Introduction to EV

Concept and Components

Actuarial Department

Bangkok Life Assurance

Embedded Value

Why do we need to calculate embedded value?

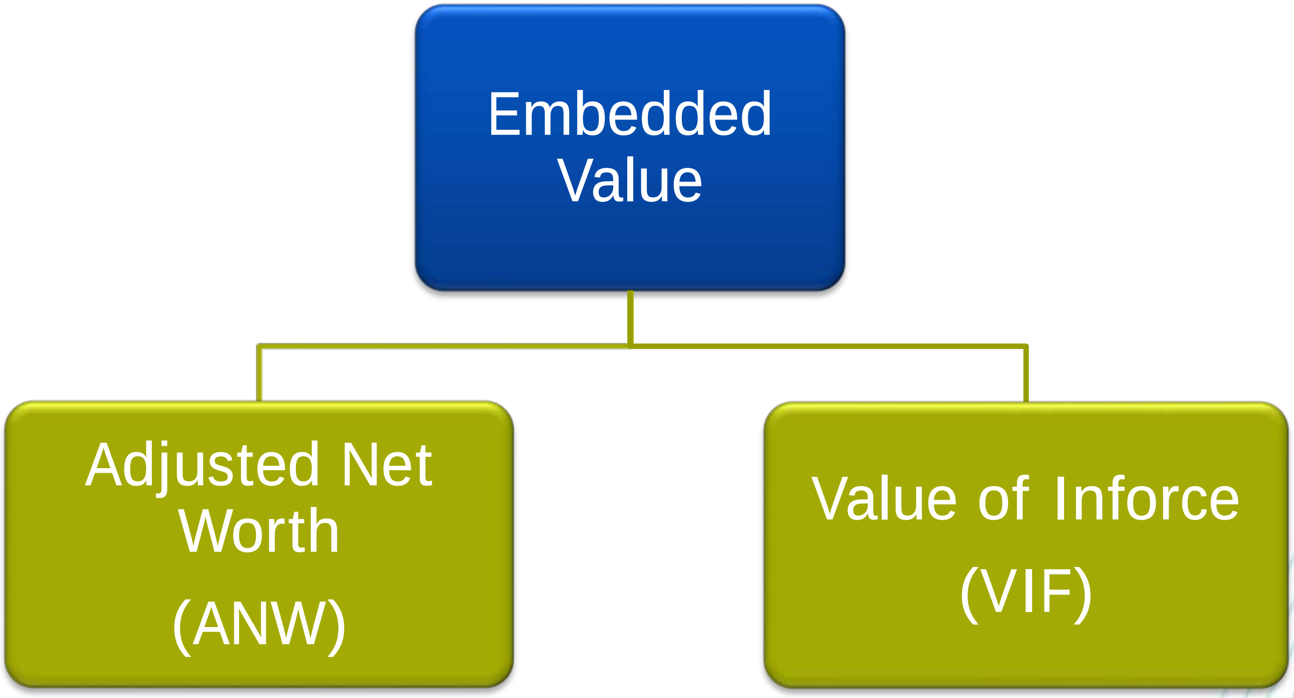
Evaluating life insurance companies is different from other businesses because it has much longer term of liabilities. This longer term of liabilities requires a method to estimate the future profit. Thus, this leads us to the embedded value calculation.

Comparison components of "other business" and "life insurance business"

Value of "Other businesses"	Value of "Life insurance business"
Net worth (ANW)	
The profit can be realized in the same year it is sold	The profit is estimated throughout the future years and summarized into a present value. This means the policy sold ten year ago may still generate the profit at the valuation date today (VIF)
Franchise value and Potential future income (VNB)	

