In order to calculate the patent term numerically which would satisfy (7), given Nordhaus' assumptions regarding the demand function of the industry and the invention possibility curve B(R), from equation (7) we can calculate the optimal patent term for given values of α, B, ρ and η. Using $B(R) = \beta R^{\alpha}$ k in equation (7) becomes $k = -B''B/B'^{2} = (1 - \alpha)/\alpha$. We allow B to take an values .005, .01, .1 and η takes on values .5, 1.0, 1.5, 2.0. ρ and α are set at .20 and .1 respectively. The results in Table 1 show that the optimal patent term ranges from 22.5 years to 4.3 years, depending on the amount of cost reduction and the elasticity of demand. As was shown in Figure 2, given the above plausible values of B when the equilibrium T in table 1 (lower left number of each cell) is less than 20 years (which is the existing life of a patent both in Canada and the United States), the optimal patent life is shorter than 20 years. On the contrary, when the equilibrium T is more than 20 years, the optimal life is longer than 20 years.

Table 1

Optimal Patent Terms with Competition and Monopoly in the Invention Industry that Fulfil Policy Maker's Equilibrium, with α = .10, and ρ = .20.

			η		
		.5	1.0	1.5	2.0
	.005	.5 22.5	.5 19.1	.5 17.2	.5 15.8
B	.01	.5 19.1	.5 15.8	.5 13.9	.5 12.6
	.05	.5 11.6	.5 8.7	.5 7.2	.5 6.2
	.10	.5 8.7	.5 6.2	.5 5.0	.5 4.3

Note: Lower left number in a cell refers to the monopolist inventor, while the upper right cell number pertains the competitive invention industry.