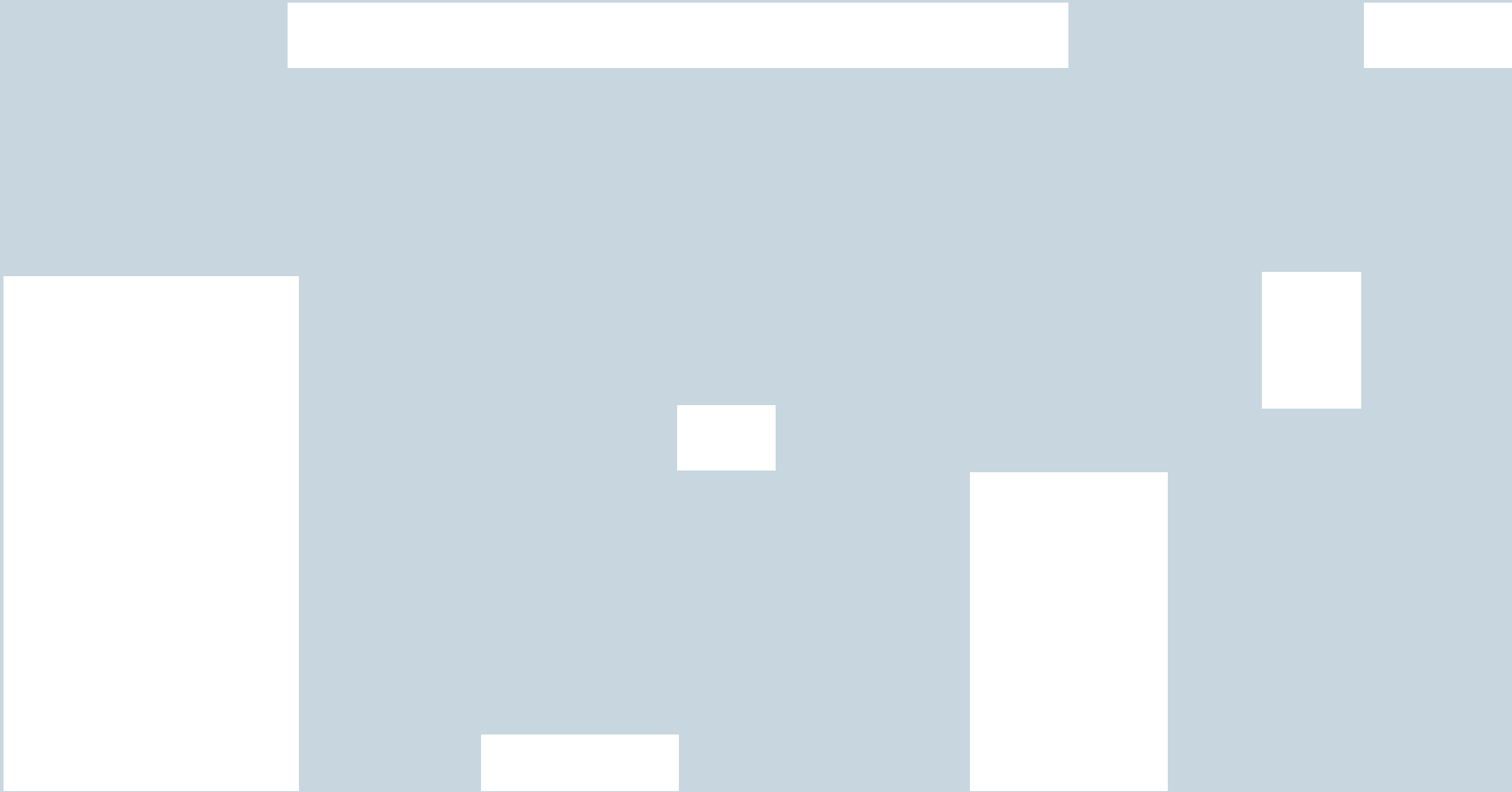


# Embedded Value for Property and Casualty Companies

September 2016

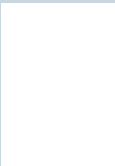
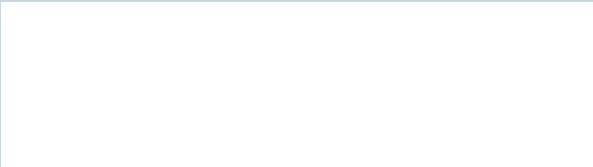
## Casualty Loss Reserve Seminar



# Agenda

- Introduction
- Components of embedded value
- Advantages and uses of embedded value
- Implementation challenges

# Introduction



## Recent events have posed serious challenges for insurers

- Low interest rates
- Volatile stock market
- Increased catastrophes
- Slow economic recovery
- Pressure on margins
- Increased reserves
- DAC write-offs
- Revenue volatility
- Demanding owners

**Insurers now have to prove themselves to skeptical owners**

# Do your owners/board/senior management understand how an insurance company creates value?

- Best practice companies use embedded values to
  - Evaluate business performance
  - Communicate with stockholders, rating agencies, regulators and other stakeholders
  - Make strategic decisions related to capital deployment
  - Incentive management
- Who uses embedded values?
  - U.S. subsidiaries of European, Canadian and Asian multinationals publish embedded values
  - U.S. domestic stock and mutuals - large and small - calculate embedded values, usually for internal purposes

2015 Year-End EV Disclosure Involving U.S. Companies	
John Hancock	Jackson National
Allianz	Legal and General
AXA	SCOR
Zurich	Protective
StanCorp	Symetra

## A number of companies headquartered in the US calculate EV for internal purposes

- US companies focus on using EV for:
  - Internal financial reporting
  - Economic capital
  - Value of new business
  - Incentive compensation
    - Some companies are particularly interested in EV as an incentive compensation metric given that EV links value and risk
- MetLife 2016 Proxy Statement:
  - “...the Accelerating Value initiative to increase sustainable Free Cash Flow, and continued to lead the development and reporting of Embedded Value metrics upon which Accelerating Value is based. The Company’s January 2016 press release announcing the plan to pursue the separation of a substantial portion of its U.S. Retail segment was due, in part, to this initiative.”
- AIG 2Q15 conference call:
  - “Our second quarter results demonstrate our steadfast commitment to value-based management – we’re taking action today to create long-term value for tomorrow,” Peter D. Hancock, AIG president and chief executive officer
- The Hartford has used market consistent valuation for its runoff VA business

# How to measure the value of any company

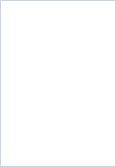
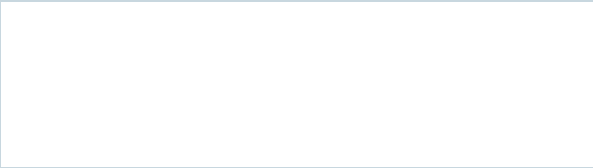
- There are many ways to measure the value of any company. One way is to divide the value of a company into three components
- Value of tangible assets
- Tangible assets include cash, accounts receivable, inventory, equipment, real estate
- Value of liabilities
- Liabilities include short and long term debts
- Value of intangible assets
  - Future profits due to
    - Brand
    - Relationships
    - Distribution arrangements
    - Customer lists
    - Customer contracts
    - Non-compete agreements
    - Intellectual property
    - Licenses
    - Patents
    - Trademarks
    - Copyrights
    - Royalties
  - Challenging to determine