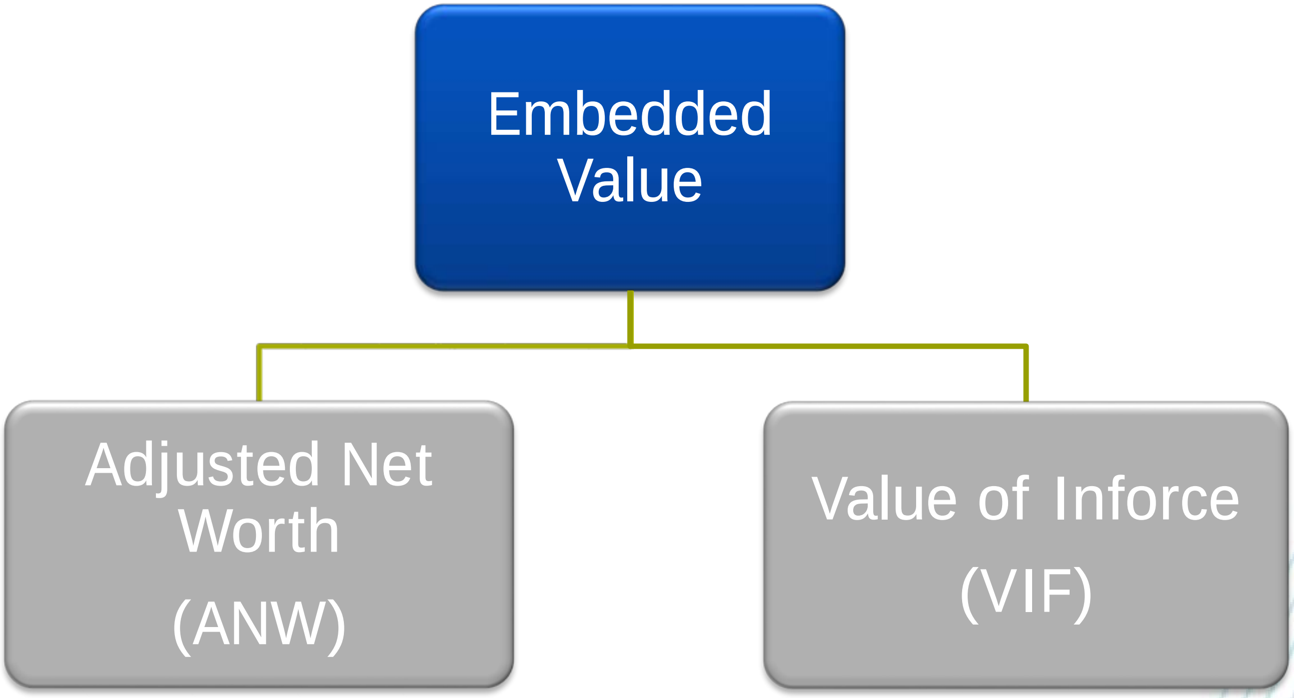
Embedded Value

Life Insurance Company’s Value



Embedded Value

Embedded Value



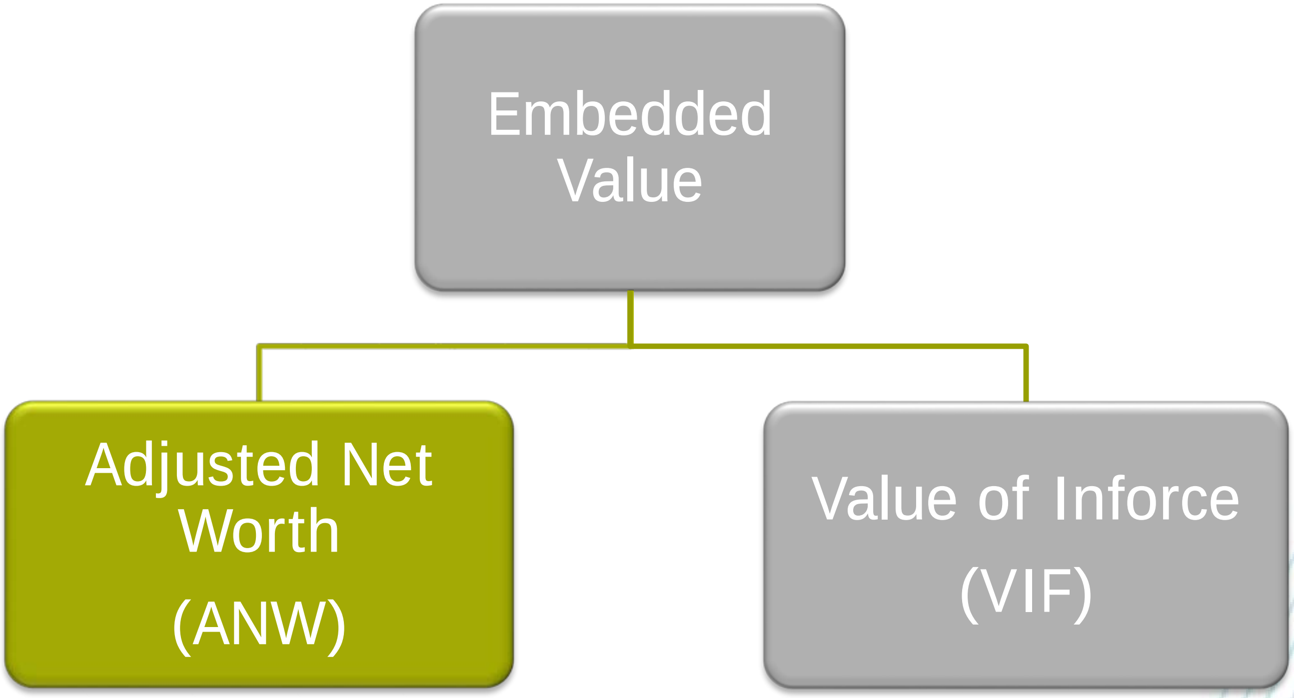
Embedded Value

Embedded Value is defined as the sum of the net asset value and present value of future profits of a life insurance company on inforce business. This can be seen as the value of company if it stops selling products, but remain operating until the liability has run off.

