IMF INSTITUTE & CENTRAL BANK OF ALGERIA HIGH LEVEL SEMINAR

on

NATURAL RESOURCES, FINANCE & DEVELOPMENT: CONFRONTING OLD & NEW CHALLENGES

MANAGEMENT OF COMMODITY REVENUES – BOTSWANA'S CASE

by

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OUTLINE

- **BOTSWANA'S ECONOMIC & EXTERNAL POSITION**
- **TRANCHING**
- **PULA FUND**
- **ASSET ALLOCATION & PORTFOLIO OPTIMISATION**
- **GOVERNANCE/INSTITUTIONAL FRAMEWORK**
- **CONCLUSION**

BOTSWANA'S ECONOMIC & EXTERNAL POSITION

- **Small open economy**
- **Typical of a commodity rich developing country**
- **Narrow domestic economic base**
- **One of world's leading diamond exporters**
- **Relatively high reserves (in months of import cover) compared to other developing countries in its league (19 months)**
- **Part of revenues held as foreign currency reserves to yield additional foreign currency income**

TRANCHING

- **Botswana needs to hold higher reserves because of adverse exogenous factors**
  - Relatively undiversified & relies mainly on extraction/export of a non-renewable commodity (diamonds)
  - Country's terms of trade depend to a substantial degree on real exchange rate between ZAR and SDR
  - Susceptible to periods of sustained drought
  - Geopolitical uncertainties abound
- **Tranches established to reflect different objectives & Risk/Return preferences**
  - Liquidity Portfolio
    - Transactions Balance Tranche
    - Liquidity Investment Tranche
  - Pula Fund

PULA FUND

(Established in 1993)

- **Main Objectives**
  - National savings deployed to contribute to sustainable economic development
  - Long-term offshore investments necessary to deflect demands for immediate use for possible unproductive or unsustainable projects
  - Generate relatively higher returns than possible in short-term investments
  - Additional long-term earner of foreign exchange
  - Form of diversifying sources of income away from dominant commodity sale income to include financial investment income
  - Prudent yield maximising venture/alternative

PULA FUND (cont'd)

- **Investment Policies & Guidelines**
  - **Policies**
    - Safety: maintenance of value/purchasing power
    - Return: generation of additional forex
    - Liquidity: short-term volatility tolerated given longer investment horizon
  - **Guidelines**
    - Strategy for implementing investment policies
    - Currency Risk
    - Market/Interest Rate Risk
    - Performance benchmarks for fixed income & equity mandates developed

ASSET ALLOCATION & PORTFOLIO OPTIMISATION

- **Optimisation exercise to consider:**
  - Nature of capital markets
  - Relative risk/return profile of asset classes
  - Correlation coefficients of asset classes so as to put together portfolio of negatively correlated investments to achieve diversified portfolios of bonds & equities (North America, Europe, UK and Pacific Basin)

- **Asset Allocation Model**
  - Quantified effects of diversification
  - Identified asset mixes constituting efficient portfolios
  - Determined expected return & risk of portfolio using input assumptions of:
    - Expected Return
    - Standard Deviation/Risk of expected return
    - Correlation Coefficient (relationship between pairs of assets)

ASSET ALLOCATION & PORTFOLIO OPTIMISATION (cont'd)

- Input assumptions considered sound & consistent with historical/long term capital market returns
- Tests of sensitivity of results to changes in input assumptions conducted in best interests of a robust analysis
- Hence outcome in Fig 1 (Portfolios A to H) where risk and expected return increase as portfolios are diversified to include equities
- However, increase in return is less than increase in risk as long term assets (equities) are added to portfolio