## How to measure the value of an insurance company

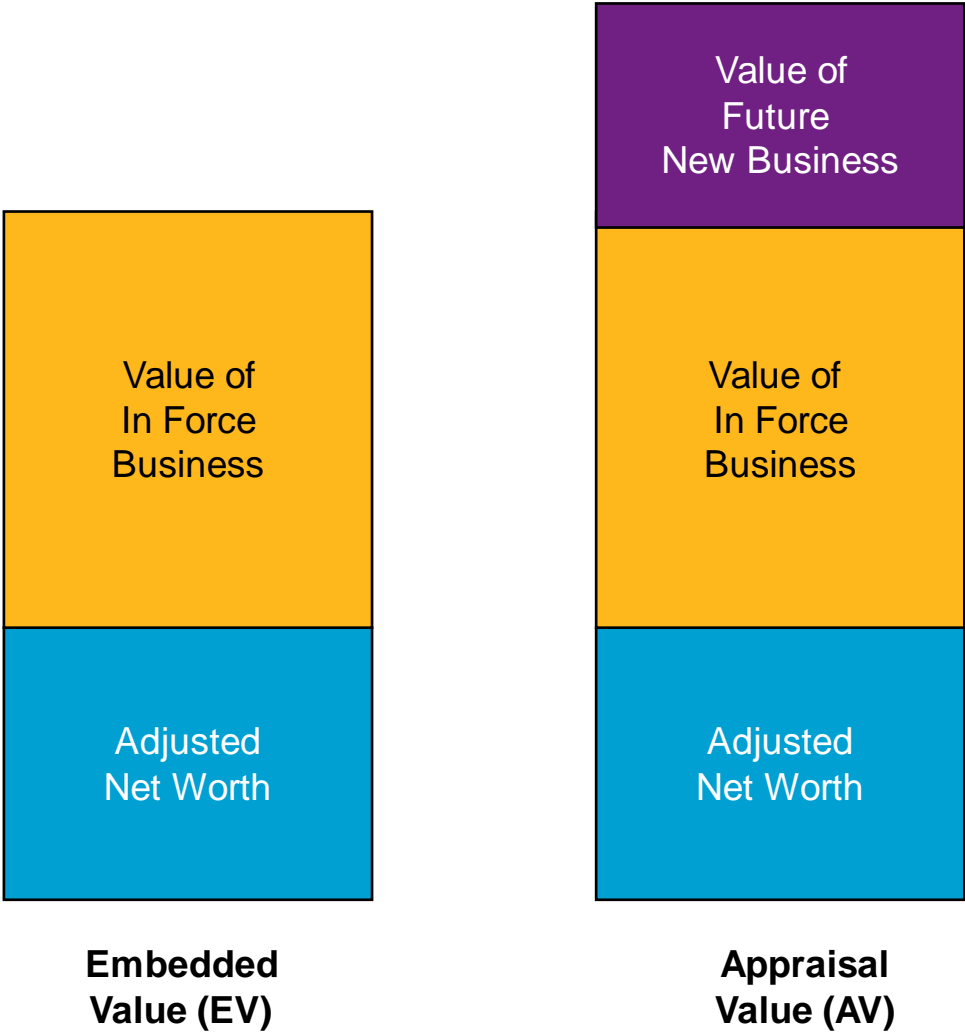
- Same components as any other company plus one new component
- Same components
  - The difference between the value of the tangible assets less the value of liabilities
    - Called “Adjusted Net Worth” (ANW)
    - Statutory capital and surplus, with adjustments
  - The value of intangible assets
    - Called “Value of Future New Business” (VNB)
    - Value of five to ten years of expected new business
- One new component that is unique to the insurance business
  - Future profits related to business already sold (i.e., policies on the books)
  - Called “Value of In Force Business” (VIF)
  - Arises due to the long term nature of insurance contracts and the conservative nature of reserves
  - Not as challenging to determine as the value of new business



# Components of embedded value

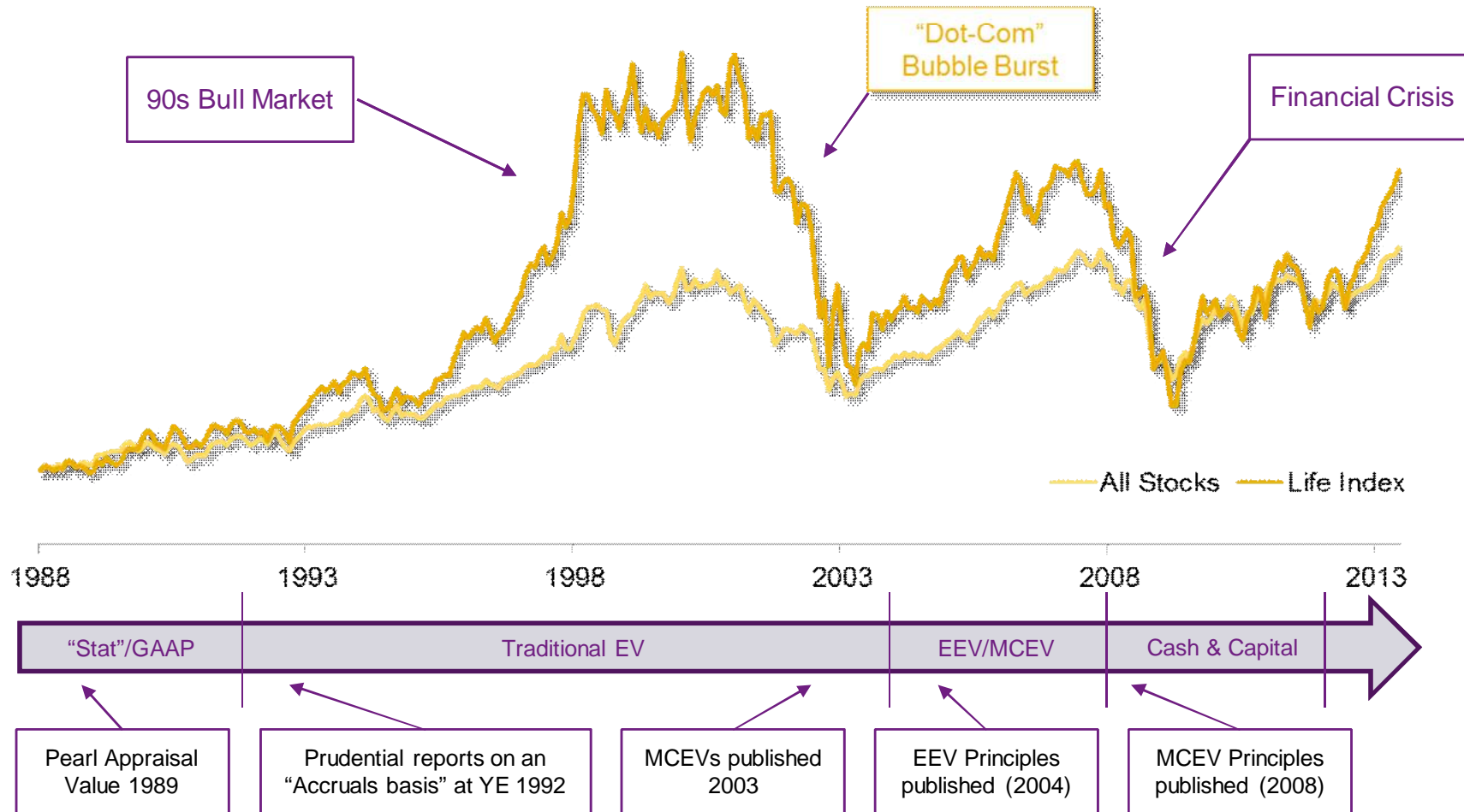


For performance management purposes, insurance companies typically focus on embedded value which excludes the value of future new business