$$\boxed{EV_t = ANW_t + VIF_t}$$

Embedded Value

Component : Adjusted Net Worth

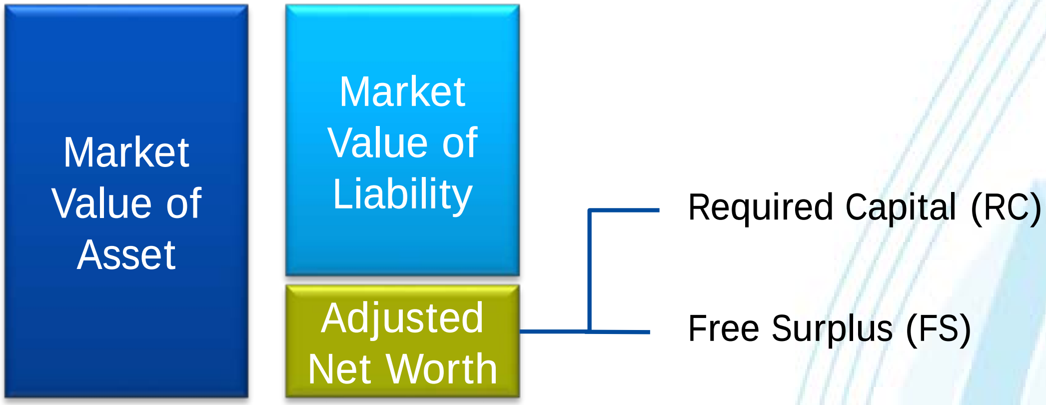


Embedded Value

Component : Adjusted Net Worth

Adjusted Net Worth is the realizable value of capital and surplus, excluding intangible asset (e.g. Goodwill). Statutory capital and surplus are adjusted to include certain liabilities that are allocations of surplus and non-admitted assets that have realizable value.

