

A CRITICAL ANALYSIS OF THE BTR DUNLOP CASE

Valuation Issues

1. Under the premise of “willing buyer, willing seller” should synergies be considered?
2. How should the element of size be considered in the valuation analysis?
3. What reliance should be put on management’s forecast in developing value estimates in a retrospective appraisal?
4. What criteria should be used in selecting comparables?
5. Should adjustments be made to guideline (or comparable) company data?
6. How should beta be estimated?
7. Should inter-company charges be at arm’s length?

Re: BTR Dunlop Holdings Inc., et al, v Commissioner (T.C. Memo 1999–377)

The issues above were all part of the subject case. Unfortunately, the published opinion does not address all of the subject issues and is somewhat misleading as to what actually occurred in Court. In some issues we believe the Court appears to have preferred purported objectivity over appropriate appraisal practice.

Background

In late 1988, early 1989 BTR plc, a very large U.K. manufacturing company, through a subsidiary, acquired Schlegel Corporation, a U.S. company with manufacturing facilities in twelve countries including two subsidiaries—Schlegel U.K. and Schlegel GmbH. Subsequent to the purchase, BTR decided to transfer Schlegel U.K. (valuation date of June 30, 1989) and Schlegel GmbH (valuation date of November 30, 1989) from Schlegel Corp. to itself resulting in taxable transfers. The case revolves around the appropriate valuation of the subsidiaries for these transfers. All of the issues that we will address in this critique pertain to Schlegel U.K.

Schlegel U.K. was composed of two separately managed operating divisions: Automotive Products (Auto) and Building Products (Building). Auto manufactures and

sells seals for car doors, windows, trunks, and hoods to original equipment manufacturers (OEMs). Building produces seals and hardware for housing door and window OEMs. One major difference between the two units is that Auto had less than ten customers with two Ford and Rover. This constitutes about two-thirds of their volume, while Building has over one thousand customers.

Auto

The Auto business had grown rapidly in the years preceding the valuation date as seen in the following exhibit:

Exhibit 38A-1

Automotive Products Financial Highlights (in millions of pounds)

	1984	1985	1986	1987	1988
Sales	10.8	14.7	16.5	21.7	24.3
PBIT	-0.55	0.98	0.70	2.15	0.85
PBIT %	-5.1%	6.7%	4.2%	9.9%	3.8%

PBIT: Profit before interest and taxes.

The reason for the significant increase in sales was the awarding of new business. The plant manager at the time said that Draftex, a major competitor, went to its OEM customers and tried to raise prices. The result was a significant shift in business to Schlegel U.K., albeit, at low and uncertain profit margins. The major technology in Auto was the use of wire carrier in their seals. Although the primary patents on this technology had expired, strong secondary patents were in place. This technology was licensed from Schlegel Corp. at 5% of sales. Wire carrier was made in another subsidiary, Schlegel, Ireland. A trend occurring in 1989 was the introduction of joining seals with corner molds rather than using wrap around seals, which had a tendency to pull out in the corners. This development, which was also covered by U.S. technology, required a significant investment in extruders and molding presses. Thus, a significant increase in capital expenditures was expected at Coalville, the main Auto facility.

After the acquisition of Schlegel Corp., BTR wanted to significantly change the production operations in Auto in order to increase productivity and reduce scrap. The Schlegel U.K. method of operation had been to use a central production model whereby production was sequenced between various automotive models. This model minimized capital investment but required more labor and higher scrap rates due to change over in setups for equipment. The BTR model which was called "cellular" involved the dedication of equipment to certain large volume production models. Although this production model required more investment, the advantage was that setup would be minimized, scrap would be reduced and hopefully higher productivity would be achieved. These changes were underway at Coalville in early 1989.

A significant development at the time was the expected impact of the European Economic Community (the “Common Market”) on U.K. automobile production. Production in the U.K. was expected to increase due to Japanese transplants locating to the U.K.; Toyota and Nissan were supplying dealers on the continent.

Building

Building had experienced significant growth in both sales and profit in the years before the valuation date as shown in Exhibit 38A–2.

Exhibit 38A–2

Building Products Financial Highlights (in millions of pounds)

	1984	1985	1986	1987	1988
Sales	8.4	9.1	12.7	15.1	17.8
PBIT	0.10	0.46	0.85	1.93	2.65
PBIT %	1.2%	5.0%	6.6%	12.7%	14.9%

The most significant factor responsible for the growth in profitability was the introduction of the compression seal for wood windows. The sealing material was inert and did not react with either paint or stain. The technology for the compression seal had been developed in the U.S. and the manufacturing process was setup in the U.K. by U.S. personnel in the mid-to-late eighties. The process was highly proprietary and hazardous. It required the same chemical that was responsible for 2500 deaths at Bophal. For this reason, Schlegel U.K. had little competition and enjoyed a large profit margin on the product. Another trend that was emerging in the late eighties in the U.K. was the switch from wooden windows to PVC windows. Most of the growth in profit was from the compression seal on wooden windows. The trend of increasing penetration of PVC windows was not favorable to Schlegel U.K. In some other European countries, such as Germany, market demand was almost exclusively for PVC windows because they were essentially maintenance free.

Another contributor to sales increases at Building was Schlegel U.K.'s introduction of traded hardware. This was hardware developed by others, but sold by Schlegel. Schlegel had their own hardware which was being marketed so they already had a sales force in place. Although traded hardware added sales, the profit margins were not as good as on their own hardware.

The domestic construction market in the U.K. had experienced a peak of 242,000 housing units in 1988 due to a number of favorable factors: a dip in interest rates, a generous tax cut and an August deadline for cessation of mortgage tax relief. After August 1988, there was a precipitous drop in housing starts due to a reversal of many of the above factors. Interest rates soared to over 14%, tax breaks had been eliminated and government subsidization of public housing was further reduced. Housing starts had fallen to a level of about 165,000 units by June 1989 and a significant housing recession was expected.