## Developments in Financial Reporting

EV methodologies have evolved as each major market event creates new challenges

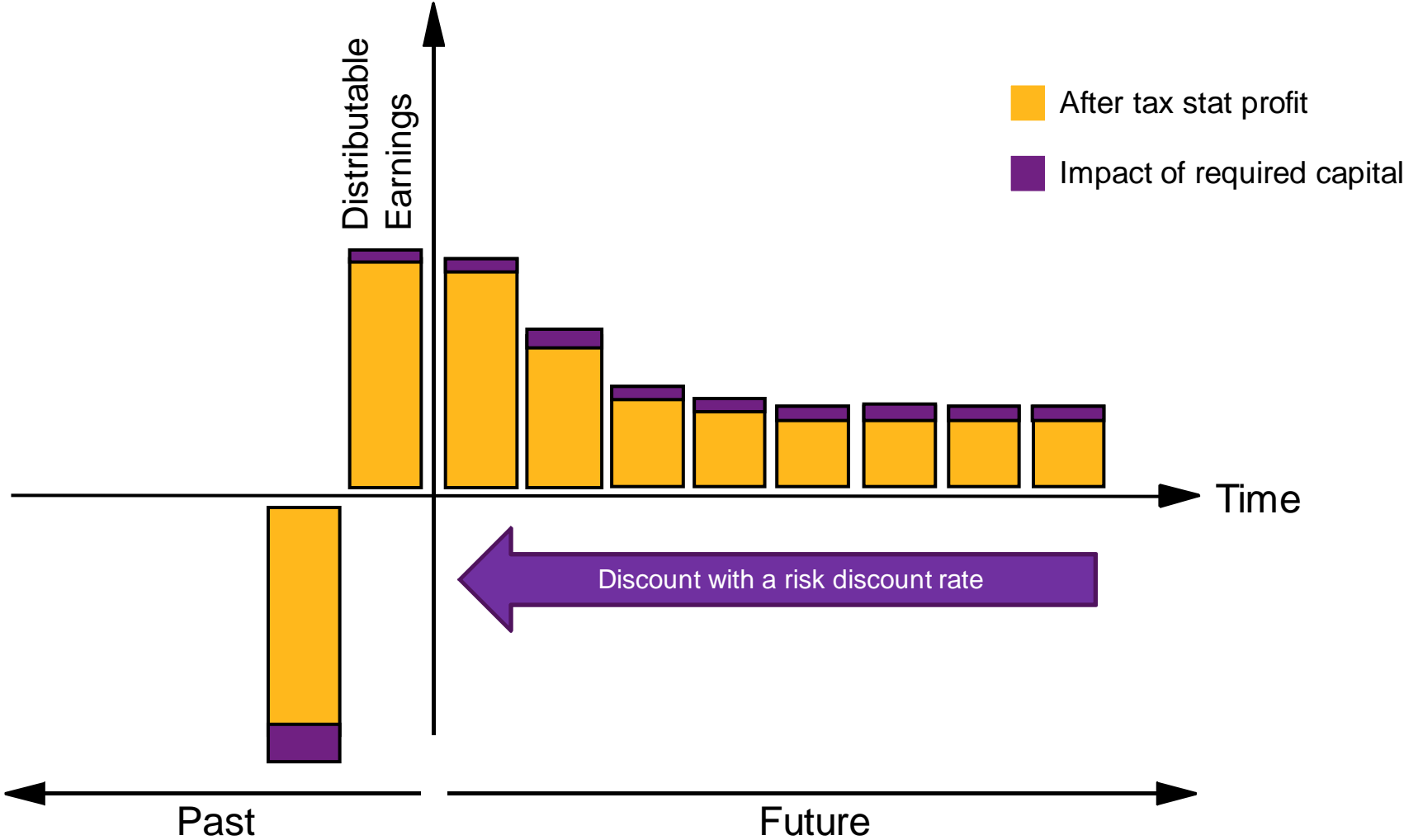


Source: Willis Towers Watson analysis of Bloomberg data

## Adjusted net worth (“ANW”)

- The starting point for adjusted net worth is the statutory capital and surplus taken directly from the statutory statement
- Adjustments may consist of:
  - Asset Valuation Reserve (“AVR”)
  - Interest Maintenance Reserve (“IMR”)
  - Non-admitted assets — to the extent they have realizable value
  - Certain tax adjustments — such as book to tax carrying value differences in the assets and the impact of the existing DAC tax balance
  - Market value adjustment — in order to mark-to-market any assets supporting free surplus
  - Miscellaneous items more appropriately classified in adjusted net worth rather than the value of in-force business, such as unauthorized reinsurance