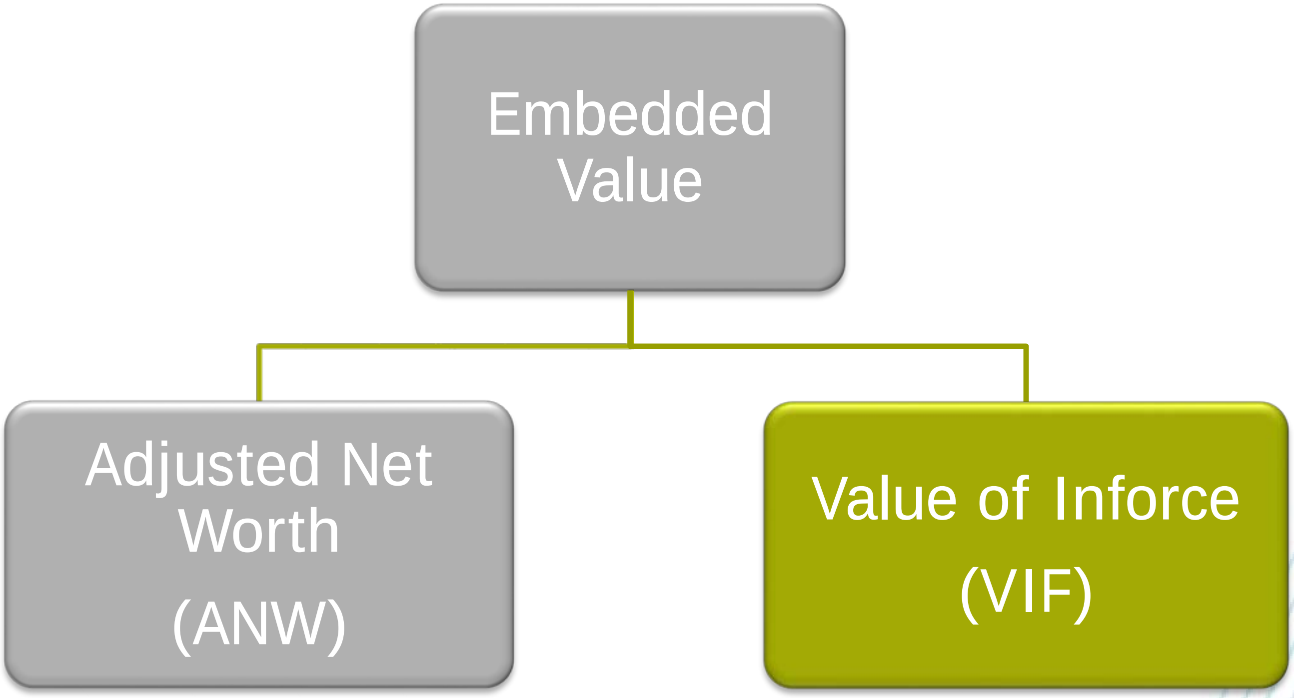
In other words, it is the market value of total asset less the market value of total liability. However, not all are distributable since it is consist required capital (RC) and free surplus (FS)



Source : Embedded Value: Practice and Theory [March 2009 issue of the Actuarial Practice Forum, SOA]

Embedded Value

Component : Value of Inforce Business



Embedded Value

Component : Value of Inforce Business

Value of Inforce Business is the present value of after-tax **future profits** (PVFP) less the present value of the cost of capital (PVCoC), both computed with **best-estimate assumptions** at the date of valuation and discounted to the valuation date at a risk discount rate (RDR)

Year	0	1	2	3	4	. . .	n-1	n
Profit		Pr_1	Pr_2	Pr_3	Pr_4		Pr_{n-1}	Pr_n
CoC		CoC_1	CoC_2	CoC_3	CoC_4		CoC_{n-1}	CoC_n

$$VIF_0 = PVFP_0 - PVCoC_0 = \sum_{t=1}^{n} \frac{\Pr_t}{(1+RDR)^t} - \sum_{t=1}^{n} \frac{CoC_t}{(1+RDR)^t}$$

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Embedded Value

Component : Value of Inforce Business

Future Profit after tax at time t

At future point (t), the profit is calculated from total income less total outgo

$$\boxed{\Pr_t = (Income_t - Outgo_t) \times (1 - Tax)}$$

Where $$Income_t = Premium_t + InvesmentReturn_t$$

$$Outgo_t = BenefitPayment_t + Expenses_t + \Delta Reserve_t$$

Embedded Value

Component : Value of Inforce Business

Best-Estimate Assumption

Since future profit is generate using actuarial model, the assumptions underlying such model are essential. Practically, these assumption are set based on the best prospective view of the company, and independently reviewed by external auditor(s).

