

Actuarial Excel Addin

JS and LX functions

The **JS function** returns the value at Age1 of \$1 of pension per year starting at Age1 + Deferred, discounted with interest and mortality and payable:

- > during the annuitant's lifetime or ceasing after a number of years,
- > with ou without a guaranteed period,
- > with or without a co-annuitant, and
- > with or without indexation.

The **LX function** returns a vector of L_x from age or $x = 0$ to 120 (years), where $L_x = L_{x-1} \times p_{x-1}$. LX is never used alone, it is always a parameter of one of the following functions: JS, Lifelns, TPX, TQX, getLx, CERTAIN.

JS - Parameters		Default	Comment
Age1 *	60		Age of annuitant at valuation date
Lx1 *		annuitant's mortality: $LX[_{sex1_qx1_ageMove1_load1_proj1_scale1_baseYear1_yearVln1_ageVln1}]$
interest *	3%		Interest rate(s) 2.00% 10 1.50%
Age2	62		Age of co-annuitant at valuation date
Lx2		co-annuitant's mortality: $LX[_{sex2_qx2_ageMove2_load2_proj2_scale2_baseYear2_yearVln2_ageVln2}]$
Reversion	50%	0	% reverting to co-annuitant after annuitant's death
Guarantee	5	0	Payments guaranteed (in years)
Deferred	0	0	Deferment of first annuity payment first payment at age 60.019
Years paid			Period of payments (in years)
Indexation	1%	0	Indexation rate(s) 1.00% 10 0.50%
First age index	60.5	60.5	First age annuity is indexed first indexation at age 60.500
Frequency	52	12	Number of payments per year
Due	TRUE	TRUE	Due or immediate (a-dot-dot or not)
Qx-pre	TRUE	TRUE	Mortality during deferment period
Certain reduced	TRUE	FALSE	Guaranteed pension reduced after annuitant's death
Percentage married			% married at retirement
Returned value	20.3542		

LX - parameters		Lx1	Lx2	Default	Comment
Sex *	2	1			Sex --> 1: Male, 2: Female, 1.25: Unisex (75% male and 25% female), ...
QxTable		CPM2014		UP94ICA	Mortality table
Age Move	0	0		0	Age shift for the mortality table (+ means older, - means younger)
Load	0	0		0	Loading ($q_{x-loaded} = q_x \times (1 + load)$)
Projection	FALSE	TRUE		FALSE	With or without mortality projection
Projection Scale	ECH_CPM_B	ECH_CPM_B		
Projection base year	2014	2014			Base year of the mortality table
Year of valuation	2021	2021		
Age at valuation	60	62		

Required parameter *