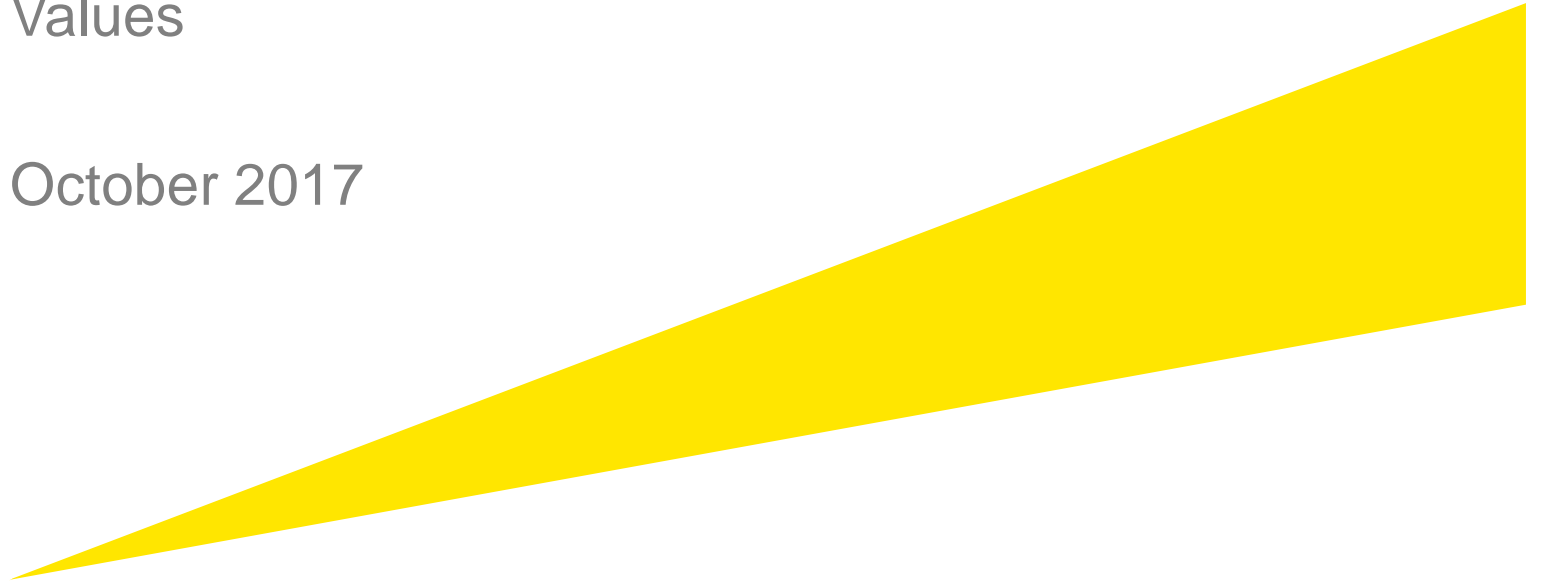


Traditional Embedded Value (TEV)

Capacity Building Seminar on Embedded
Values

October 2017



A close-up photograph of a person wearing a grey suit jacket and a white shirt, holding a large, white, curved document or folder. The person's hands are visible, with a ring on the left hand. In the foreground, there is a stack of papers on a desk. The background is a bright, out-of-focus window.

Agenda

Agenda

- ▶ Components
 - ▶ Adjusted Net Worth (ANW)
 - ▶ Value of In-force (VIF)
 - ▶ Assumptions
 - ▶ Risk Discount Rate (RDR)
 - ▶ Time Value of Financial Options and Guarantees (TVFOG)
 - ▶ Analysis of Movement
 - ▶ Limitations
-