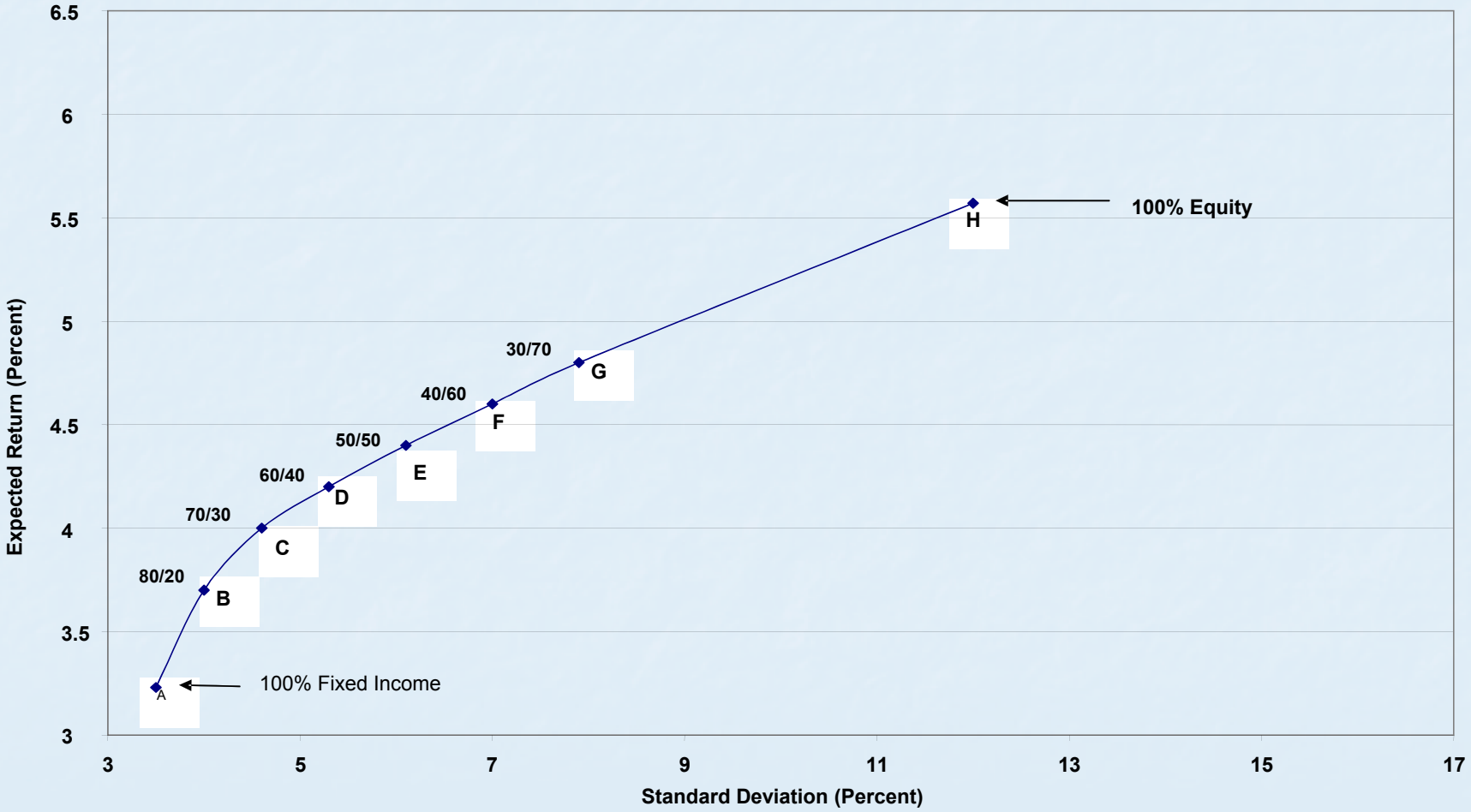
Figure 1
Input Assumptions (Percent)

Asset Class	A	B	C	D	E	F	G	H
Fixed Income	100	80	70	60	50	40	30	0
Equities	0	20	30	40	50	60	70	100
Expected Return	3.2	3.7	4	4.2	4.4	4.6	4.8	5.6
Risk	3.2	4.1	4.5	5.2	6	7	7.9	11.5