Theoretically, assumptions are separated into 2 groups; Non-Economic and Economic

Non-Economic	Impact to Profit
Mortality	Benefit Payment and Reserve Cash Flow
Morbidity	
Lapse	
Expenses	Expenses Cash Flow

Economic	Impact to Profit
Return on Investment	Investment Income cash flow
Tax	Tax amount
Risk Discount Rate	Directly affect profit cash flow

กรุงเทพประกันชีวิต

Value of New Business

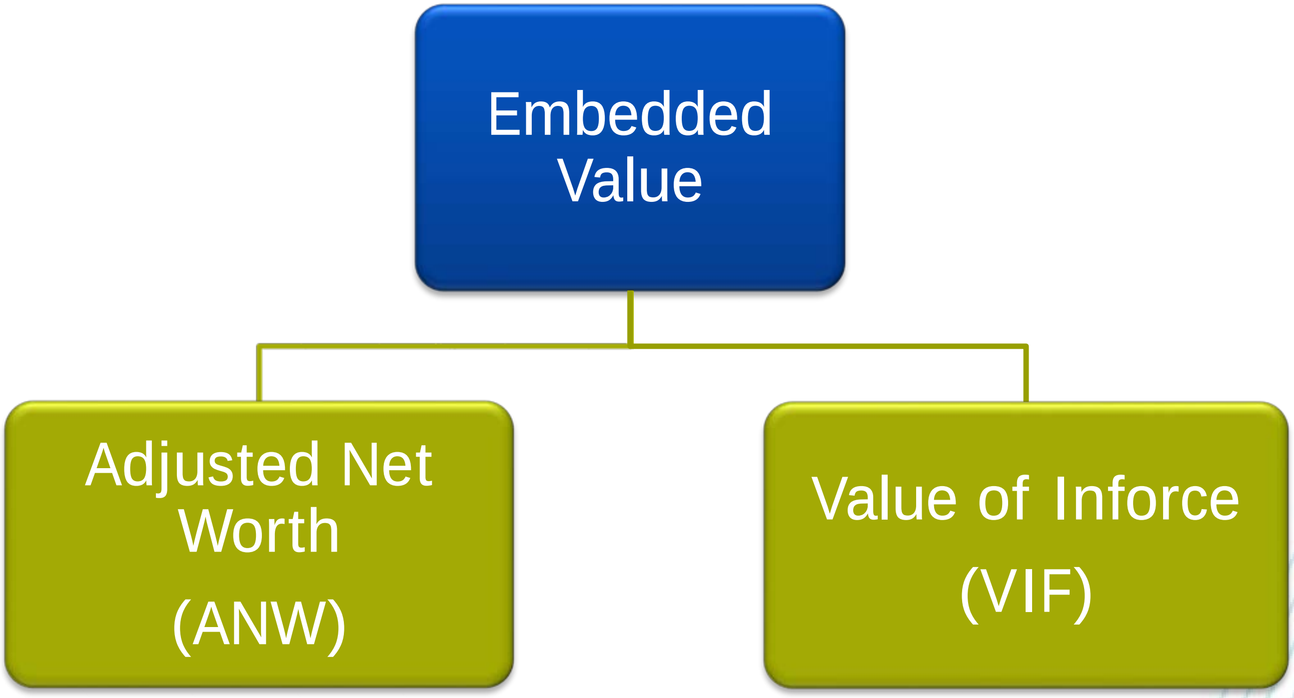
the value of the new business sold

Value of New Business refers to the value of new business sold in the particular reporting period. It represents the growth potential of a life insurance company.

Comparison between VIF and VNB

Similarities	Differences
Calculation method is the same	VNB is valued at the point of sale, a moment **before** the first premium and any acquisition expenses are incurred, but VIF is valued at any particular point **after** policy has been incepted
Both measures rely on best estimate assumptions	

Summary



ขอบคุณ
THANK YOU