Components

Components

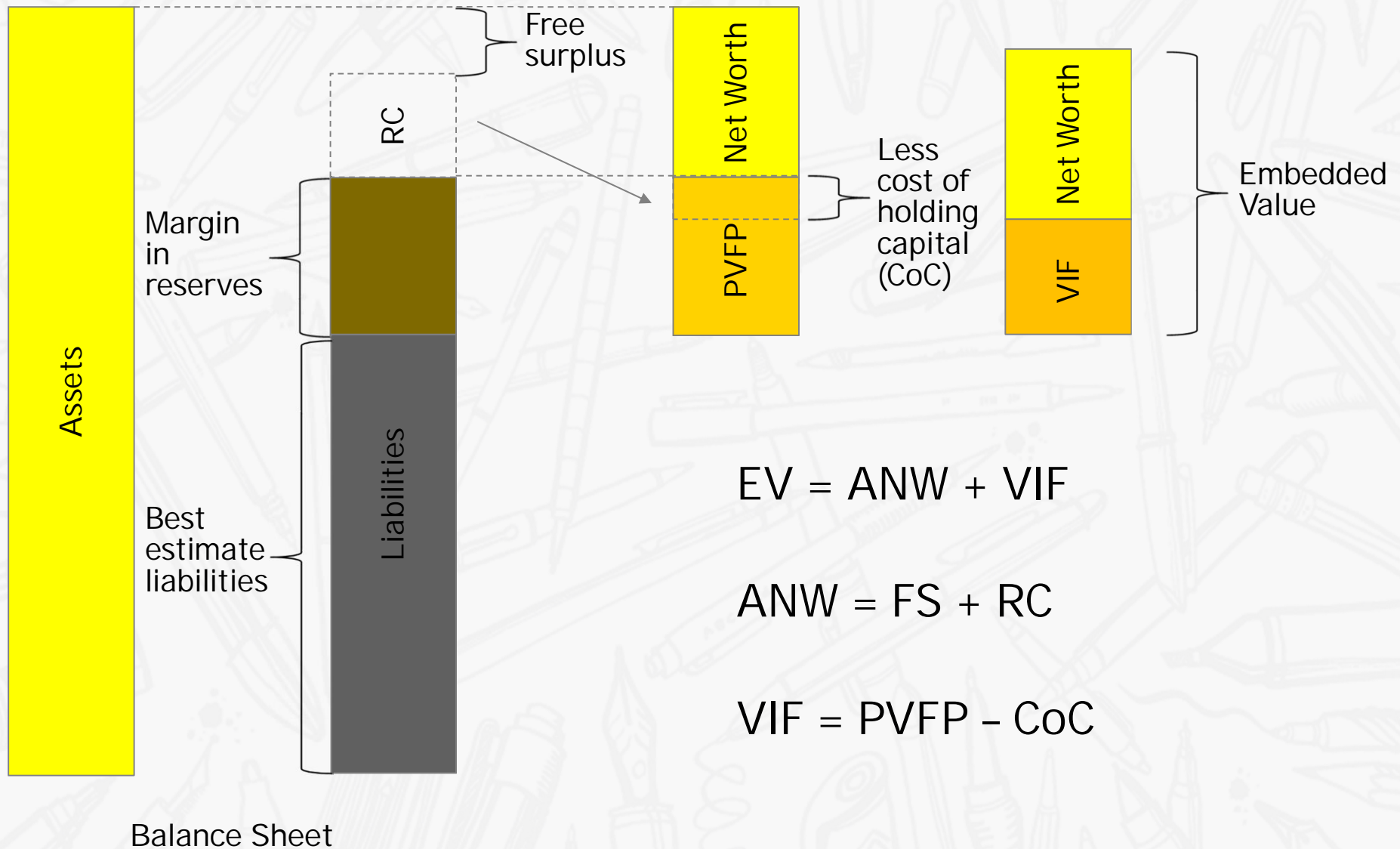
Definitions

- ▶ Embedded Value (EV) = Measure of value created by existing assets and liabilities of insurer for shareholders
- ▶ Equivalent to balance sheet value or net worth of a company - No allowance for goodwill
- ▶ Value adjusted for expected return on capital by shareholders

Embedded Value

- ▶ Adjusted Net Worth (ANW) = Assets - Liabilities
 - ▶ Assets and liabilities as per balance sheet
 - ▶ Liabilities held on prudent basis for insurance companies
 - ▶ Present Value of Future Profits (PVFP) = Release of prudent margins in liabilities
 - ▶ $ANW = \text{Free Surplus (FS)} + \text{Required Capital (RC)}$
 - ▶ Cost of Capital (CoC) = Cost of having to hold solvency margin
-

Components





Adjusted Net Worth (ANW)

Adjusted Net Worth

Balance Sheet (INR '000s)

Assets		Liabilities	
Shareholders	45,00,000	Non-linked reserves	3,65,00,000
Policyholders	3,50,00,000	Credit / (Debit) Fair value	50,000
Linked assets	2,00,00,000	Linked reserves	1,95,00,000
Loans	1,00,000	Discontinuance Fund	2,50,000
Fixed assets	15,50,000	FFA	3,00,000
Current Assets		Current Liabilities	
Cash	16,50,000	Current Liabilities	30,00,000
Advances and other assets	40,00,000	Provisions	65,00,000
Sub Total	56,50,000	Sub Total	95,00,000
Total	6,68,00,000	Total	6,61,00,000

$$\text{ANW} = \text{Total Assets} - \text{Total Liabilities}$$

ANW calculated consistent with accounting practice for assets

Adjusted Book Value or Market Value?

