A	B	C	D	E	F	
						1
	Thesis: PHI in Excel is different from PHI in mathematics					2
						3
	Similarity:	Standard Normal in both				4
	Difference	Density in Excel; Cumulative probability outside Excel				5
						6
	Phi(z): standard Normal **density** in Excel; **cumulative** standard Normal **probability** outside Excel					7
						8
	=PHI(z) =Norm.S.Dist(z,0)	*Phi inside Excel is the standard Normal density function*				9
		https://www.excelfunctions.net/excel-phi-function.html				10
		Designated by a lower-case Phi in Wikipedia				11
						12
	PHI(z) =Norm.S.Dist(z,1)	*Phi outside Excel is the cumulative standard Normal probability*				13
		https://en.wikipedia.org/wiki/Standard_normal_table				14
		Designated by upper-case (capital) Phi in Wikipedia				15
						16
	=Norm.S.Dist(z,1) - 0.5	Phi of Z>0				17
		https://mathworld.wolfram.com/NormalDistribution.html				18
						19
		EXCEL	**Density**	**Density**	**Probability**	20
		Z	**Phi(z)**	**Norm.S.Dist(z,0)**	**=Norm.S.Dist(z,1)**	21
		-3	0.0044	0.0044	0.00135	22
		-2	0.0540	0.0540	0.02275	23
		-1	0.2420	0.2420	0.15866	24
		-0.5	0.3521	0.3521	0.30854	25
		0	0.3989	0.3989	0.50000	26
		0.5	0.3521	0.3521	0.69146	27
		1	0.2420	0.2420	0.84134	28
		2	0.0540	0.0540	0.97725	29
		3	**0.0044**	**0.0044**	**0.99865**	30
			=PHI(C30)	=NORM.S.DIST(C30,0)	=NORM.S.DIST(C30,1)	

The PHI in these equations in the cumulative standard normal probability from minus infinity.

Mathematics	Excel
1 $PHI(z) = (ERF(z/sqrt(2))+1)/2$	$Norm.S.Dist(z,1) = (ERF(z/sqrt(2))+1)/2$
2 $ERF(z/sqrt(2)) = 2*PHI(z)-1$	$ERF(z/sqrt(2)) = 2*Norm.S.Dist(z,1)-1$
3 $ERF(z) = 2*PHI(z*Sqrt(2))-1$	$ERF(z) = 2*Norm.S.Dist(z*Sqrt(2),1)-1$
4 $ERF(z/2) = 2*PHI(z/Sqrt(2))-1$	$ERF(z/2) = 2*Norm.S.Dist(z/Sqrt(2),1)-1$

Gini (Log normal) = ERF(sigma/2)   www.statlit.org/pdf/2018-Schield-ASA.pdf
https://en.wikipedia.org/wiki/Standard_normal_table