Efficient Frontier – Fixed Income/Equity Portfolios

- Series of efficient portfolios for every level of risk
- Portfolios that maximise expected return at each level of risk
- The higher the expected risk (Standard Deviation), the higher the expected return (upward sloping curve)
- Choice of efficient portfolio depended on investment horizon, risk appetite and expected return

Figure 2
Efficient Frontier
Fixed Income/Equity Portfolios



Probability of Expected Return of Efficient Portfolios

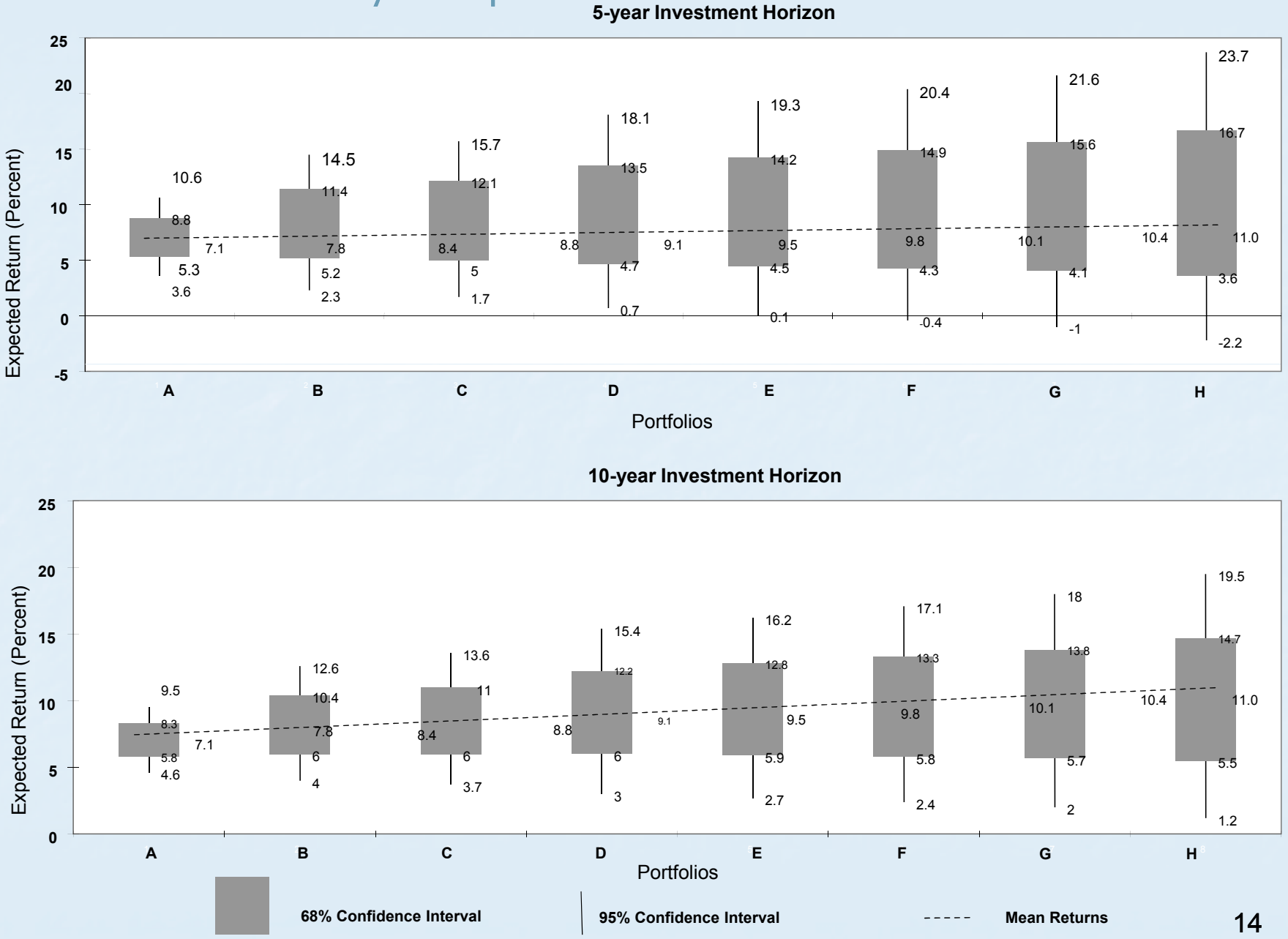
- Potential variability of expected returns of efficient portfolios assessed as guide to determine appropriate portfolio mix
  - Horizontal dotted line represents "Median Expected Returns" as on Efficient Frontier
  - Shaded area represents a range of possible outcomes within one standard deviation from median. This is referred to as the (68 percent confidence interval)
  - Either side of shaded area: 14 percent confidence interval, i.e. probability that return could be above or below shaded area)