A confusing situation of fact during the trial was Schlegel's accounting and transfer pricing policies. First, Schlegel had two accounting systems; Statutory and Management. In the Management accounting reports, no royalties were deducted for the use of technology, but there was a management charge subtracted for corporate overhead. In Statutory accounting, royalties were deducted but there was no management charge. Further complicating the analysis was that Building was actually paying no royalty. This was an oversight that Schlegel Corp. was unaware of in the late eighties because the Schlegel U.K. financial information they received was consolidated. This oversight was corrected after Schlegel Corp. discovered this omission. Clearly a royalty should have been paid on the compression seal business which was proprietary Schlegel Corp. Technology.

Experts' Opinions

Respondent's Original Opinion

The government retained Dr. Alan Shapiro, a Professor of Finance and Economics at the University of Southern California's, Marshall School of Business. Dr. Shapiro performed a very cursory analysis, where he developed four indications of value in his original report. His methods included:

1. a Discounted Cash Flow (DCF) analysis (Income approach)
2. a Guideline (or Comparable) Companies method (Market Approach)
3. a Transaction method (Market Approach)
4. a Value Allocation approach

The Value Allocation approach consisted of an allocation of the purchase price of Schlegel Corp. to Schlegel U.K. based on relative earnings and asset return parameters. Shapiro's original DCF analysis consisted of taking management sales forecast, using historic expense relationships for the previous two and half years and taking depreciation, capital expenditures and working capital assumptions from a prior appraisal by Ernst & Young, which was not an expert in this case. Shapiro then developed a discount rate based upon CAPM using a capital structure and beta based upon U.S. comparable companies he had identified. In computing betas, data was measured weekly over a two-year period. Shapiro explicitly stated that he was of the opinion that the discount rate should reflect value to BTR. He used as his equity risk premium, Ibbotson's long-term premium over government bonds. Shapiro added no premium for size or company specific risk.

In his original Guideline approach, Shapiro identified eight SIC codes that bore some comparability to activities of Schlegel U.K. He then selected all U.S. listed companies whose primary SIC code was among the eight he had identified as having a December 31, 1988 year-end and for which he had data. These findings produced eight companies whose multiples were computed without any analysis of the comparability of each company's business to that of Schlegel U.K. and without any adjustments to the financial data. Three of the companies had market capitalizations over \$500 million. Many of the companies

operated primarily in the automotive after-market; a market with different characteristics from those of the OEM business in which Schlegel U.K. operates. One company primarily sold products to airports and municipalities; markets not aligned with the general economy, making that company not a good guideline company. Additionally, we believe U.S. companies are at best inferior guideline companies for an U.K. company given that there were U.K. guideline companies available. In his analysis of publicly traded companies, Shapiro did not add any control premium but stated that the value developed represented a standalone value.

Shapiro then performed a Transactions approach using the same SIC criteria and found seven transactions—six U.S. and one U.K. Again, no further analysis was undertaken to assess their comparability to Schlegel U.K. One of the transactions selected as comparable was Wickes, which had sales of nearly \$5 billion and a market capitalization of \$2.5 billion. We are of the opinion that the Wickes transaction was at best a poor comparable for Schlegel U.K. Likewise, no adjustments were made to any of the financial statements. The multiples were computed using "raw" data.

Finally, in his Value Allocation approach, Shapiro applied the multiples implicit in BTR's purchase of Schlegel Corp. to Schlegel U.K. No adjustments were made: (1) for changes in the markets or economy between the acquisition date and the valuation date; or (2) for the fact that Schlegel Corp. operated in different economies and Schlegel U.K. operated under its own unique set of economic conditions; or (3) for the fact that Statutory accounting did not include management charges or an appropriate royalty.

Petitioner retained two experts, Economic Consulting Services, Inc. ("ECS") and PricewaterhouseCoopers LLP ("PwC") to value Schlegel U.K. Shapiro, after receiving the reports from ECS and PwC, significantly revised and rewrote his original opinion. In his revised DCF approach, Shapiro now used U.K. equity premium data, which indicated an equity risk premium 2.27% higher than the Ibbotson data taken during the same period.

Shapiro explains this as relating to the much smaller size of U.K. listed companies compared to U.S. companies. His contention was that this difference should then be offset against any small stock premium derived through Ibbotson data. Shapiro also used U.K. companies to develop a beta. He used weekly and daily observations over varying periods for six to eighteen months. The beta Shapiro developed was 0.5.

Shapiro performed another Guideline search using SIC codes for U.K. companies without any screening of each company's comparability to Schlegel U.K. and without any adjustments to the financial statements. He concluded that the multiples developed from this approach were more reasonable than multiples from companies more carefully selected by ECS and PwC.

Finally, as a test of the small stock effect Shapiro compared valuation multiples for high capitalization companies versus multiples for low capitalization companies. His logic was that if small companies have higher rates of return expectations and, everything else is equal, they should have lower multiples. Two problems exist with this test. First, all "other things" may not be equal, i.e., smaller companies typically have faster expected growth rates and Shapiro made no adjustment for differences in growth expectations. Second, a company's multiple may be temporarily high because earnings have been lower than expected.

Shapiro compared cash flow estimates from the various parties. He mistakenly added back royalties deducted in the ECS and PwC cash flow projections and failed to add them back to his own projections due to not realizing that the projections he used had royalties deducted. His expenses came from an analysis of historic expenses, which included royalty expense.

Petitioner's Experts Opinion—ECS

ECS was represented by Dr. Ken Button. Dr. Button is a consultant who specializes in economic issues related to International Trade and also does business valuations. Dr. Button is a candidate member of the ASA.