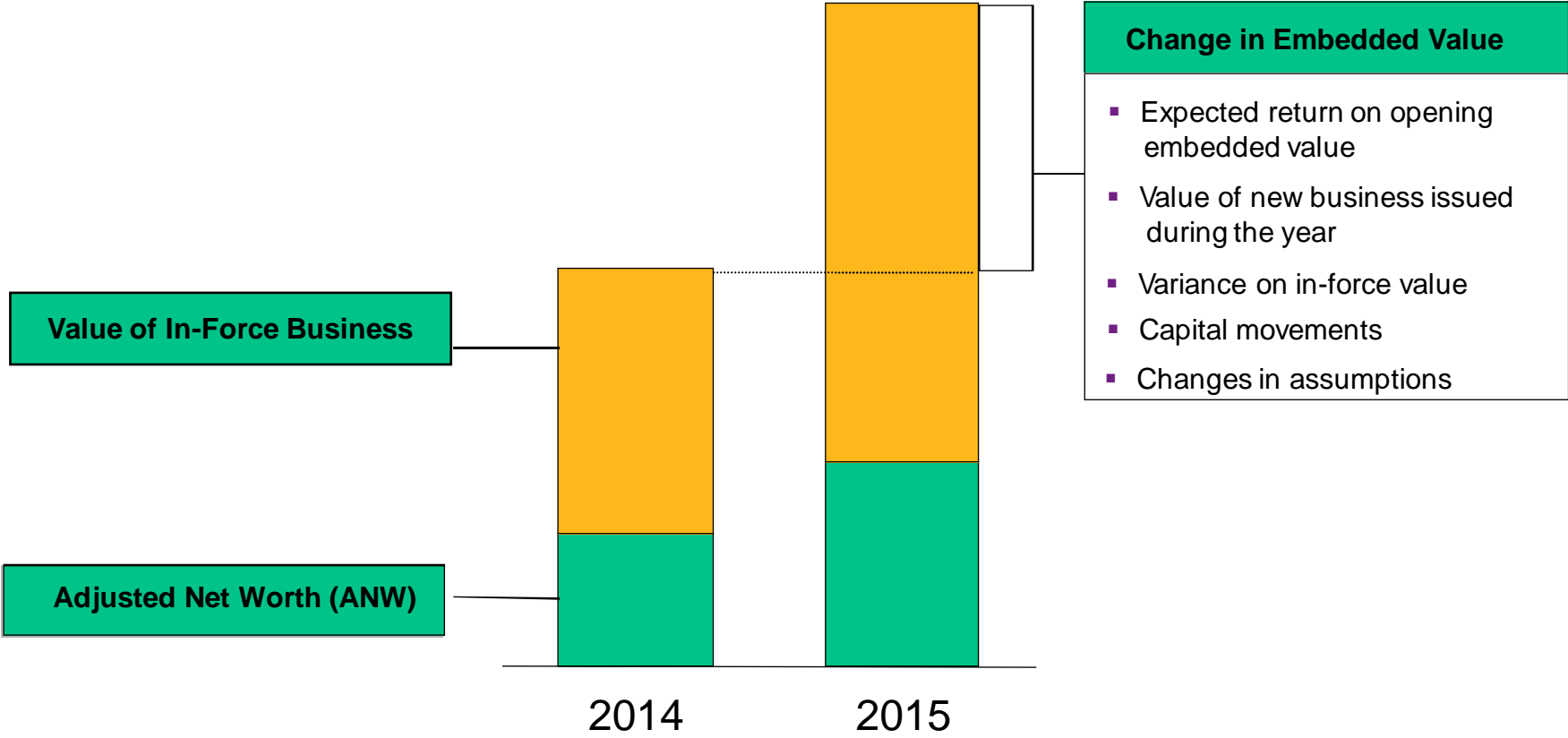
The value of in-force business considers expected future statutory profits from all past generations of business



## The value of in-force business is the present value of distributable earnings from in-force business

- Requires models of assets and liabilities for all significant lines of in-force business
  - Spreadsheets or simplified valuation techniques may be used for less significant businesses
  - Depending on the nature of the business, stochastic projection techniques may be required for some product lines or a simplified allowance for the expected cost of material options and guarantees may be appropriate
- Based on best-estimate assumptions
  - Operational
    - Claim losses (catastrophes)
    - Persistency
    - Expenses
    - Premiums, charges and fees
    - Reserves
    - Taxes
    - Capital
  - Financial
    - Investment returns
    - Inflation
    - Discount rate

The change in embedded value shows whether value has been created or destroyed during the period



**For financial reporting, the change in EV is more important than the actual EV**

## The change in embedded value shows the reasons why value has been created or destroyed

$$EV_1 = EV_0$$

- ± Expected change in embedded value
- ± Experience variances
  - ± Claims
  - ± Lapses/Persistency
  - ± Renewals
  - ± Expenses
  - ± Investment returns
- ± Value added by new business issued in the year
- ± Changes in assumptions
- ± Shareholder dividends, capital infusion



## Change in Embedded Value - Example

	Product 1	Product 2	Total	Explanation
Embedded Value at End of 2014	40	100	140	
± Expected change in embedded value	3	8	11	
± Experience variances				
± Claims	-	-	-	
± Lapse/persistence	-	-	-	
± Expenses	-	(5)	(5)	2015 expenses were higher than expected due to unexpected lawsuit that was ultimately dismissed
± Investment returns	2	3	5	2015 investment income on assets was greater than expected due to higher than expected interest rates
± Value added by new business issued in the year	(1)	5	4	2015 new business returns for Product 1 are too low to achieve target profitability because trying to increase market share. 2015 new business returns for Product 2 exceed target profitability (niche market)
± Changes in assumptions	4	6	10	Interest rates rose during 2015 so interest rates were assumed to increase going forward. No change was made to future expense levels because lawsuit was considered a one time non-recurring event
± Shareholder dividends, capital infusion	-	-	-	
Embedded Value at End of 2015	48	117	165	

# Change in Value of New Business - Example

	Product 1	Product 2	Total	Explanation
Expected Value of New Business (i.e., pricing)	1	2	3	
Actual Value of New Business	-1	5	4	
Difference	-2	3	1	
<u>± Sales</u>	1	2	3	Sold more than expected
<u>± Claims</u>				
<u>± Lapse/persistency</u>				
<u>± Expenses</u>	-4	0	-4	Acquisition expense overruns (i.e., greater than pricing)
<u>± Investment returns</u>	1	1	2	Actual interest rates greater than interest rates used for pricing

# EV external disclosures and internal reports

## Contents of a typical EV disclosure / internal report

### 1 EV at valuation date

ANW	xxx
VIF	xxx
<b>EV (=ANW+VIF)</b>	<b>xxx</b>
VNB	xxx

### 2. Movement Analysis

<b>EV at BoP</b>	<b>xxx</b>
VNB	xxx
Expected Return	xxx
Variances	xxx
Other	
<b>EV at EoP</b>	<b>xxx</b>

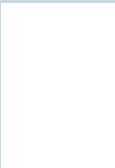
### 3. Sensitivities

- Interest
- Lapse
- Claims
- Expense
- Other

### 4 Commentary on key assumptions, methodology and results

Internal EV reports will provide significantly more detail and commentary, e.g., results by product, additional movement analysis components

# Advantages and uses of embedded value



# EV reporting offers unique advantages relative to GAAP and Statutory reporting

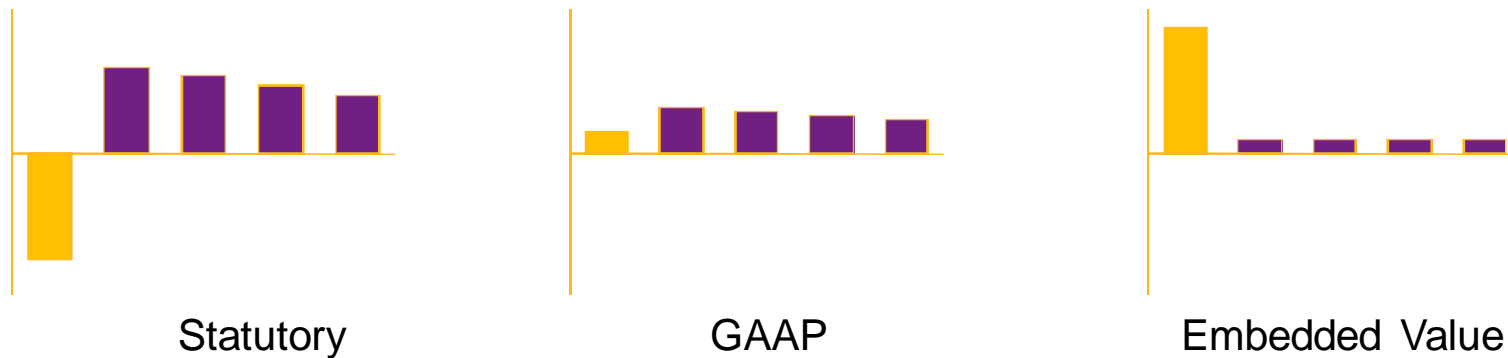
	EV	GAAP	Statutory
Focuses on economic value	✓✓✓	✓	✗
Earnings conservatively reported	✗	✓	✓✓✓
Isolates value of new business issued	✓✓✓	✗	✗
<ul style="list-style-type: none"> <li>▪ Growth and profitability</li> <li>▪ Link to pricing</li> </ul>			
Early warning of adverse developments in inforce	✓✓✓	✓	✓
Differentiates the components of value	✓✓✓	✗	✗
Supports comparison of alternative products and business strategies to determine which add value	✓✓✓	✓	✗
Correlated to stock price	✓✓✓	✓	✗
Reflects cost of capital	✓✓✓	✗	✗