- ▶ ANW to ideally reflect applicable accounting practice
 - ▶ Policyholder assets on adjusted book value for India
 - ▶ Shareholder assets can be taken on market value
- ▶ Using market values will theoretically overestimate in case of U/R gains and underestimate in case of U/R losses
- ▶ Critical to ensure consistency while setting assumptions
- ▶ Expected taxes on U/R gains should be allowed
- ▶ Credit for only gains attributable to S/H on par business

Arguments for using Market Values

- ▶ Easier to implement
 - ▶ Avoids requirement for ALM to calculate future weighted average yields
 - ▶ Same assumptions for existing and new business calculation
- ▶ Easier to justify
- ▶ Currently no prohibitions on realizing market value gains



Value of In-force (VIF)



Value of In-force

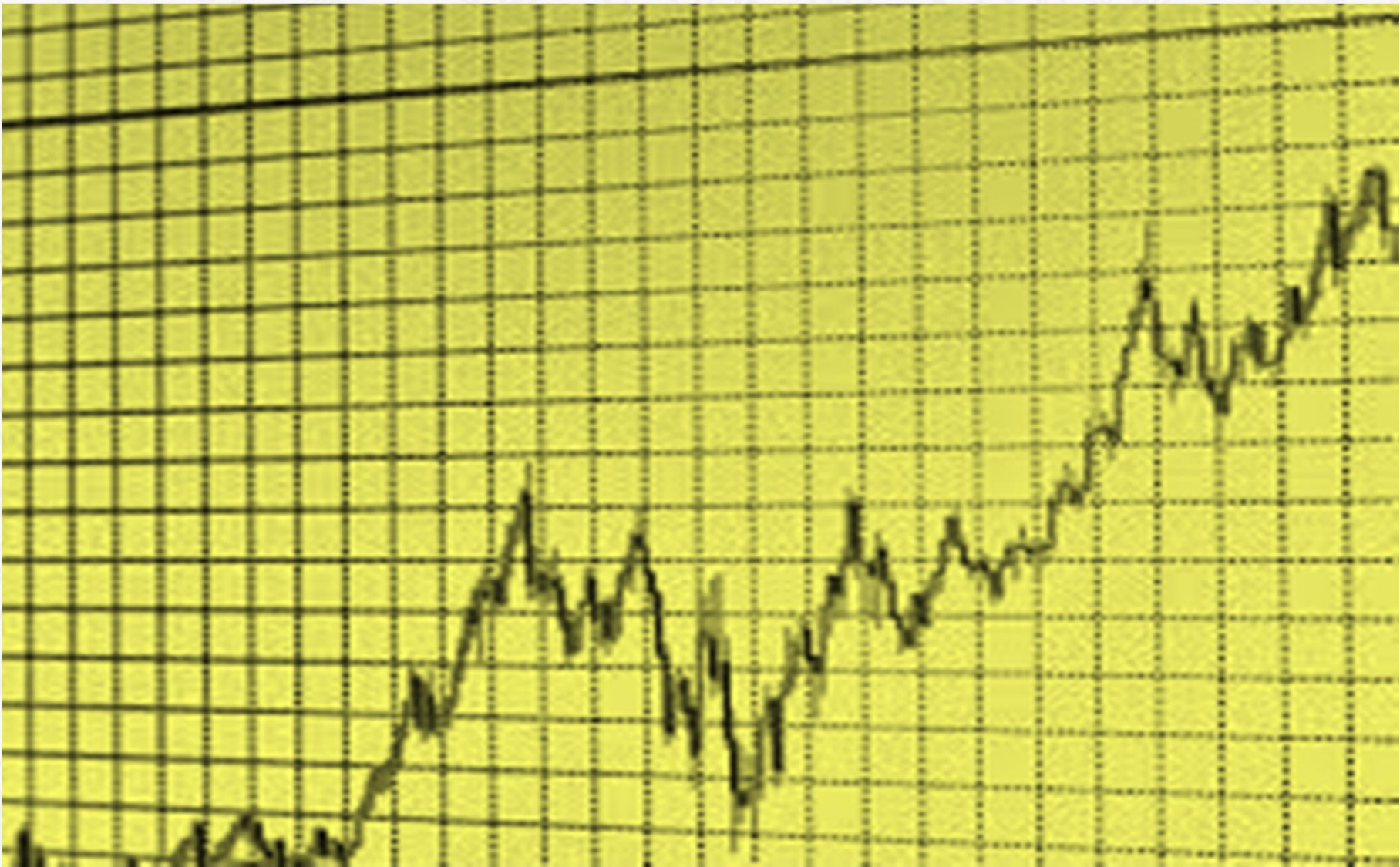
- ▶ Calculated using Discounted Cash-flow (DCF) Method
- ▶ Present value of future profits (PVFP) - Cost of Capital (CoC)
 - ▶ PVFP – Profits arising from margins in statutory liability
 - ▶ No losses in future if reserving prudent
 - ▶ CoC – Cost of holding solvency capital
 - ▶ Cost of holding statutory liability in-built in PVFP
- ▶ Assumes immediate distribution of full surplus arising
- ▶ Material dependence on accuracy of projected reserves
 - ▶ Reserve rebasing