ECS used both the DCF and Guideline approaches. In its DCF, ECS used management's forecast for sales, but used historic data for expenses. In developing ECS's weighted average cost of capital, the capital structure and beta were based upon U.K. companies. The equity risk premium was based upon the difference between returns on U.K. equities and gilts of 10.29%. ECS also applied a small stock premium of 5.7% based upon Ibbotson data through 1988. In his rebuttal, Shapiro correctly pointed out that this is somewhat double counting because the equity risk premium in the U.K. already reflected a significantly smaller company than the average U.S. company in Ibbotson. ECS also applied a 1% premium for company specific risk which ECS attributed to a number of factors including: over optimistic sales forecasts and a number of major difficulties in Auto by trying to produce new products, such as corner molded seals under very stringent delivery requirements.

In their Guideline approach ECS initially did a SIC search and found sixty-five possible U.K. companies. By examining the identified companies further, ECS screened the number of comparable companies to 5 companies. Laird, a company with a directly competitive operation to Auto, was left out because Laird's multiples seemed out of line. ECS applied multiples to develop an indication of value to which ECS applied two adjustments. First, was a control premium of 35% based upon observation of U.K. control premium data. ECS also applied a discount for lack of marketability of 16.3% to the indicated value because Schlegel U.K. was not publicly traded. ECS deemed this value to be a standalone. Gooch and Grabowski believe that the 35% average premium includes some amount of synergistic effect making this result not a standalone value.

Petitioner's Expert Opinion—PwC

PwC was represented by Lawrence B. Gooch, holder of the accreditation Accredited Senior Appraiser from the American Society of Appraisers with twenty-nine years of appraisal experience. PwC used both the DCF and Guideline approaches. In both approaches there were two scenarios, standalone and synergistic.

In the DCF approach, Auto and Building were valued separately. PwC investigated all transfer pricing practices and concluded that material purchase transactions (including the purchase of wire carrier from Ireland and weather stripping from the U.S.) were at arm's length prices. This view is based on discussions with plant managers that were producing

the materials being transferred. As to the technology, there was a license agreement, which stated that all patents, patent applications, technical property, trademarks and trade names used in licensable products were subject to a 5% royalty. In the recent past royalties had actually been paid by Auto and equated to 4.1% of sales. At the date of valuation, the head of the automotive technical center for Schlegel Corp. stated that all the technology in Auto was developed in the U.S. and should have been covered by the license agreement. Schlegel Corp. had outside license agreements with third parties in Yugoslavia and France. Both of these agreements were at 3% of net sales and included the same property being used by Schlegel U.K. It was PwC's conclusion that 3% would then be the appropriate arm's length royalty for Auto.

Building was paying no royalty at the time of the valuation; however, Schlegel Corp. management insisted this was an oversight. Because the financial information for Auto and Building was consolidated in the UK before being sent to the US Schlegel Corp.; management was not aware that Building was not paying any royalties. According to the license agreement, Building should have been paying royalties. PwC conducted an analysis of all the products being sold by Building with the sales and engineering staff in the U.K. (which incidentally was now owned by a company not related to BTR) and they clearly indicated what technology and trade names were being used. PwC did an in-depth analysis of the benefits from the various products and concluded that an appropriate arm's length royalty would be equal to 3.2% of net sales.

In determining the discount rate PwC used both the CAPM and PwC sized based analysis. (See "The Size Effect and Equity Return", *Business Valuation Review*, June, 1995. The data used was as of December, 1988 and updated data is available in the *PricewaterhouseCoopers Risk Premium Report 2000* at www.ibbotson.com). In the synergistic scenario, PwC concluded that the likely buyer would have a \$100 to \$200 million capitalization. This was based upon two considerations: (1) we observed that acquirers are typically five to ten times larger than targets and (2) this size produced a difference in the discount rate that when combined with operating synergies, produced a premium over the standalone scenario of 30% to 40%. In the standalone scenario, PwC determined that Schlegel U.K. would have approximately a \$20 million market capitalization. The median sized company on the London Stock Exchange had a market capitalization of \$75 million at the time.

In using the CAPM, PwC used a 5% equity risk premium (see "The Equity Risk Premium for Cost of Capital Studies: Alternative to Ibbotson", *Business Valuation Review*, September, 1994) and a 5% small stock premium for a total equity risk premium of 10%. This compared to an 8.96% premium in the synergistic scenario using the PwC premia studies and an 11.87% in the standalone scenario. Interestingly, this compares with the 10.29% equity risk premium between U.K. equities and U.K. gilts. Further, it was Shapiro's conclusion in his rebuttal that if he were to use a small stock premium, it would be 1.63%, making his total premium 11.92%.

The management forecasts provided were actually prepared after the acquisition by BTR. Therefore, it was PwC's conclusion that Auto projections represented synergistic projections. Gooch stated this twice during cross-examination; however, the Court's

opinion states that PwC sales forecasts represented only a standalone scenario which is in total contradiction of Gooch's testimony at trial.

In developing estimates of cash flow, PwC did not accept the management forecasts. The actual management forecasts called for profits that far exceeded anything that had been achieved historically. PwC discussed both the sales forecast and expense levels with management that had been employed at the valuation date. The 1989 Auto profit plan stated that it was very optimistic and that a number of favorable things had to occur in order for it to be met. The near-term forecast was slightly modified to take out business that had been awarded to BTR directly and was expected to be transferred to Schlegel U.K. This contract was not deemed to be an asset of Schlegel U.K. PwC actually forecasted higher sales than management in the far-out years due to the advent of the Common Market. The profit levels were adjusted to levels that management believed could be met on average, i.e., considering both good and bad years for the synergistic scenario (much higher than what had been achieved historically). Historic profit levels were used for the standalone scenario. PwC's Auto profit forecast actually exceeded the forecast implicit in Shapiro's forecast.