## The Importance of the Value of New Business Issued During the Year

- Growth is all about putting profitable new business on the books
- Embedded value allows company to see how much of a company's current change in value is represented by in-force vs. new business
- The value of new business indicates whether new business is being priced above or below the target hurdle rate

# The same profits arise under statutory, GAAP and EV; the difference is the timing of profit recognition

## Example: Profit Recognition on New Business

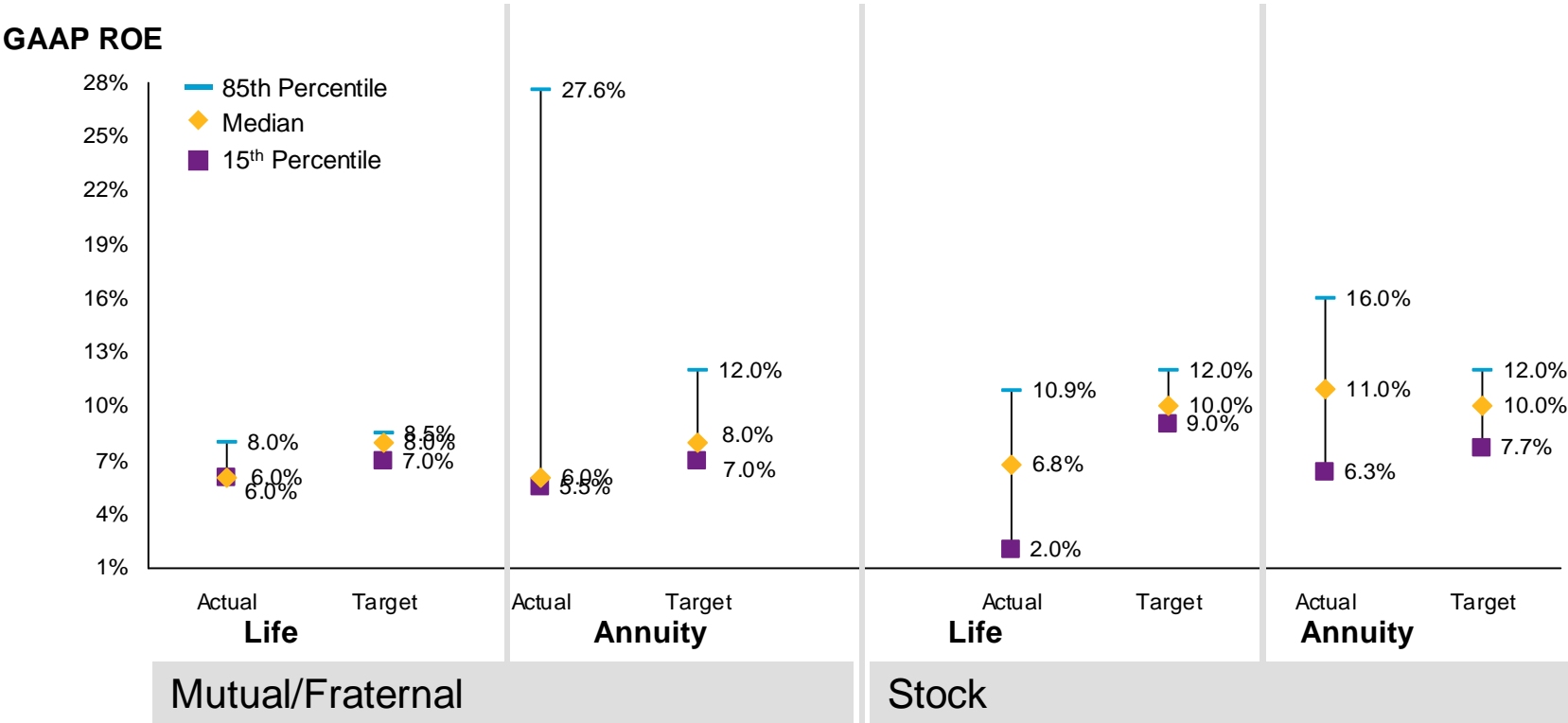


- Under Stat reporting, a loss emerges in the year of issue
- Under GAAP reporting, the value of improved sales is spread over all future periods, resulting in little improvement in the current year's results
- Under EV reporting, the value of improved sales shows up in the current period

The consequence of deferring profit is that results today are dominated by decisions made in earlier periods

**Median GAAP ROEs achieved for life business in-force in 2014 are generally lower than targeted median ROI/ROEs for 2014 new issues**

**2014 Actual GAAP ROE vs. Targeted ROI/ROE (Unleveraged)**



Not surprisingly, there is considerably more variability in actual results than in targeted objectives

Source: 2015 Willis Towers Watson Pricing Methodology Survey

Note: Actual and targeted minimum and maximum results are not necessarily for the same company.



## 52% of respondents indicated that actual ROE was significantly different than target ROE

In general, actual ROE is worse than targeted ROE for about half of the respondents

Most companies cited reasons as:

- Low interest rate environment
- Higher than expected expenses
- In-force business less profitable than new business

Source: 2015 Willis Towers Watson Pricing Methodology Survey

## EV as a Business Function

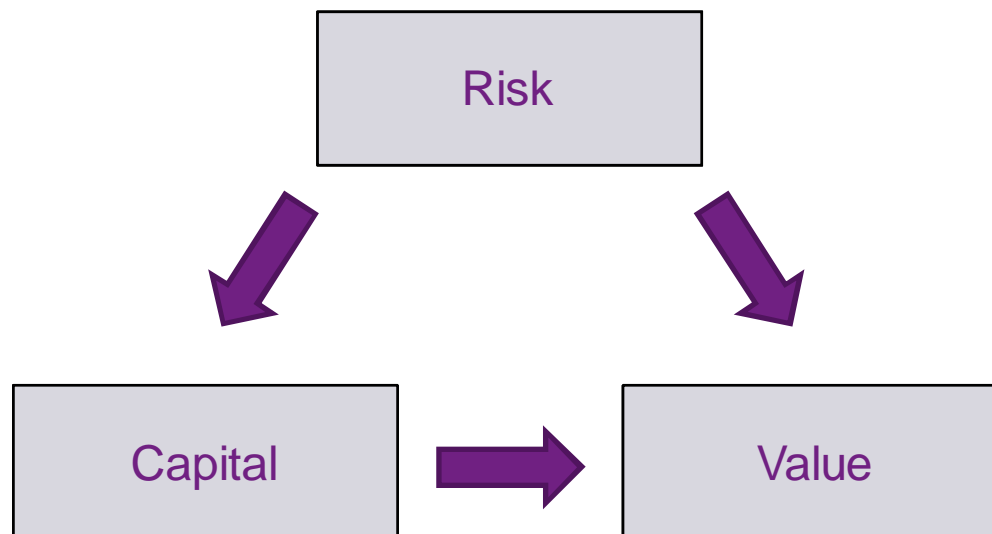
EV business processes observed in other companies

