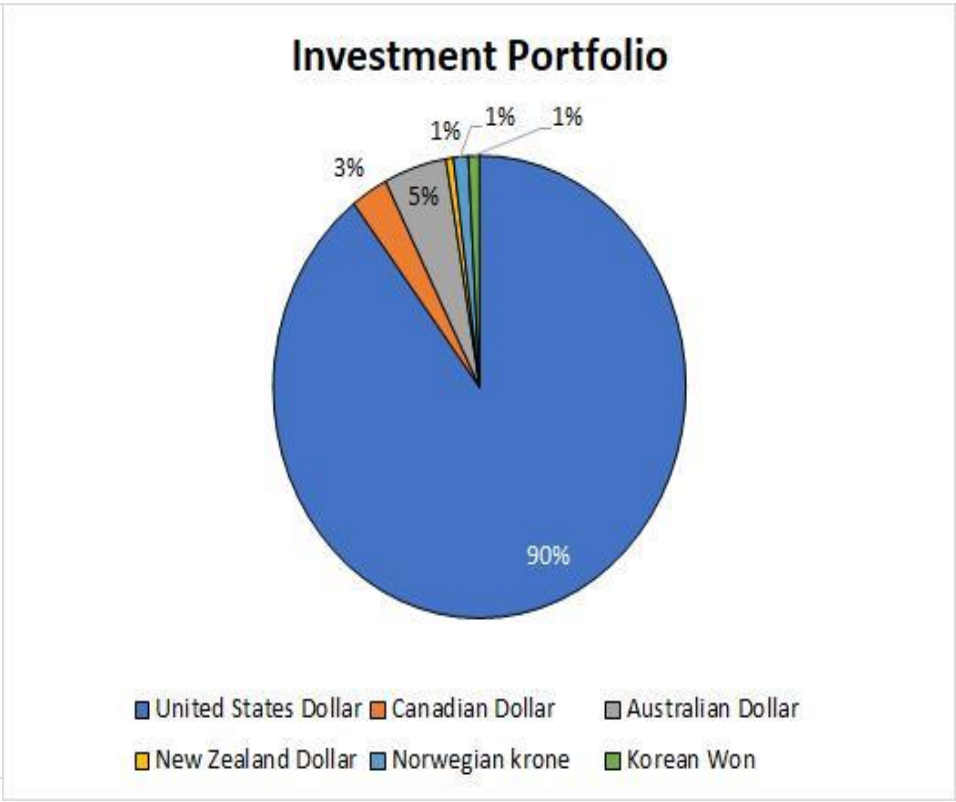
Portfolio duration evolution



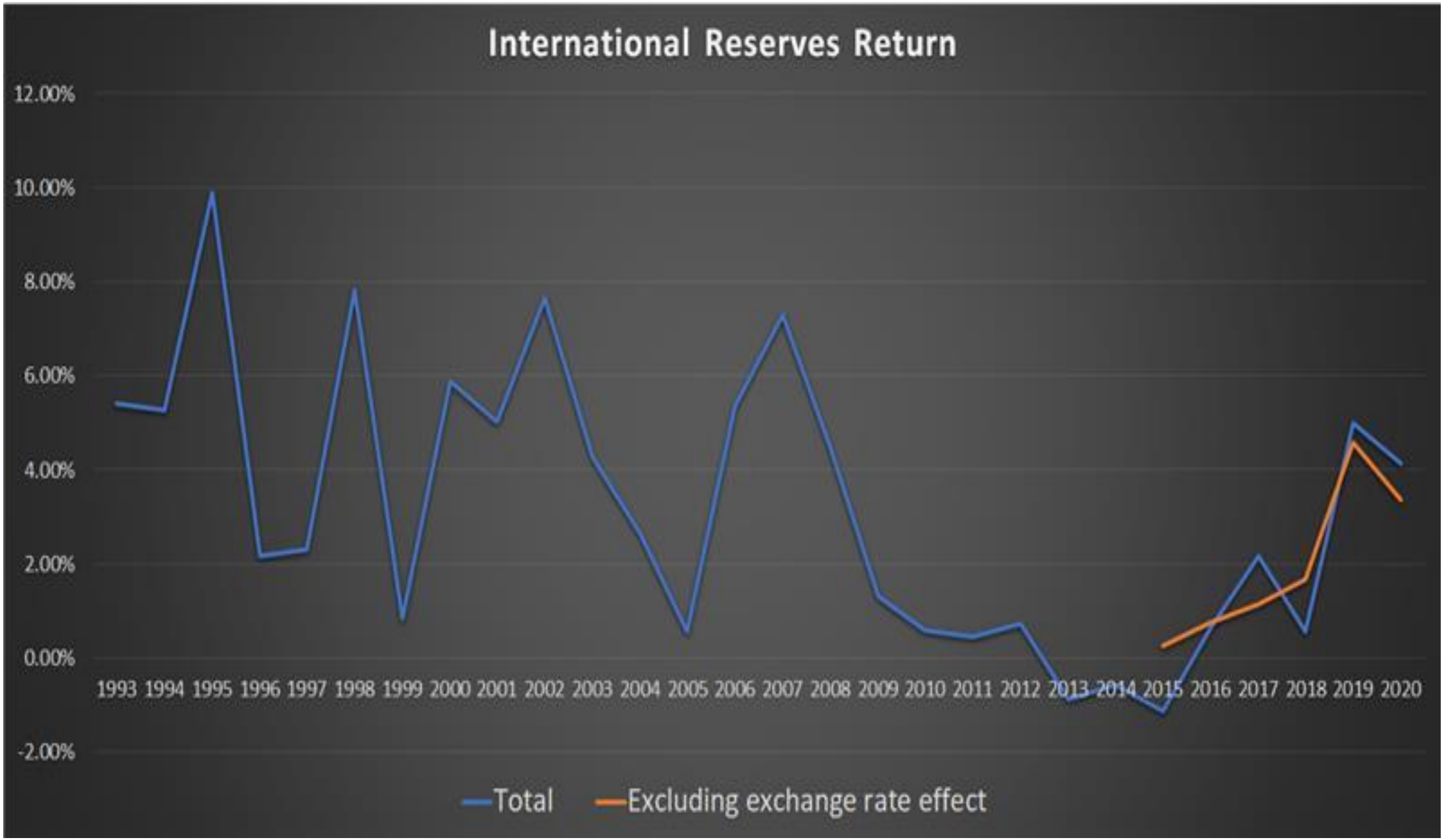
Currency Compostion







Note: The graphs for the medium term tranche and the invetment portfolio do not include investments in BIS funds.


International Reserves Return
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
-2.00%
1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020
Total
Excluding exchange rate effect

Thank you