Probability Of Expected Return Of Efficient Portfolios (cont'd)

- Vertical line represents range within which expected return could fall - 95 percent probability/confidence interval

	Median	68%	95%
e.g. over 10-yr Investment Horizon			
Portfolio C:	8.4	6 – 12.2	3 – 15.4

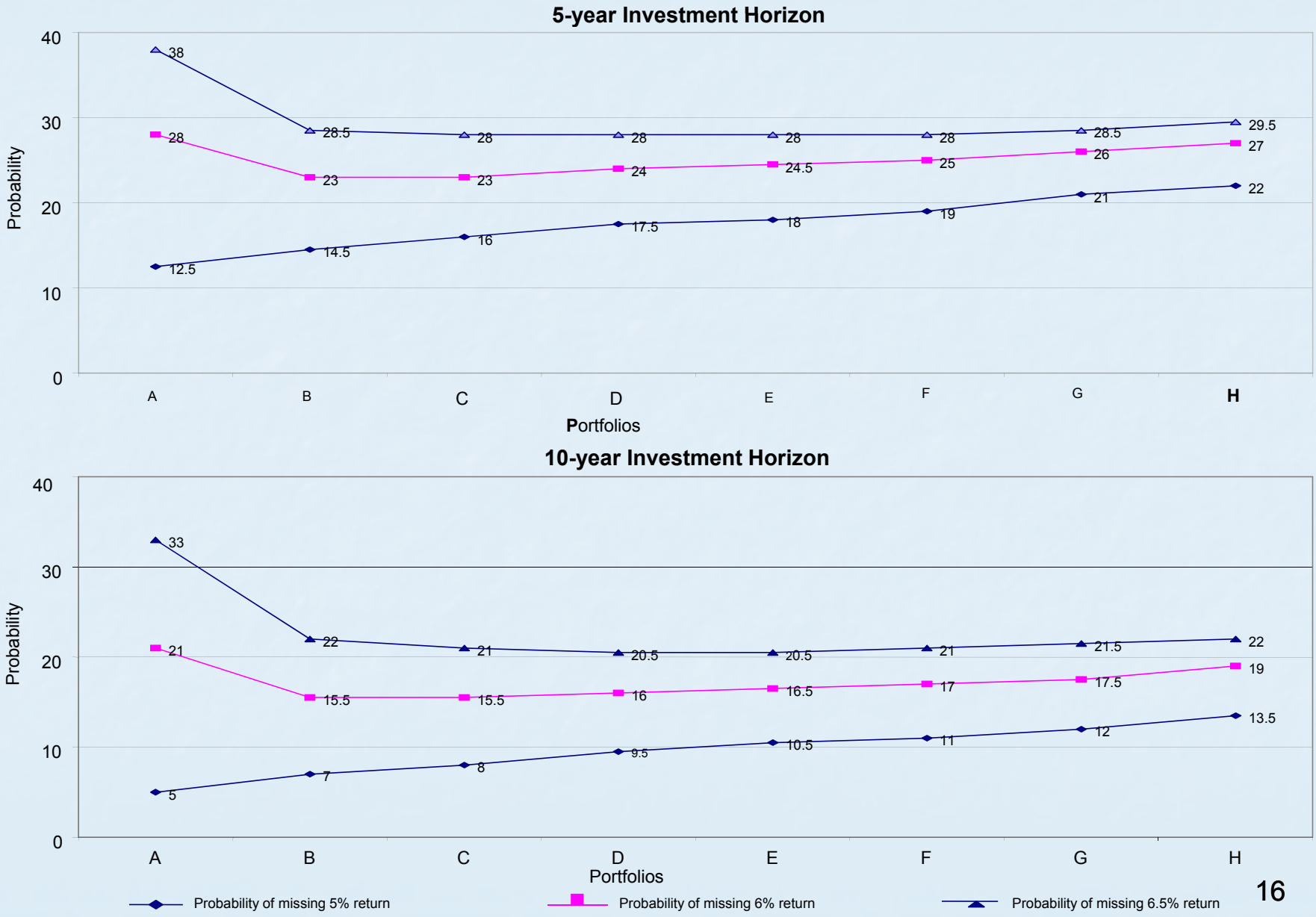
Figure 3
Probability of Expected Return - Efficient Portfolios