Function	Application
<b>Business Unit Management</b>	<ul style="list-style-type: none"> <li>▪ Managing existing portfolio: focus attention on most critical “value-drivers”</li> <li>▪ Product development and pricing</li> <li>▪ Managing distribution channels and customer relationships</li> <li>▪ Planning, prioritization and decision making</li> <li>▪ Determine expected return for investments</li> <li>▪ Forecasting</li> </ul>
<b>Financial Reporting</b>	<ul style="list-style-type: none"> <li>▪ Internal financial reporting</li> <li>▪ Setting financial targets for business units and measuring performance</li> <li>▪ Communicating targets internally</li> </ul>
<b>Corporate Planning</b>	<ul style="list-style-type: none"> <li>▪ Allocate capital among existing businesses</li> <li>▪ Consider acquisitions/divestitures</li> </ul>
<b>Strategic Planning</b>	<ul style="list-style-type: none"> <li>▪ Ensure that business plans do not destroy value</li> <li>▪ Define business unit role in corporate portfolio</li> </ul>
<b>Incentive Compensation</b>	<ul style="list-style-type: none"> <li>▪ Establish appropriate performance targets</li> <li>▪ Pay incentive compensation in line with value created</li> </ul>
<b>Risk Management</b>	<ul style="list-style-type: none"> <li>▪ Base balance sheet for EC calculations</li> <li>▪ Link between risk, value and capital management</li> </ul>

## Corporate & Strategic Planning

EV promotes an economic view of capital and risk management

- Risk exposure determines capital needs
- Required capital is a function of the tail of the risk distribution
- The price of risk is a key driver of value creation
- Price depends on overall characteristics of the risk distribution
- Capital utilization has a cost and hence reduces value creation



***Value is created when performance exceeds the price of risk and the cost of capital employed. EV therefore can be a key indicator of the value creation for the company***

## Economic Capital (“EC”)

### Using EV to calculate EC

- Economic capital could be measured as “embedded value at risk”
- The EC can be defined as the difference between a *baseline* EV and *stressed* EV
- Stresses can be defined as 1 in [x] events (e.g., for a 99% confidence interval, x would be 100)
  - Statistical distributions are used to determine the magnitude of the shock based on the confidence interval chosen
- Illustrative example (exposed to 2 risks)
  - Equities: A 1 in 100 event is equivalent to a 40% drop in equity returns
  - Interest rates: A 1 in 100 event is equivalent to a decrease of 100bps to interest rates
- The EC is aggregated using a correlation matrix:

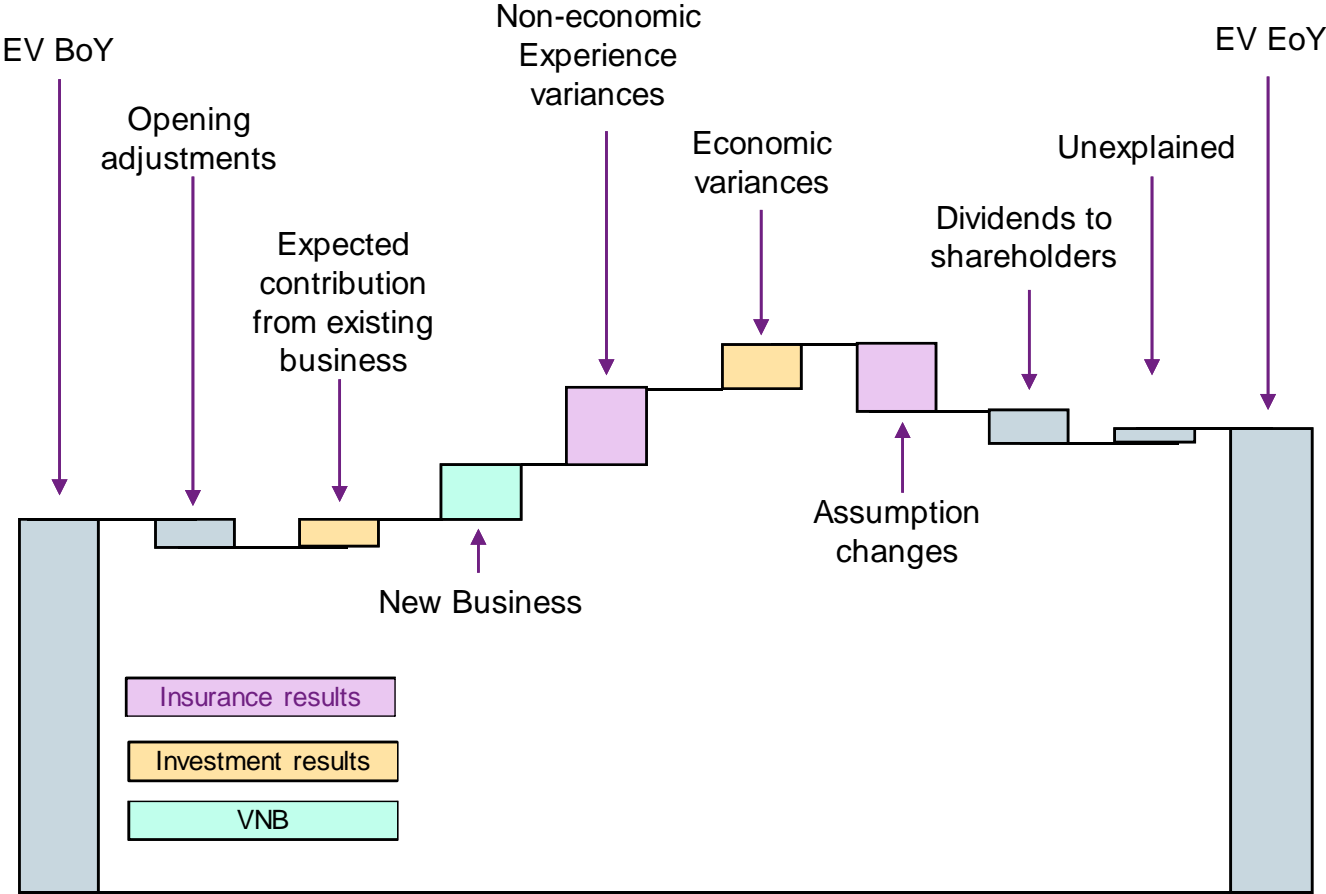
Correlations	Equities	Interest rates
Equities	100%	50%
Interest rates	50%	100%