The Building sales forecast called for sales to increase from 17.9 million pounds in 1988 to 21 million pounds in 1989 and 28.0 million pounds in 1993. 1988 was a record year for housing completions with 242,000 housing units. Annualized housing starts were running at only 165,000 housing units in June 1989 and it was fairly obvious that the building industry was headed for a recession. Due to housing completions, lagging housing starts the trend may not have been obvious at the beginning of the year (the acquisition date) but by June (the valuation date), the falloff in business should have been readily apparent. In actuality, Building sales dropped to just 15.4 million pounds in 1990. PwC made a forecast taking into consideration average housing starts over the prior seven years and trending up for population growth. PwC's profit percentage forecasts for Building were based on an average between what was forecast and what had been achieved historically for the synergistic forecast and what had been achieved historically for the standalone scenario.

PwC conducted a Guideline analysis. PwC initially identified a fairly large number (over 50) of possibly comparable U.K. companies. By studying their business descriptions and analyzing their financial information, nine companies were selected as appropriate comparable companies. For each of these companies PwC obtained their annual reports and conducted a news search. For Laird, a company believed by many at the trial to be the best comparable because one of their divisions was a direct competitor to Auto, a significant announcement had been made in their annual report. Laird was going to sell its Transportation division, which had lost considerable sums of money over the recent year. A Pro Forma Statement of income without Transportation appeared in their annual report restating financial statements for the sale as shown in Exhibit 3.

Exhibit 38A–3

The Laird Group Restated Financials Statements (in millions of pounds)

	1988 Before Restatement	1988 After Restatement
Turnover	553.8	500.3
Trading Profit Before Interest	25.9	44.0

The use of restated financial statements resulted in substantially lower multiples than would be obtained by strictly using the reported earnings. PwC was of the opinion that investors would have been basing their stock price estimates using the restated financials statements. The multiples are shown below with and without the transportation division in Exhibit 4.

Exhibit 38A–4

The Laird Group Market Multiples Before and After Restatement

	Before Restatement	After Restatement
MVIC/SALES	0.47	0.52
MVIC/EBITDA	6.24	4.34
MVIC/EBIT	10.00	5.87
MVE/ADJ. NET INCOME	N/M	8.75

MVIC: Market Value of Invested Capital = Market Value of Equity (MVE) plus Debt

EBITDA: Earnings before Interest Taxes Depreciation Amortization

N/M: Not Meaningful

Using the multiples for the selected guideline companies, PwC developed an estimate of the standalone value. In this conclusion it was assumed that any control premium would be offset by a lack of marketability discount.

To obtain an estimate of synergistic value, a merger premium was added. Data used was from the U.S., but it was PwC's understanding that U.S. merger premiums were roughly equivalent to the U.K. data. Lastly, it was concluded that the chance of finding a synergistic buyer was about as likely as not finding one. When Schlegel Corp. was for sale, there had been six inquiries. Only one, BTR, conducted any due diligence. Since the original acquisition at the end of 1988, the British economy had cooled substantially especially in the building sector. The question is: were there any other buyers out there besides BTR? This is a difficult question to answer. Thus, PwC decided to give equal weight to both a synergistic and standalone scenario.

Synergy Issue

A question that has been discussed for a long time without resolution in valuation circles is whether or not synergies should be considered in the fair market value of a company. The Court opinion stated that the willing buyer and willing seller are hypothetical with no specific characteristics, i.e., we cannot assume a specific buyer such as BTR. The Court also stated that the buyer and seller must be disposed to maximum economic gain and that the value of the property should reflect the highest and best use to which the property could be put on the date of value. Thus, the Court believes that synergy should be considered. In delivering its opinion the Court had certain perceptions as to how the experts stood on the position of synergy. The Court believed that Shapiro placed too much reliance on synergy resulting in too high a value. The Court was of the opinion that ECS did not give any credence to synergy. The Court believed that PwC did not give enough consideration to synergy because PwC used a small stock premium and adjusted for company specific risk and that the synergistic cash flows should have reflected greater sales than the standalone cash flows. The Court believed that the both the ECS and PwC Guideline approaches did not reflect objective guide posts of comparability. The Court also believed that petitioner experts made numerous adjustments based upon hindsight and thus manipulated the projections to fit their position.

The Court appears to have misunderstood the positions taken by the parties as to synergy. Shapiro ultimately used a 10.29% equity risk premium that reflected a median size company on the London Stock Exchange. The median sized company on the London Stock Exchange had a market capitalization of \$75 million. Shapiro's market comparable approach was likewise based upon a median of companies identified in specific SIC codes. The Court believed this was objective. Gooch and Grabowski believe that this is not proper appraisal practice. Shapiro made no examination of the companies to determine whether each company as a whole would be considered a comparable, whether the company operated in the same geographical markets and whether the company's multiples were unduly high or low because of unusual and non-recurring events.

ECS stated that they only did a standalone approach. ECS did apply a control premium of 35% in their Guideline approach. These authors believe adding a control premium drawn from acquisition premiums typically implies some degree of synergistic analysis.

PwC did both standalone and synergistic scenarios and then gave them equal weight because there was not any clear indication that a synergistic buyer could be found other than BTR. In fact, Shapiro was able to find only one transaction of a British acquisition over a period of three years in the selected SIC codes. The Court opined that there was not a large enough difference between PwC's synergistic and standalone values. The actual difference between the two scenarios is 28.6%, which is about the average size of an acquisition premium. During cross-examination, Gooch stated that PwC did not adjust the standalone sales downward, which would have increased the premium. The Court totally misunderstood the testimony of Gooch by stating that PwC did not adjust the sales forecast in the synergistic scenario upward, yet the management forecast already reflected BTR's synergies. The management forecast included contributions from Nissan, which was work that had been awarded to BTR Dunstable.

While we believe the Court operated in good faith, attempting to develop a fair decision, it is our observation that the format and limited length of court time did not permit a full disclosure of the facts. In Tax Court, appraisal reports are to stand on their own and only limited time, if any, is given to expert witnesses to present their direct testimony. Further, petitioner's experts were at somewhat of a disadvantage in this case because Shapiro completely changed his original opinion in his rebuttal report thus not giving petitioner's experts a fair amount of time to rebut Shapiro's new positions.