Points to consider (1)

- Participating business
 - FFA support to capital
 - Consistency between VIF and ANW
 - Lapsed policies eligible for reinstatement
 - Expense overruns
-

Points to consider (2)

- Tax losses carried forward (TLCF)
 - Service Tax
 - Orphan policies
 - Corporate Social Responsibility (CSR)
-



Assumptions



Assumptions

Best estimate based on own experience study

Investment Returns

- Internally consistent
 - ANW calculation
 - Inflation / RDR
 - Bonus / Crediting Rates
- Current Vs Strategic asset mix

Mortality

- Allowance for IBNR

Persistency

- Net of reinstatements
- Allowance for paid-ups and partial withdrawals

Expenses

- Maintenance expense overruns

Reserving assumptions consistent with ANW calculation



Risk Discount Rate (RDR)



Risk Discount Rate

- ▶ Reflect Shareholder's Expected Return on Business
- ▶ Common approaches for estimation:
 - ▶ Weighted Average Cost of Capital (WACC)
 - ▶ Capital Asset Pricing Model (CAPM)
- ▶ $RDR = \text{Risk Free Rate} + \text{Beta} \times \text{Market Risk Premium}$
 - ▶ Risk free rate - 10-year government bond yield
 - ▶ Market returns in excess of risk free rate
 - ▶ Beta - Relative volatility of insurance shares to market
- ▶ Vary depending on:
 - ▶ Existing or new business
 - ▶ Riskiness of business
 - ▶ Investor



Time Value of Financial Options and Guarantees (TVFOG)

Time Value of Financial Options and Guarantees

- ▶ Can be allowed for explicitly in TEV calculation
 - ▶ Mandatorily required only by EEV
- ▶ Applicable for asymmetric guarantees
 - ▶ Generally products where policyholder cash-flows vary with investment returns
 - ▶ ULIP an exception as investment returns fully attributable to policyholders, unless explicit guarantee provided
- ▶ Ideally EV calculations should be done stochastically
 - ▶ Using average investment returns instead an approximation
 - ▶ Approximation valid only for symmetric guarantees
- ▶ TVFOG = Average EV over stochastic scenarios - EV over average scenario

Example

	Scenario	Investment Return	PVFP
AP - INR20,000	1	2%	-5,798
SA - INR100,000	2	3%	-2,383
PT - 10 years	3	4%	1,032
PPT - 5 Years	4	5%	4,446
Survival benefit - 25% of SA	5	6%	7,861
Paid after PPT to PT	6	7%	11,276
	7	8%	14,691
	8	9%	18,105
Investment Return - 7%	9	10%	21,520
RDR - 13%	10	11%	24,935
	11	12%	28,349
	Average	7.0%	11,276

Example

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Average EV over scenarios = EV over average scenario

Example (continued)

Protection against lower investment returns

Survival benefit reduced from 25.0% to 23.5% of SA if investment return lower than 4%

Scenario	Investment Return	PVFP
1	2%	-260
2	3%	2,912
3	4%	1,032
4	5%	4,446
5	6%	7,861
6	7%	11,276
7	8%	14,691
8	9%	18,105
9	10%	21,520
10	11%	24,935
11	12%	28,349
Average	7.0%	12,261

Example (continued)

Protection against lower investment returns

Survival benefit reduced from 25.0% to 23.5% of SA if investment return lower than 4%

