Proton Quest: financial strategy

Although Proton Quest operates within a high-risk industry, its overarching financial strategy, as a whole, is risk aversion. A strong profit margin is sought on each software transaction, or collaborative project. A recent *Annual Report* sums up its financial strategy as follows.

"The group's low-risk strategic principle is to provide solutions targeted to assist in all stages of pharmaceutical research. All products and services are supplied to customers in a way that generates attractive margins for Proton Quest, together with, if applicable, milestone payments and future pharmaceutical royalties."

This risk aversion is mirrored in the Molecular Allies division. Research fees are paid for the management of the project, regardless of whether milestones are achieved. In a business which has a history of losses, a key financial imperative is cash. The emphasis on a low-risk, profit-per-deal strategy, is reinforced by the division's non-reliance on milestone payments and royalties as a route to profitability. Dr Vieira noted that:

"For us royalty and milestone payments are really just the icing on the cake. We never risk, or speculate {on collaborative projects}. We always make a very reasonable profit on just doing the research project {by ensuring that research fees exceed costs and include a profit margin} … for the foreseeable future cash is critical both for the group and for my division."

The method by which the financial structure of a project is negotiated with a collaborator reflects this aim of achieving a healthy profit margin from research fees alone.

Proton Quest: financial goals and performance

Proton Quest's management has performed an environmental analysis. The ultimate objective here was to evaluate prior performance, establish the extent to which prior long-range financial goals were being achieved, and modify existing financial goals conducive to addressing shareholder value. This included a re-evaluation of its long-range financial goals regarding:

- *(i)* divisional growth;
- *(ii)* capital structure;
- *(iii)* capital expenditure; and
- *(iv)* hurdle rates for investment.

Proton Quest is trading in a world market, with operations, customers, staff, partners and investors worldwide, though primarily in Western Europe and North America.

(i)   Divisional growth:
Given Proton Quest's historical performance relative to its competitors and its present life cycle position, earnings growth rates were established as follows. For Techno Insights it was estimated that losses for the division would reduce by 33·3% per year for the next three years, after which a profit of €1,000,000 (EBIT) by the end of 2004 would be achieved. This would be followed by a 25% earnings growth rate for the year 2005. As for the Molecular Allies division, it was estimated that the division would be profitable (€500,000) by the end of 2002 followed by a growth rate of 35% annually for four years. It was envisaged that such a growth rate could probably not be sustained given the present conditions of the environment, with growth rate tapering for Techno Insights and Molecular Allies to 10% and 15% respectively, thereafter. Tax rates for Proton Quest were estimated at 35%.

(ii)   Capital structure:
It was estimated that the ratio of long-term debt to long-term assets would remain virtually zero for the foreseeable future. This was viewed as offering considerable flexibility in financing future investment opportunities, especially via the use of debt.

(iii)   Capital expenditures:
Capital expenditures for Techno Insights and Molecular Allies were estimated to grow at 30% and 32% respectively, year on year. Capital expenditures would basically include the purchases of tangible and intangible assets with depreciation and amortisation increasing by 20% year on year. Changes in working capital are expected to be negligible.

(iv)   Hurdle rates for investment:
Finally, the target hurdle rate of Proton Quest was set at 16% (net of tax) for new capital projects. Management was not specific about divisional hurdle rates given the difficulty of deriving a reliable and accurate estimate for non-public entities. They did, however, note that the rate may be considerably higher for Techno Insights given the level of systemic risk, especially in comparison with its publicly-traded competitors (that is, betas for similar firms average 2·50, a return on the market of 12·5%, and a risk free rate of 7.0%).

Although these estimates regarding the future performance of Proton Quest and its divisions were clearly articulated to the public, analysts failed to see them as realistic. Many analysts felt management was too optimistic, especially given the historical performance of the divisions and the group as a whole.

Some preliminary calculations have been made for Techno Insights:

Year	Year	Depreciation / amortisation	Earnings before interest and tax (EBIT)	Taxation	EBIT (1-t)	Capital expenditure	Free cash flows to Techno Insights
		€000	€000	€000	€000	€000	€000
2000	Base	12,201	(18,457)			(4,436)	
2001	1	14,641	(12,303)	(4,306)		(5,767)	(3,429)
2002	2	17,569	(8,201)	(2,870)		(7,497)	1,871
2003	3	21,083	(5,467)	(1,913)		(9,746)	5,870
2004	4	25,300	1,000	350	650	(12,670)	13,280
2005	5	30,360	1,250	437	813	(16,471)	14,702

Notes: These calculations are based on, and are consistent with, the forecasts already given in this section, and the data in appendices C – G.