If we are to consider synergy in an acquisition, how are we to go about it? There are obviously no guidelines or even cogent articles on the subject. The valuation consultant has a wealth of data on acquisition premiums to use. Imbedded in these premiums are often contributions that the buyers add to the combined businesses from any perceived synergies. Two observations should be offered here. From the buyer's perspective no more is going to be offered than what the buyer believes will clearly beat the market. Second, we cannot know or assume which buyer will prevail; i.e. we cannot assume that the potential buyer with the greatest potential synergy will be the successful buyer. Such assumption would contradict the hypothetical buyer concept. Does this mean that we, in some fashion, have to attach probabilities to the various possible buyers and come up with some blended scenario?

In the DCF analysis, how large a company would the hypothetical buyer be? If you believe as we do that the size of the firm affects the discount rate, then should the discount rate reflect the size of the buyer (not the target) in a synergistic scenario or should it reflect the size of the combined business? In the CAPM approach, the discount rate should reflect the risk of the business being valued. In a synergistic scenario, the resultant business equals the sum of the buyer's business, plus the target's business (though in a company with multiple lines of business, the risk should be measured in terms of the "pure play" business being valued, not the company as a whole). Does that apply just to beta as a measure of systematic risk or would it also apply to size (since beta decreases for larger companies)? Also operating synergies need to be used within the synergistic cash flow model, maybe not full synergies but at least some sharing of the synergies with the target. The amount of sharing of the synergies would depend upon how much competition among potential buyers, for the target, is anticipated.

One study that might be useful in the synergistic scenario is a study on the relative size of buyers and targets. Are Market Caps 1:1, 5:1, 10:1 or 100:1? A distribution could be developed that might shed some light on the likely relative sizes. Further, many people have questioned whether we should just automatically apply a premium in a valuation. Certainly, we should look at what is happening in the target industry. Is consolidation occurring or strategic alliances being formed? Recently, there have been over 150 acquisitions in the medical products industry. This would suggest that in determining the fair market value of a company in the medical products industry, one would need to give substantial consideration to a synergistic premium. On the other hand, in the subject case only one other U.K. acquisition was found over a period of several years in the selected SIC codes. This would suggest that one should not count on a synergistic acquisition. This line of reasoning was not mentioned by the Court or the experts.

Discount rate

Exhibit 5 presents the various assumptions made by the experts in developing their discount rates as well as that of the Court. A number of issues are noted within the discount rate controversy:

- Beta and its measurement
- Equity Risk Premium
- Small Stock Premium
- Company Specific Risk Premium

DISCOUNT RATE COMPARISON

	<u>SHAPIRO</u>		<u>ECS</u>		<u>PwC SYNERGISTIC SCENARIO</u>				<u>JUDGE COHEN</u>	
	<u>ORIGINAL REPORT</u>	<u>REBUTTAL REPORT</u>	<u>REPORT</u>	<u>AUTO CAPM</u>	<u>AUTO BUILT UP</u>	<u>BLDG PROD CAPM</u>	<u>BLDG PROD BUILT UP</u>	<u>ADJUSTED SHAPIRO</u>	<u>ADJUSTED ECS</u>	
<i>DEBT PROPORTION</i>	35% (1)	17% (2)	19.9% (3)	20% (4)	20% (4)	20% (4)	20% (4)	17%	19.9%	
<i>EQUITY PROPORTION</i>	65%	83%	80.1%	80%	80%	80%	80%	83%	80.1%	
<i>COST OF DEBT</i>	12.55%	13.00%	13.16%	11.30%	11.30%	11.30%	11.30%	13%	13.16%	
<i>RISK FREE RATE</i>	10.68%	10.68%	9.88%	10.12%	10.12%	10.12%	10.12%	10.68%	10.68%	
<i>BETA</i>	0.84 (9)	0.5 (10)	1.18 (11)	1.3 (12)	n.a.	1.5 (13)	n.a.	1.18 (11)	1.18	
<i>MARKET RISK</i>	7.20% (5)	10.29% (6)	10.29% (6)	5.00% (7)	8.96% (8)	5.00% (7)	8.96% (8)	10.29% (6)	10.29%	
<i>SPECIFIC RISK</i>	none	None	1.00% (16)	2.00% (17)	2.00% (17)	none	none	none	none	
<i>K_E</i>	16.73%	15.83%	28.77%	21.62%	19.08%	22.62%	19.08%	22.92%	22.36%	
<i>K_O</i>	13.73%	14.57%	24.75%	18.77%	16.73%	19.57%	16.73%	20.46%	19.60%	
<i>K_O Adj</i>				20.77% (18)	18.73% (18)					
					USED 19.75%		USED 18.25%			

Endnotes

- (1) Shapiro original capital structure based on U.S. guideline companies
- (2) Shapiro revised capital structure based on U.K. guideline companies
- (3) ECS based capital structure on specific U.K. guideline companies
- (4) PwC capital structure based on specific U.K. guideline companies but then rounded up
- (5) Ibbotson average since 1926
- (6) London Stock Exchange premium since 1946
- (7) Based on consideration of various ex post and ex ante returns
- (8) Based upon thirty-year average premium for a company of approximately \$150 million in market capitalization
- (9) Based upon U.S. guideline companies run weekly over two years
- (10) Based upon U.K. guideline companies run daily over six months to eighteen months
- (11) Based upon selected U.K. guideline companies
- (12) Based upon analysis of U.S. Industry averages and nature of betas correlation with size
- (13) Based upon analysis of U.S. Industry averages and nature of betas correlation with size
- (14) Ibbotson small stock premium since 1926
- (15) Ibbotson small stock premium over last 30 years
- (16) Premium due to aggressive sales forecast, operational problems, lack of diversity, and inadequacy of management resources
- (17) Premium due to risk involved in model changeover, i.e., rather than reconstruct new cash flow estimates because of probability of loss of business a risk premium was added