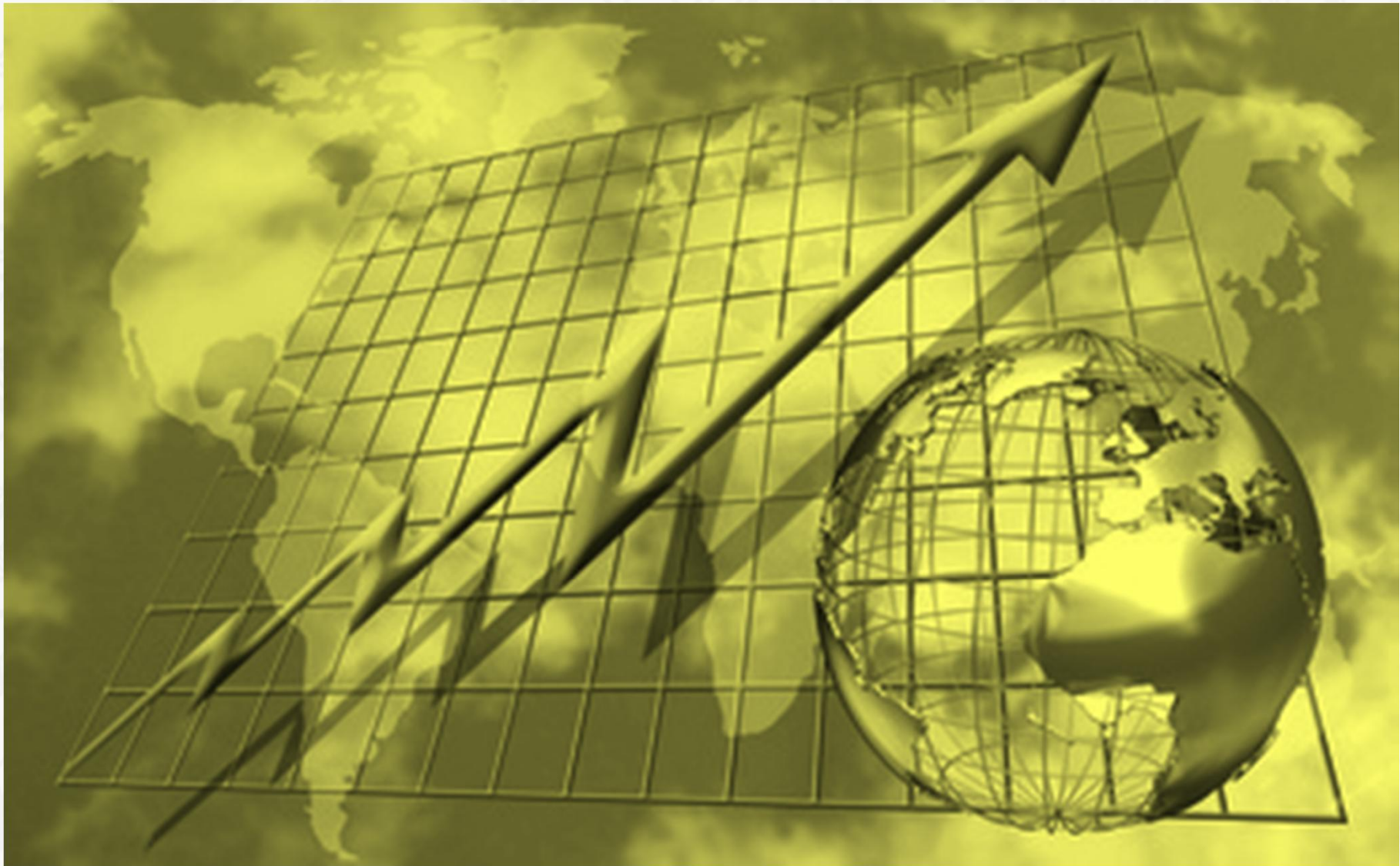
Asymmetric Guarantee

TVFOG = 985

Average return of 7.3% gives the same PVFP as the average value instead of 7.0%

Scenario	Investment Return	PVFP
1	2%	-260