The free cash flows to the company for the years 2001, 2002 and 2003 do not include the taxation losses calculated on the losses for those years.

Techno Insights division

Techno Insights was the original business through which Proton Quest was founded. Its primary mission was to provide software, database products and technical support to interested users. However, after a few years of software development, it was decided that managing a drug discovery process would be a more lucrative area, because the industry was not adequately served, and would at the least enhance the strategic position of the group as a whole. Thus, as opposed to being solely a software provider, the group's mission was modified to incorporate Molecular Allies as an important entity in the strategic development of the group via winning and managing drug discovery contracts.

Proton Quest acquired the rights to new software developed for Techno Insights in 1999. However, sales were disappointing and the value of the intangible assets were subsequently re-assessed.

Molecular Allies as a virtual company

Virtual structure

The Molecular Allies division operates very much as a virtual company. It has a small staff, with limited resources; therefore to manage large-scale discovery projects it relies on Proton Quest's network of partner companies and university sub-contractors. An immediate benefit of such a system, as previously noted by Dr Vieira, is that the division:

"… keeps overheads low by out-sourcing via virtual teams."

This virtual structure should not be confused with the concept of a broker. As noted earlier, the guiding principle of the division is to act as a bridge between university and commercial R&D. However, while a broker plays a passive role, bringing interested parties together and then withdrawing from the day-to-day operation, the Molecular Allies division plays an active role in the design and management of each discovery project. This distinction between broker and virtual company is strikingly captured by Dr Hislop:

"We are a lot more involved in turning an idea into something that is real. Our role is essentially, having put the couple together, to co-ordinate it. {This happens} on the scientific level and on the commercial level."

Inter-disciplinary team work

The nature of the Molecular Allies division, as a virtual company, requires that it embraces an inter-disciplinary approach. To manage projects, the division brings together a diverse set of skills from within the group itself (expertise in design and software), Proton Quest's partner companies (expertise in high throughput screening and combinatorial chemistry) and university sub-contractors (diverse ranges of chemistry and biology expertise) to deliver its discovery services.

Management of sub-contractors

Once a project has been identified, the Molecular Allies division determines what resources and capabilities will be needed to deliver a successful outcome. This involves deciding what tasks will be conducted in-house and what will be sub-contracted, either to Proton Quest's two partner companies or university sub-contractors. In identifying suitable university sub-contractors, the division draws upon its knowledge of, and relationships with, academia. Many projects can involve sub-contracts with more than one university. In the case of the Ionic Tiger project, sub-contracts for services exist with the University of Wexbridge and CABD University in Cambria, Australia. There are three important aspects to these relationships, namely the broad nature of the contract, the responsibilities of the contractor and the managerial interaction between the sub-contractors and the division.

Contracts are drawn up between academics, who have the required expertise, and the group. These academics are referred to as the principals. Molecular Allies does not micro manage these sub-contractors; it charges them with the responsibility of day-to-day operation of their part of the project. The scientific progress of the sub-contractors is reviewed by a project manager on a weekly basis.

One of the reasons for this hands-off approach is that these sub-contractors are experts in their field and are contractually charged with delivering specified outcomes, thus negating the need for operational management on the part of Molecular Allies. Another reason is that these university sub-contractors are often involved in the initial design of the project.

Customer relations and interactions

Molecular Allies provides an additional critical link in the web of partners, making it the central partner in the web. It is Molecular Allies that provides the communication and managerial systems that link together the sub-contractors, partner companies, Techno Insights and other parts of Proton Quest, as well as the collaborative partner (client). As has been outlined earlier, there are compelling reasons why collaborative partners come to Proton Quest. The communication process between the Molecular Allies division and a collaborative partner does not end once agreement to fund a project has been signed. The partner continues to play a pivotal role in the overall strategic management of the project. It is also critical to the success of a project that the collaborative partner be kept informed of the progress of the project. Thus the division pays particular attention to the management of communication with the client.