(18)	Specific risk premium was added directly to overall rate
$K_E =$	Rate of return on experts' capital
$K_O =$	Overall rate of return on integrated analysis cost of capital

Note: **Tax rate used by everyone = 35%**

One of the major controversies in this case was the measurement of beta. Those that have developed betas using comparable companies know that there is often a wide and seemingly unexplainable pattern in the betas of individual companies. These authors do not believe in averaging a .4 beta with a 1.2 beta to get a .8 beta. Depending on the type of company there should be some relationship between beta and the nature of the company, durable versus consumable, OEM versus aftermarket, interest rate sensitive versus non-interest rate sensitive, diverse geographically versus local market, etc. As an example, one of Shapiro's guideline companies, Newman Tonks plc, is a manufacturing firm that sells a variety of architectural products to the building industry in the U.K., U.S., and Europe. Newman Tonks has cultivated relationships with architects around the world; thus, their sales are more tied to the world economy than say Schlegel U.K. whose sales are primarily U.K. Not surprisingly, Newman Tonks had a beta less than 1.0. Likewise, Shapiro in his original report used Spartan Motors as a guideline company to develop his beta. Spartan Motors sells to the municipal (fire trucks) and airport markets (maintenance vehicles). According to Shapiro their beta was .36. Does it make sense that such a low beta be averaged with others to estimate a beta for Schlegel U.K., which is in the automotive OEM sector and the U.K. OEM building industry—two interest rate sensitive sectors?

Another factor that came to light in the trial and rebuttal documents was that the computation of beta is greatly influenced by the period of observation and the frequency of observation. Consider Exhibit 6:

Exhibit 38A6

Comparison of Beta – Using Different Time Horizons

From Bloomberg (Same Source as Shapiro)

Beta Calculation's

Respondent's Comparable Co.	2 Year Adjusted, as of		5 Year as of June 30, 1989		5 Year Adj. Beta
	November 30, 1989	June 30, 1989	5 Year Raw Beta		
AAR Corp.		1.11	0.83	1.37	1.25
Arvin		1.08	0.88	1.30	1.20
Champion Parts		0.82	0.53	1.27	1.18
Durakon		0.75	0.37	0.89	0.93
Jason		0.91	0.94	1.37	1.25
Masco		0.89	0.62	1.31	1.20
Modine Mfg.		0.56	0.47	0.84	0.89
Simpson		1.04	0.81	1.05	1.03
Spartan		0.67	0.36	0.50	0.67
Averages		0.87	0.65	1.07	1.10
W/O Spartan		0.92	0.69	1.14	1.15

From Exhibit 6 it is readily apparent that beta is significantly affected by the choice of measurement period and frequency. Reilly and Wright (see pages 64–69, *Journal of Portfolio Management* 14, no. 3, Spring 1988) found that the interval effect depended on the size of the firms. The shorter interval caused a large beta for large firms and a smaller beta for small firms. Their study was based upon monthly versus weekly data. In Shapiro's rebuttal analysis he was actually using daily observations which would only exasperate the problem. Now it's understandable why Shapiro came up with a .5 beta, which makes no intuitive sense for Schlegel U.K. When you are dealing with small "cap" companies or companies that do not trade frequently you must use longer intervals and longer periods of observation. Ideally, observations should take place monthly over a five-year span, such as Value Line and Ibbotson.

ECS developed a beta estimate of 1.18 using selected U.K. companies. PwC developed industry beta estimates of 1.15 to 1.2 for Auto and 1.3 to 1.35 for Building using Value Line industry groups. These were then adjusted upward for size effect, i.e., smaller companies have larger betas (see Ibbotson) resulting in a beta estimate of 1.3 for Auto and 1.5 for Building. It should be pointed out that the beta for the Financial Times industry sector averages for Motors and Building Materials were both around 1.1 as was the actual beta for BTR. Judge Cohen concluded a beta of 1.19 (about the ECS estimate of beta), which we certainly believe is at least reasonable. This caused the weighted average cost of capital for Shapiro to increase from about 14% to 20%.

The next big issue in terms of the discount rate was the equity risk premium and whether a small stock premium should be added. The Court's opinion is very misleading on this issue. The Court states that they do not believe a small stock premium should be used because it does not reflect synergistic effects. Yet, the Court accepts the equity risk premium for the London Stock Exchange for the period 1946–1988 of 10.29%. Implicit in using this equity risk premium is that the London Stock Exchange is comprised of companies that are generally smaller than the companies included in the markets used to develop the Ibbotson data. The median company on the London Stock Exchange in 1988 only had a market capitalization of \$75 million. PwC in their CAPM used a U.S. based equity risk premium of 5%, plus a small cap stock premium of 5% representing a company with a market cap of \$150 million. This combined premium is virtually the same premium as that chosen by the Court.

Likewise, PwC in their sized-based analysis of equity risk premiums used 8.96% (total premium) for their synergistic scenario and 11.87% for their standalone scenario. Since these scenarios were averaged in the PwC conclusion the PwC effective equity risk premium was 10.41%. In our opinion, it was incorrect for ECS to add the 5.7% small stock risk premium to the British equity risk premium of 10.29%. Shapiro pointed out in his rebuttal that the correct small stock premium to add for the British market was 1.63% to give a total equity risk premium of 11.92%—this is very similar to the PwC standalone build-up equity approach result of 11.87%. Shapiro did not deny the existence of a small stock premium, but merely thought it was not appropriate in this case since we were estimating the discount rate applicable to a synergistic buyer. He did state that he thought that current Ibbotson measurement techniques tend to overstate the amount of the premium. Thus, it would be our conclusion that this decision does not preclude the use of a small

stock premium; it was merely not appropriate in this case because presumably it would not apply to a larger synergistic buyer.