Probability of Missing Targeted Expected Returns

- Risk reduction when investment horizon is longer
- Probability of missing target return
  - Higher when investment horizon is short (5 years)
  - Lower when investment horizon is longer (10 years)
- Hence relatively high risk portfolio has lower probability of missing expected return of 6 percent for 10-year investment horizon (19 for Portfolio H), than is the case for 5-year investment horizon (27 for Portfolio H)

Figure 4
Probability of Missing Targetted Expected Returns



Efficient Portfolio

- **Against this background:**
  - Compensation can be high when more risk is assumed
  - Risk can also decline when investment horizon is long
  - On this basis, Pula Fund established in 1993 and "efficient portfolio", with limited downside risk of expected return, chosen
  - Investment horizon – 10 years

GOVERNANCE/INSTITUTIONAL FRAMEWORK

- **Bank of Botswana solely responsible for reserves management activities**
- **Board decides on policy and delegates implementation responsibility to Governor**
- **Ministry of Finance consulted on strategic asset allocation, particularly size of**
  - Liquidity Portfolio & Pula Fund
  - Fixed Income & Equity in Pula Fund

GOVERNANCE/INSTITUTIONAL FRAMEWORK (cont'd)

- **Financial Markets Department**
  - Manages 50 percent of reserves (short and long term fixed income investment instruments of Liquidity Portfolio and Pula Fund)
  - 50 percent managed by 9 fund managers (used since 1988)
    - Fixed income and equity mandates of Liquidity Portfolio and Pula Fund
    - 5 specialised mandates: Fixed Income, US Equity, Japan Equity, Europe Equity, Global Equity

GOVERNANCE/INSTITUTIONAL FRAMEWORK (cont'd)

- **Reasons for appointing fund managers**
  - Performance comparison with Bank staff
  - Staff training
  - Fallback position in case of brain drain
  - Added value incremental to portfolio

GOVERNANCE/INSTITUTIONAL FRAMEWORK (cont'd)

- **Criteria for appointing fund managers**
  - Investment expertise
  - Experience
  - Stability
  - Investment style
  - Decision-making process
  - Past performance
  - Willingness to train Bank staff
  - Fees

GOVERNANCE/INSTITUTIONAL FRAMEWORK (cont'd)

- **Custody & Portfolio Advisory services**
  - Monitoring investment activity
  - Providing audit trail
  - Providing checks and balances
  - Transition management
  - Performance Measurement
  - Securities lending, etc

CONCLUSION

- Botswana's reserves managed actively and conservatively in the best national interest

- THANK YOU