The client also plays a role in determining the strategic direction of the project as research results emerge. The partner may wish to pursue one research path, which emerges during the discovery process, in preference to other options.

For a project to succeed, it is necessary for the Molecular Allies division to initiate projects and manage a web of sub-contractors and partner companies to physically work on various aspects of the project. Moreover, Molecular Allies must also manage relationships with the client, clearly indicating progress, manage expectations, and manage the evolution of the project in line with the overall strategic direction of the collaborative partner.

The future

Growing companies like Proton Quest require various forms of finance at different stages in their development. The lack of appropriate forms of finance might be one reason for the under-performance of growth companies, especially those in the biotech sector. The cash generated from initial public offerings (IPOs) only goes so far and at various stages in a company's development, additional capital is normally needed to enable it to continue as a going concern. In short, Proton Quest is not immune to those problems facing growth companies and it must find ways of renewing investor confidence and rebuilding trust with its stakeholders.

Present value table

Present value of £1, that is $(1 + r)^{-n}$ where r = interest rate; n = number of periods until payment or receipt.

Periods	Interest rates (r)									
(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149

Periods	Interest rates (r)									
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.079	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026

Periods	Interest rates (r)									
(n)	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	0.826	0.820	0.813	0.806	0.800	0.794	0.787	0.781	0.775	0.769
2	0.683	0.672	0.661	0.650	0.640	0.630	0.620	0.610	0.601	0.592
3	0.564	0.551	0.537	0.524	0.512	0.500	0.488	0.477	0.466	0.455
4	0.467	0.451	0.437	0.423	0.410	0.397	0.384	0.373	0.361	0.350
5	0.386	0.370	0.355	0.341	0.328	0.315	0.303	0.291	0.280	0.269
6	0.319	0.303	0.289	0.275	0.262	0.250	0.238	0.227	0.217	0.207
7	0.263	0.249	0.235	0.222	0.210	0.198	0.188	0.178	0.168	0.159
8	0.218	0.204	0.191	0.179	0.168	0.157	0.148	0.139	0.130	0.123
9	0.180	0.167	0.155	0.144	0.134	0.125	0.116	0.108	0.101	0.094
10	0.149	0.137	0.126	0.116	0.107	0.099	0.092	0.085	0.078	0.073
11	0.123	0.112	0.103	0.094	0.086	0.079	0.072	0.066	0.061	0.056
12	0.102	0.092	0.083	0.076	0.069	0.062	0.057	0.052	-	-
13	0.084	0.075	0.068	0.061	0.055	-	-	-	-	-
14	0.069	0.062	0.055	-	-	-	-	-	-	-
15	0.057	0.051	-	-	-	-	-	-	-	-

Cumulative present value of £1 per annum, Receivable or Payable at the end of each year for *n* years

$$\frac{1-(1+r)^{-n}}{r}$$

Periods	Interest rates (*r*)									
(*n*)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.679	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.878	13.590	12.462	11.470	10.594	9.818	9.129	8.514

Periods	Interest rates (*r*)									
(*n*)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	7.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870

Periods	Interest rates (*r*)									
(*n*)	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	0.826	0.820	0.813	0.806	0.800	0.794	0.787	0.781	0.775	0.769
2	1.509	1.492	1.474	1.457	1.440	1.424	1.407	1.392	1.376	1.361
3	2.074	2.042	2.011	1.981	1.952	1.923	1.896	1.868	1.842	1.816
4	2.540	2.494	2.448	2.404	2.362	2.320	2.280	2.241	2.203	2.166
5	2.926	2.864	2.803	2.745	2.689	2.635	2.583	2.532	2.483	2.436
6	3.245	3.167	3.092	3.020	2.951	2.885	2.821	2.759	2.700	2.643
7	3.508	3.416	3.327	3.242	3.161	3.083	3.009	2.937	2.868	2.802
8	3.726	3.619	3.518	3.421	3.329	3.241	3.156	3.076	2.999	2.925
9	3.905	3.786	3.673	3.566	3.463	3.366	3.273	3.184	3.100	3.019
10	4.054	3.923	3.799	3.682	3.571	3.465	3.364	3.269	3.178	3.092
11	4.177	4.035	3.902	3.776	3.656	3.544	3.437	3.335	3.239	3.147
12	4.278	4.127	3.985	3.851	3.725	3.606	3.493	3.387	3.286	3.190
13	4.362	4.203	4.053	3.912	3.780	3.656	3.538	3.427	3.322	3.223
14	4.432	4.265	4.108	3.962	3.824	3.695	3.573	3.459	3.351	3.249
15	4.489	4.315	4.153	4.001	3.859	3.726	3.601	3.483	3.373	3.268
16	4.536	4.357	4.189	4.033	3.887	3.751	3.623	3.503	3.390	3.283
17	4.576	4.391	4.219	4.059	3.910	3.771	3.640	3.518	3.403	3.295
18	4.608	4.419	4.243	4.080	3.928	3.786	3.654	3.529	3.413	3.304
19	4.635	4.442	4.263	4.097	3.942	3.799	3.664	3.539	3.421	3.311
20	4.657	4.460	4.279	4.110	3.954	3.808	3.673	3.546	3.427	3.316