The last issue in the determination of the discount rate is company specific risk. Both PwC and ECS used an adjustment for company specific risk. Shapiro held to the academic CAPM theory that no unsystematic risk should be recognized in developing the equity discount rate. The Court sided with Shapiro.

The reason PwC used a company specific risk adjustment was that we believed the cash flows projected did not reflect the possibility of loss of major contracts at model turnover. This was a major concern according to management. Sales can go up or down quickly. The Court said this was balanced off with the possibility of more sales. However, we note that Schlegel U.K. already had a 70% share of market and there was more to lose than to gain. ECS said they added a company specific risk adjustment because ECS believed that the cash flows projected were very optimistic and, in all likelihood, would not be met. Although we would observe a reduction in value for a perceived risk can be made in a number of difference ways, in light of the Court's decision, it may be more prudent to change the cash flows rather than increase the discount rate.

MANAGEMENT FORECASTS

One dilemma in appraisal circles is the use of management forecasts to make a valuation. A truly independent appraisal would develop its own forecast, but there are those that believe that management is in a better position to make a forecast than any third party. There are also those that believe management forecasts are often not objective forecasts but really "stretch budgets", i.e., optimistic targets for which to strive. It is our belief that management forecasts should be considered and only adopted if they appear reasonable in light of historical performance (i.e., how did prior forecasts match actual sales achieved) and future opportunities, i.e., we have seen too many "hockey stick" projections that never materialized.

The original management forecasts (prepared near the acquisition date) called for sales to increase by 62% over the next four years and profits to increase by 257%. The profit percentage on sales was expected to more than double from 7.9% in 1988 to 17.3% in 1993. In the Auto profit plan for 1989 the Managing Director specifically stated that his forecast was optimistic and called for a number of favorable events to happen such as renegotiating contracts, increasing productivity, etc. These forecasts were in light of a tightening economy in mid 1989.

All of the experts except PwC simply picked up management's sales forecast and adopted it. PwC's Auto sales forecast was actually more generous in the out years than the management's forecast because of PwC's perception of an increase in market size due to the Common Market. However, PwC substantially reduced the sales forecast for Building because of the rapidly sagging housing market. Annual housing starts were down to two-thirds of completions for 1988, which had been at an all time high. Yet, the Building forecast called for a sales increase of 23%. In PwC's opinion this was totally unrealistic.

The following comparison can be made of management's forecast, PwC's forecast and what actually happened:

**Building Products Comparison of Sales Forecast
(in 000's pounds)**

	<u>Management</u>	<u>PwC</u>	<u>Actual</u>
1989	21,111	16,493	16,817
1990	22,895	17,021	15,357
1991	24,303	17,770	13,357
1992	25,795	18,592	11,540
1993	27,379	19,368	12,831
1994	29,666	20,240	13,647
1995	30,844	21,151	12,525
1996	32,738	22,124	12,100
1997	36,882	23,142	11,742

PwC's forecast was based on an average of housing completions over a seven-year cycle adjusted up for population growth over the cycle and growing at the expected population increase. Besides the difference in housing starts, Building was planning on adding a substantial amount of traded hardware, i.e representing products manufactured by others. This did not happen. In fact, Building lost the representation of many products due to their poor performance during the recessionary period following the date of the valuation.

The Court stated in its opinion that although hindsight cannot be used, future events foreseeable at the date of value may be considered. In the view of PwC, the recession in the housing industry was knowable at the date of value. The Court admonished PwC for using hindsight. PwC did not use hindsight. We believe it is appropriate appraisal practice to scrutinize management forecasts and if they do not seem reasonable to make the necessary changes. Where PwC failed is in its communication of its fact finding to the Court. Although the looming housing recession was fairly well described in the PwC report, the fact that no direct testimony was given on the upcoming recession did not help. Again, we see this as one of the shortcomings of Tax Court procedure. Too little direct testimony is allowed.

GUIDELINE COMPANY DATA

ECS and PwC followed fairly similar paths in their search for guideline companies. A relatively large number of U.K. companies (about sixty) were screened based upon SIC codes. Next, this initial set was reviewed discretely for comparability based upon markets, products and financial performance. In both cases the set was narrowed down. ECS ended up with five comparable companies whereas PwC had nine. The PwC subset included all of the ECS subset plus several others.

One notable difference was that PwC included Laird. Laird owned Draftex, a direct competitor of Auto. We have already reviewed the impact of the restated financial statements on Laird's multiples. It basically reduced them by 30% to 40%. The range of multiples for the selected comparable companies was reasonably tight for PwC. In contrast, Shapiro had initially used U.S. comparable companies.

In Rebuttal PwC made the following observations:

Exhibit 38A8

COMPARISON OF MARKET MULTIPLES

	<u>P/E RATIO</u>
SHAPIRO'S GUIDELINE COMPANIES	15.0
S & P 500	14.8
PwC GUIDELINE COMPANIES	10.5
FTSE 100	11.1
FTSE BLDG MAT SECTOR	10.2
FTSE MOTORS SECTOR	10.3

Shapiro in his rebuttal report completely abandoned his U.S. comparable companies and did another selection using SIC codes on U.K. companies. He did no further analysis of individual company characteristics but performed some statistical calculations to show that this superset basically supported his original position and that PwC and ECS analysis must be suspect because their multiples were at the low end of his superset. Yet, his superset had not been screened in any fashion. We have no idea how comparable these companies are to Schlegel U.K., whether they operate in the same geographical markets, have lines of business that are relatively immune from changes in interest rates or whether they have high multiples because of low performance. These authors believe this to be contrary to sound appraisal practice.