2	3%	2,912
3	4%	1,032
4	5%	4,446
5	6%	7,861
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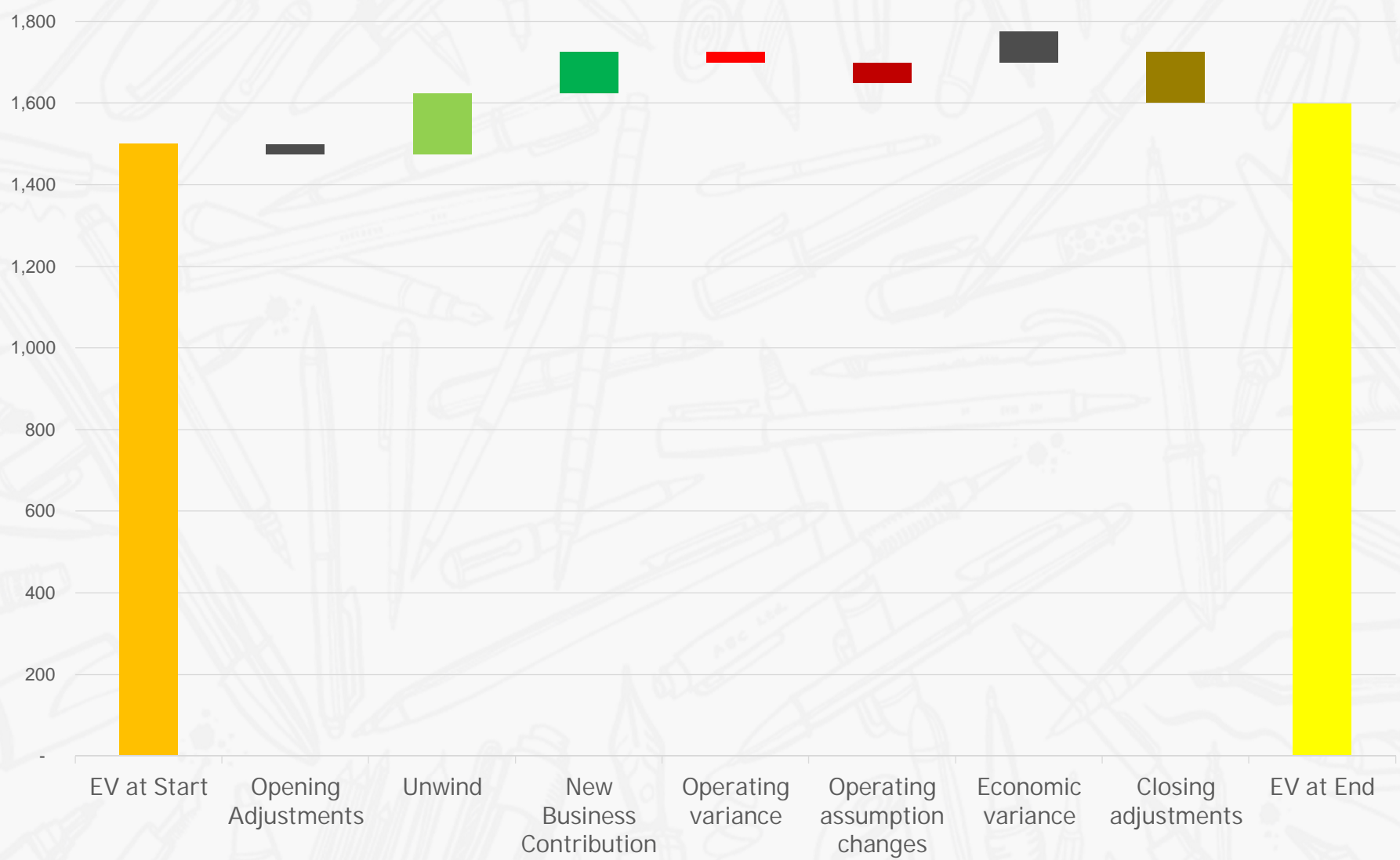
Average EV over scenarios \neq EV over average scenario