Risk	Impact to EV
Equities	\$-40m
Interest rates	\$-20m

- Baseline EV = \$200m, Stressed EV = \$147.1m → EC = \$52.9m

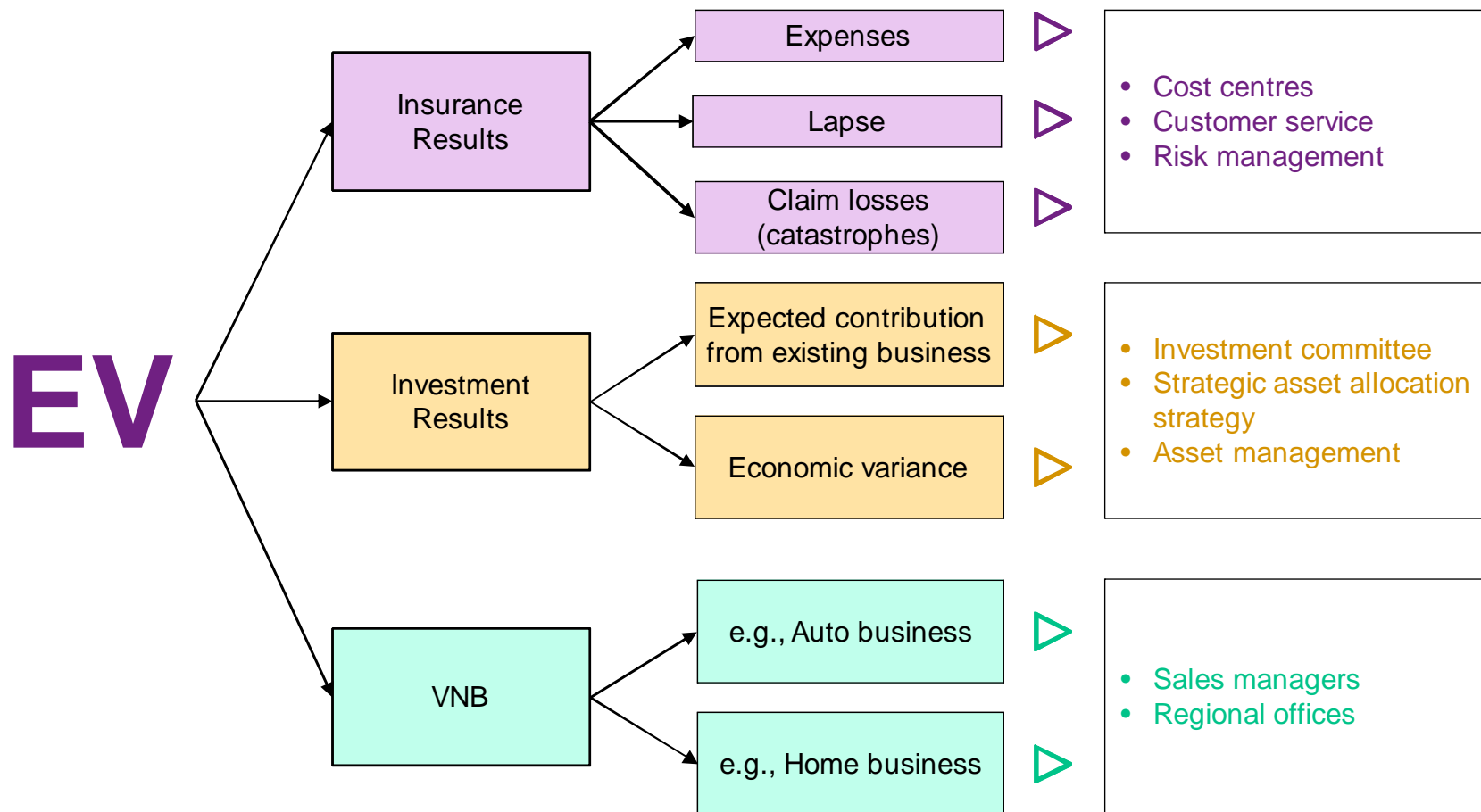
# Overview of Movement Analysis

The Movement Analysis includes several key components



# Managing Movement Analysis

Managing value through Movement Analysis



## Other Uses of Embedded Value

- **Incentive compensation**
  - Short term incentive plan - Value of new business
  - Long term incentive plan - Growth in embedded value
  - Reward management for what is within their control (e.g., do not punish management for interest rate swings if company decided to not hedge interest rates)
- **Tests the recoverability of DAC**
  - The value of business in-force should at least be equal and hopefully greater than the initial acquisition expenses (i.e., greater than the DAC)
  - Otherwise the company may be too aggressive in its assumptions
- **Provide minimum valuation level for insurance acquisitions**
  - Acquirers typically pay embedded value plus some multiple of the value of one year's new business
  - The effect of the acquisition can clearly be seen in the embedded value of the acquirer
    - Adjusted new worth declines assuming cash is paid for the acquisition
    - Value of in-force increases, reflecting in-force business acquired

## Other Uses of Embedded Value

- Discussions with rating agencies
- Basis for economic capital calculations
- Comparison between products and/or regions and/or distribution channels
  - Required capital
  - Level and timing of distributable earnings
  - In-force

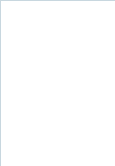
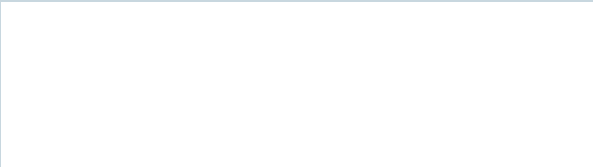
Product	Required Capital	Value of In-Force	Embedded Value	Distributable Earnings: Years 1 – 10	Distributable Earnings: Years 11+
Product 1	40	8	48	-1.4	36.8
Product 2	30	87	117	112.5	18.75

- New business

Product	Required Capital	Statutory Profits or Losses (Strain) During the Period	Present Value of Distributable Earnings After the Period	Value of New Business	Internal Rate of Return	Breakeven Year	Profit Margin
Product 1	3	-3	5	-1	7%	13	2%
Product 2	3	-8	16	5	10%	12	6%