FORMULAE

Valuation Models

(i)   Irredeemable preference share, paying a constant annual dividend, d, in perpetuity, where P_0 is the ex-div value:

$$P_0 = \frac{d}{k_{pref}}$$

(ii)   Ordinary (Equity) share, paying a constant annual dividend, d, in perpetuity, where P_0 is the ex-div value:

$$P_0 = \frac{d}{k_e}$$

(iii) Ordinary (Equity) share, paying an annual dividend, d, growing in perpetuity at a constant rate, g, where P_0 is the ex-div value:

$$P_0 = \frac{d_1}{k_e - g} \text{ or } P_0 = \frac{d_0[1 + g]}{k_e - g}$$

(iv)   Irredeemable (Undated) debt, paying annual after tax interest, $i(1-t)$, in perpetuity, where P_0 is the ex-interest value:

$$P_0 = \frac{i[1 - t]}{k_{dnet}}$$

or, without tax:

$$P_0 = \frac{i}{k_d}$$

(v)   Future value of S, of a sum X, invested for n periods, compounded at $r\%$ interest:

$$S = X[1 + r]^n$$

(vi)   Present value of £1 payable or receivable in n years, discounted at $r\%$ per annum:

$$PV = \frac{1}{[1 + r]^n}$$

(vii) Present value of an annuity of £1 per annum, receivable or payable for n years, commencing in one year, discounted at $r\%$ per annum:

$$PV = \frac{1}{r}\left[1 - \frac{1}{[1 + r]^n}\right]$$

(viii)   Present value of £1 per annum, payable or receivable in perpetuity, commencing in one year, discounted at $r\%$ per annum:

$$PV = \frac{1}{r}$$

(ix)   Present value of £1 per annum, receivable or payable, commencing in one year, growing in perpetuity at a constant rate of $g\%$ per annum, discounted at $r\%$ per annum:

$$PV = \frac{1}{r - g}$$

Cost of Capital

(i)   Cost of irredeemable preference capital, paying an annual dividend, d, in perpetuity, and having a current ex-div price P_0:

$$k_{pref} = \frac{d}{P_0}$$

(ii)   Cost of irredeemable debt capital, paying annual net interest, $i(1 - t)$, and having a current ex-interest price P_0:

$$k_{dnet} = \frac{i[1 - t]}{P_0}$$

(iii)   Cost of ordinary (equity) share capital, paying an annual dividend, d, in perpetuity, and having a current ex-div price P_0:

$$k_e = \frac{d}{P_0}$$

(iv)   Cost of ordinary (equity) share capital, having a current ex-div price, P_0, having just paid a dividend, d_0, with the dividend growing in perpetuity by a constant $g\%$ per annum:

$$k_e = \frac{d_1}{P_0} + g \ \text{ or } \ k_e = \frac{d_0[1 + g]}{P_0} + g$$

(v)   Cost of ordinary (equity) share capital, using the CAPM:

$$k_e = R_f + [R_m - R_f]ß$$

(vi)   Weighted average cost of capital, k_0:

$$k_0 = k_e\left[\frac{V_E}{V_E + V_D}\right] + k_d\left[\frac{V_D}{V_E + V_D}\right]$$