Table 21.2   Key technical and financial parameters [3]

Parameter	Process case			
	Technology	Base	Pessimistic	Optimistic
Module efficiency (%)	Czochralski	15.0	12.0	17.0
	Dendritic web	15.0	12.0	17.0
	Concentrator	19.42	17.09	21.75
	a-Si:H	10.0	6.0	12.0
Silicon price ($)	Czochralski	40/kg	75/kg	25/kg
	Dendritic web	40/kg	75/kg	25/kg
	Concentrator	2.00/cell	4.00/cell	1.00/cell
	a-Si:H (silane)	618/kg	2000/kg	150/kg
Glass ($/m^2)	All	10.76	13.46	8.07
Wafer/Kerf Thk. (mil)	Czochralski	12/10	14/12	10/6
Web pull rate (cm^2/min)	Dendritic web	20	8	30
Plasma deposition rate (Å/s)	a-Si:H	10	2	40
	Financial case			
Return on equity (%)	All	18	22	15
Debt/equity ratio	All	0.3	0.2	0.5
Debt interest rate (%)	All	14	16	12
Average cost of capital (%) (derived from other inputs)	All	17.1	21.0	13.5

were selected and reviewed by several organizations involved in the study, and it was recognized that the resulting module-price predictions were lower than those achieved at the time of the study, or, for the most part, even today. They represented a potential level of the price for high volume production with high conversion efficiencies. After determining with the model the key price drivers for each technology, other cases were defined to examine the effect of different values of the key drivers. Two cases, defined as optimistic and pessimistic and shown in Table 21.2, were used to compare with the base case. Base, pessimistic, and optimistic cases relating to material-cost parameters (process case) and cost-of-money parameters (financial case) were defined. Table 21.2 shows only the "key" parameters of the defined cases, that is, the parameters from the cases that had the greatest effect on price.

The range of required module prices associated with the full set of process-case parameters is provided in Figure 21.3 for all of the cell technologies. Within each of the process cases, the spread in module prices among the technologies is about 2:1, so that achievement of important processing parameters and conversion efficiencies has a large impact on their ultimate relative prices.

The effect of the financial case parameters on module price was determined to be in the range of about ±5% of the base case for all of the technologies. For example, Table 21.3 gives the required module prices for the Czochralski modules for each case. The range of prices for the process cases due to variation in material costs ($3.46–$1.22) is much greater than the variation due to the financial-case parameters ($1.98–$1.80).