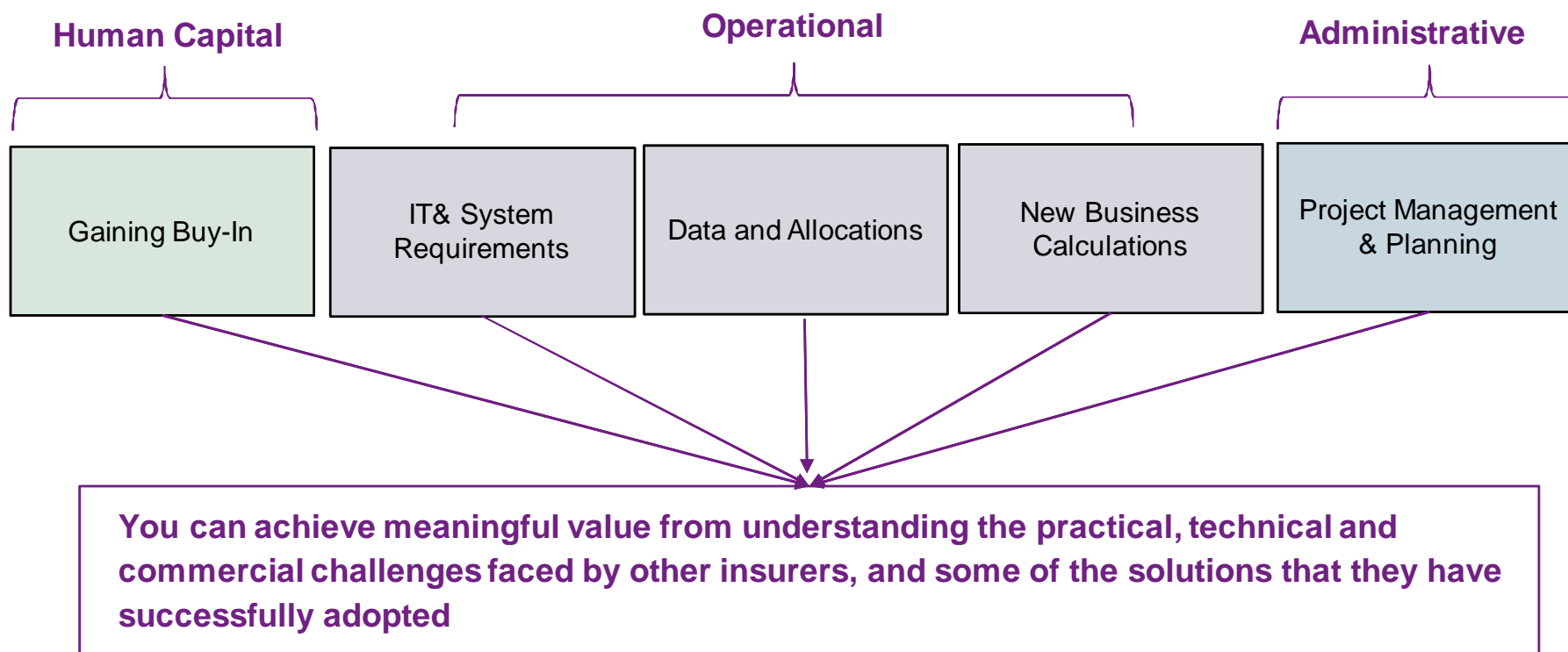
# Implementation challenges



# Challenges & Keys to Success

## Critical factors for successful EV implementation

Successful implementation of EV is an attainable, yet a challenging goal. Below are the key areas that require sufficient up front attention to help ensure the initial implementation is a success



# Human Capital Challenges & Keys to Success

## Gaining buy-in from internal resources

At first, the calculations are “yet another set” of financial reports that have to be done on top of everything else. They may not be a high priority, in which case they arrive late. If staff do not believe they are important, the quality will be poor. To reduce this risk, support needs to be demonstrated from:

- Senior leadership for people and system resources, in addition to the mandate that has already been given
- Business units for commitment to handle volume of work, prioritization with other projects, training staff, development templates, etc.

Additional Keys to Success Include:

- Setting clear objectives and realistic timelines
- Linking these objectives and timelines to incentives and management of the business
- Ensuring sufficient dedicated resources with a clear mandate relative to BAU
- Educating key stakeholders on embedded value and its benefits

# Operational Challenges & Keys to Success

## IT & system requirements

### System Requirements

- Clear understanding of methodology and approach to various technical issues as these will impact modeling requirements
- I/T and systems support for product models is paramount
  - Multiple runs (stochastic analysis) → will a cloud or grid be needed?
    - Is the model grid / cloud compatible? Has it been tested on grid/cloud?
    - Data storage requirements for output and model backups
    - Will any new hardware be needed?
    - What are the economic implications?
- Model building, testing, change control, model risk management and grid management is essential
- Simplified approach may be appropriate for small BUs or certain products where complexity is not justified (e.g., use of factors instead of nested stochastic calculations)
- Limit number of 'out-of-model' adjustments
- Opportunity to develop other models
- When EV reporting becomes BAU, involving IT to automate as much as possible the financial reporting process can generate efficiencies

# Operational Challenges & Keys to Success (continued)

## Data and allocations

### Data and Allocation Requirements/Challenges

- Income statement and balance sheet data by product is sometimes either not available on a statutory basis or does not line up well with model output
- Allocations of the following by product and by new business vs. inforce is required for EV but may not be readily available
  - Assets
  - Expenses
  - Required capital
  - Taxes
- Data required for adjusted net worth calculations can be challenging to obtain the first time an EV calculation is performed
  - Value of non-admitted assets
  - Value of deferred tax assets
  - Market value adjustment on assets backing free surplus
- Getting accountants/controllers involved early can be very helpful

## Operational Challenges & Keys to Success (continued)

There are several challenges when modeling new business

- Use pricing models or EV models
  - Accuracy vs. time
  - Ownership of the models (valuation, finance, pricing team)
- Reconciliation of pricing to EV models expected to be challenging:
  - Different platforms between pricing and EV
  - Different assumption structure
  - EV model uses seriatim file, VNB uses representative cells

# Administrative Challenges & Keys to Success

## Project management & planning

### Project Management

- Because EV timetables conflict with other financial reporting requirements, they require dedicated project management
- 'Ineffective' project management and desire to hit deadlines at all costs, with insufficient or unskilled resources may compromise quality and create inefficiencies
- Project management efforts tend to be underestimated
- Coordination with third party vendors is needed

### Planning

- Good planning is vital. Quick starts and short cuts can lead to problems longer term
- Factor in business as usual ("BAU") priorities
- Use existing and well proven templates, tools and approaches
- Recognize and leverage resources and skills available both internally and externally

# Financial Reporting

Five stages of financial reporting evolution

	Stage 1: Technical	Stage 2: Controls/ Governance	Stage 3: Analysis	Stage 4: Forecasting/ Budgeting	Stage 5: Driving Decisions
Clear line of sight from financials to company actions?					✓
Able to produce realistic forecasts under multiple scenarios?				✓	✓
Able to explain results and why they differ from expectations?			✓	✓	✓
Is the process controlled and auditable?		✓	✓	✓	✓
Able to produce results correctly?	✓	✓	✓	✓	✓



## Governance and controls are very important

- Standardized EV reporting templates and documentation
- Internal and external reviews of models, assumptions, methodology and results
- Reconciliation to audited financials
- Static and dynamic model validations
- Reasonableness checks of projections and results
- Documentation of methodology, assumptions, models, results, reconciliations, validations, reasonableness checks and explanation of results
- Signoffs at senior levels (e.g., chief actuary and/or CFO)

## For more information...

**WillisTowersWatson** 

**Dominique Lebel, FSA, FCIA, MAAA**  
**Director and Leader, Americas Life Financial Reporting**  
**and Hartford Life Practice**

175 Powder Forest Drive      T +1 860 843 7161  
Weatogue, CT 06089-9658

[dominique.lebel@willistowerswatson.com](mailto:dominique.lebel@willistowerswatson.com)