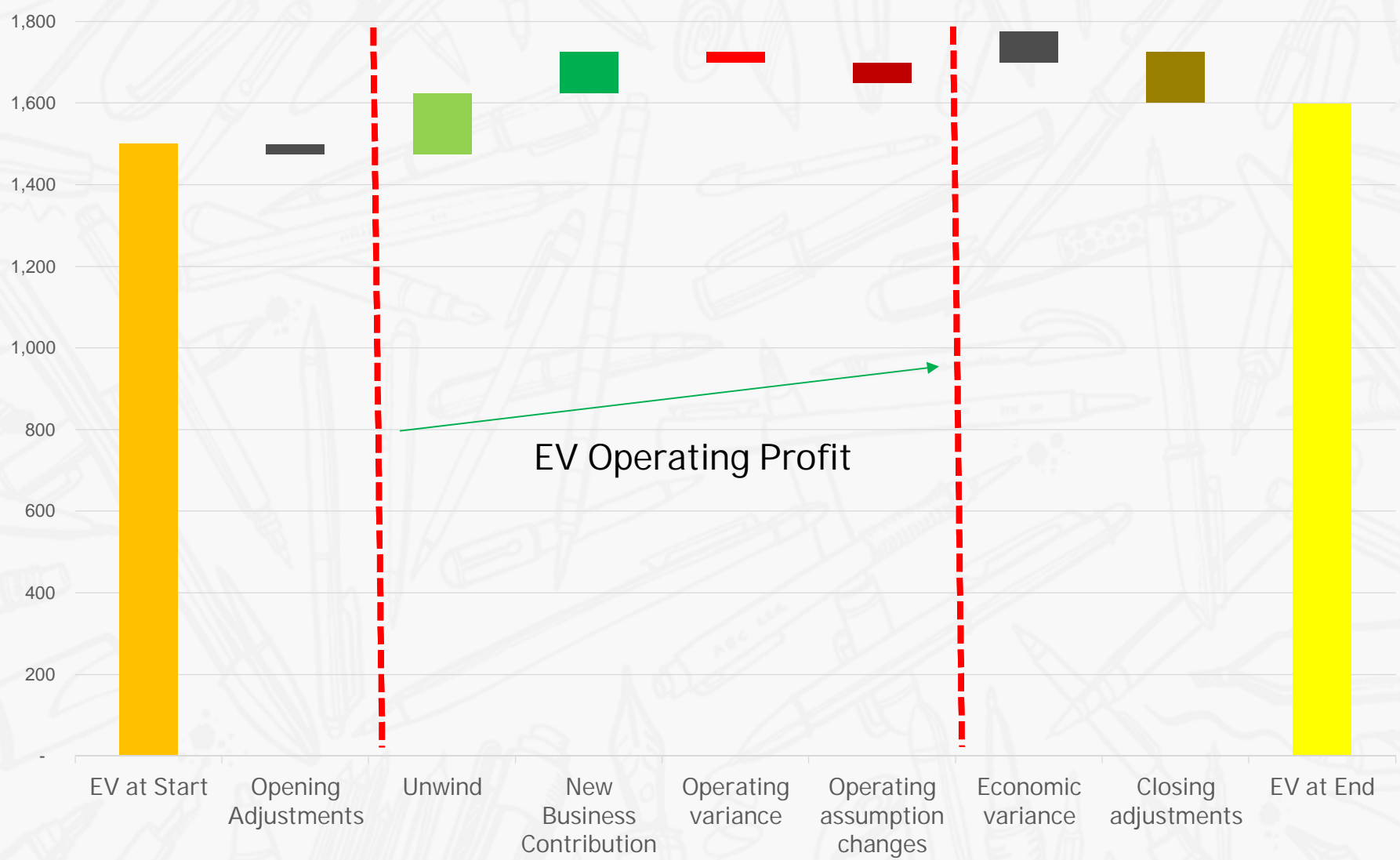
Analysis of Movement



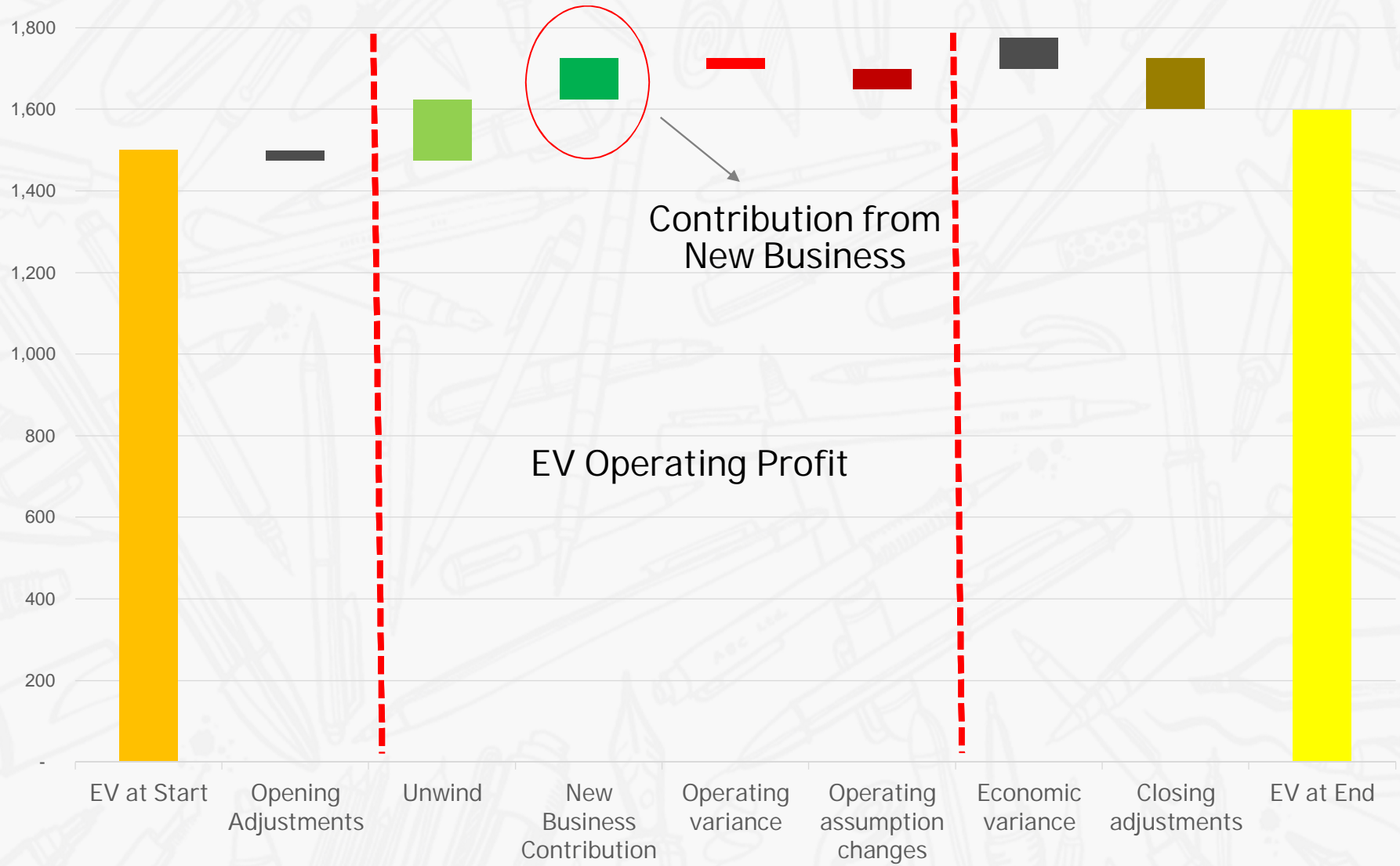
Analysis of Movement



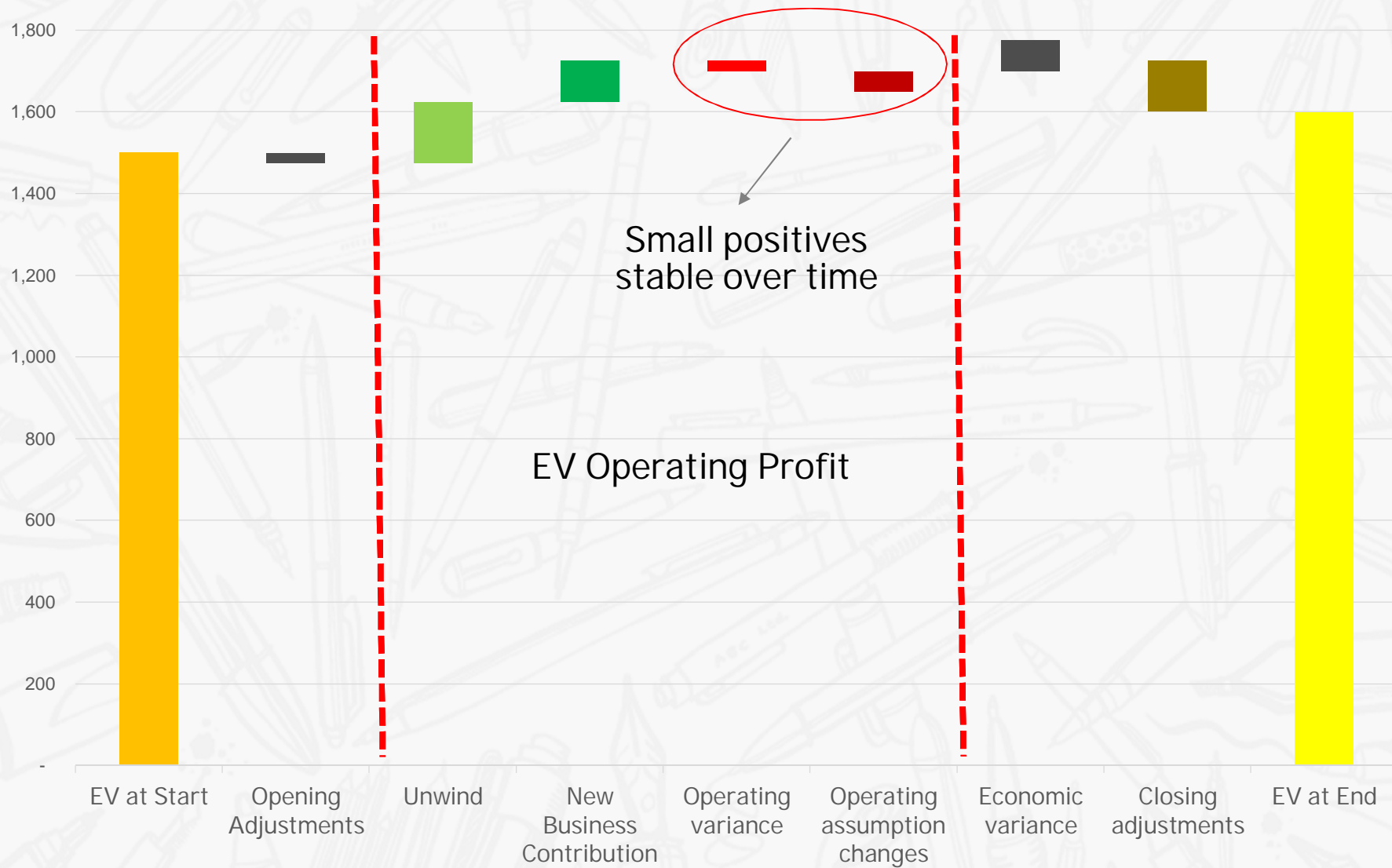
Analysis of Movement



Analysis of Movement



Analysis of Movement





Limitations

TEV Limitation

Subjective allowance for risks

- Product Portfolio
- Asset Mix
- Options and Guarantees
- Asymmetries

All risk allowances through RDR

Questions