Unfortunately, the Court seemed to accept Shapiro's arguments. What proved to be confusing (and inequitable in the case) is the fact that while the petitioner's expert's rebuttal reports were rebutting Shapiro's original report, Shapiro completely changed his position in his rebuttal report. Shapiro presented new conclusions that petitioners' experts did not have a chance to analyze and rebut in their written rebuttal reports.

INTERCOMPANY CHARGES

A fundamental issue involving any valuation is the identification of the rights or assets to be valued. Unfortunately, in this case the issue was not given much attention by the Court or majority of the experts. First, there were intercompany transfers of materials between other subsidiaries of Schlegel and Schlegel U.K. At best, PwC could determine these transfer prices were arm's length, so no adjustment was necessary.

In the case of intellectual property, there was a license between Schlegel Corp. and Schlegel U.K. for licensable property, which included both patented and unpatented technology as well as trade names and trademarks. The license called for a 5% royalty between parties on licensable products, i.e. products using the intellectual property.

Another inter-company issue was the imposition of a central or overhead charge. The charge was made at 2% of sales. A very confusing issue to the Court and to the Respondent and Shapiro was that Schlegel U.K. employed two accounting systems—Management accounting and Statutory accounting. In Management accounting no inter-company royalties were charged, while in Statutory accounting no central charge was made. A problem also existed with Schlegel U.K. in that they were not charged the proper amount of royalties for the intellectual property being used. Auto was paying out on average about 4.1% of net sales while Building was paying none. Schlegel U.K. consolidated the two business units into one statement before sending the results to Schlegel Corp. Schlegel Corp. was unaware that Building was not paying any royalties until the early nineties when the situation was rectified.

In terms of stated position, Shapiro, ECS, and the Court took the position that whatever was paid was correct and no adjustments were required. PwC took the position that the inter-company charges should be at arm's length and went to elaborate means within their report to identify what intellectual property was being used and what was an appropriate royalty. PwC's conclusion was 3.0% for Auto and 3.2% for Building (versus the 2.2% overall rate that had been historically paid, as no royalty had been paid by Building Products which was totally wrong because they were using U.S. technology). Again, the Court chose to ignore this analysis. It may be that the Court believed this was beyond their expertise and because ECS did not make any adjustment, the Court overlooked it.

Shapiro used Statutory accounting in his Guideline approach, which did not include a central or overhead charge. PwC verified this with both the Schlegel U.K. controller and auditor. Therefore, Shapiro's Guideline approach was in error at least by that much to start. The actual figures are below:

Exhibit 38A-9

**Accounting Comparison
(In 000s of pounds)**

	Statutory Accounting	
	As Reported	As Adjusted
EBITDA	4,294	3,451
EBIT	3,368	2,525
Net Income	2,162	1,641

The income figures to be used in Shapiro's Guideline approach are, therefore, overstated by 25% to 33%. While this was pointed out to the Court in PwC's rebuttal report as part of a larger adjustment including the royalties and because the Court did not pick up on the royalty issue, the management charge was also overlooked. Again, we might attribute this oversight to the brevity of the Tax Court process, which did not fully explore all of the issues.

Court's Opinion

Valuation Research Corporation (VRC) had performed an initial valuation in April, 1989. As described in the opinion, Schlegel Corp. management prepared sales forecasts for Auto and Building, which Schlegel Corp. supplied to VRC along with expense forecasts and historic financial data. VRC prepared a DCF analysis using a discount rate of 20.5%. Their results concluded fair market value after subtracting debt was \$32,363,000. As part of an overall allocation of purchase price, VRC concluded that BTR received a bargain purchase and should allocate only \$21,846,000 to Schlegel U.K. While VRC was not an expert witness in the case, its original valuation certainly had some influence on the Court's ultimate opinion. Therefore, the Court was presented with the information displayed in Exhibit 10:

Exhibit 38A-10

Summary Of Indicated Values

	(in millions)	Approach
VRC Original FMV	\$32.3	DCF @ 20.5% discount rate
VRC Bargain Purchase	\$21.8	
Shapiro Original Report	\$52.2	DCF @13.8% discount rate
	\$42-\$46	Guideline
	\$50-\$60	Transactions
	\$41.3	Value Allocation
Shapiro revised opinion		
Per Rebuttal Report	\$49.8	DCF @14.57% discount rate
	\$41-\$44	Guideline (38 firm sample)
	\$46-\$49	(54 firm sample)
ECS Report	\$16	DCF @24.75% discount rate after discount for lack of marketability of 16.3%
	\$16-\$25	Guideline after discount for lack of marketability of 16.3%
PwC Report	\$24.2	DCF-Synergistic@ 19.75% discount rate for Auto Prod,18.25% for Building Prod
	\$17.1	DCF-Standalone@ 21% discount rate for Auto Prod, 19.25% for Building Prod
	\$23.7	Guideline-Synergistic
	\$20.4	Guideline-Standalone

Ernst & Young had also prepared a valuation but were not offered as experts at trial. The Court, weighing the evidence, concluded its value based on the DCF approach using a 20% discount rate and applying it to the cash flows projected by ECS and Shapiro with no discount for lack of marketability applied. In publishing its opinion of \$31 million, we believe the Court calculated an enterprise value, failing to deduct the \$4.67 million in debt assumed as part of the transaction. The concluded value as corrected is therefore \$26.33 million.

Conclusion

The Court confirmed that the willing buyer and willing seller are hypothetical and not any specific buyer such as BTR in this case. The Court perhaps broke new ground in that the Court believed that synergy had to be considered. We agree with this, but observe that defining exactly how that synergistic element is to be included was not really addressed, perhaps just adding an acquisition premium appropriate for the industry handles it on the market comparable side. In the DCF analysis, one has to define the acquirer's cost of capital and what savings might be attributable to the target. We certainly do not believe that a prudent buyer would necessarily give all of the synergistic benefit to the seller unless there was fairly significant competition in the bidding process. Research on the relative size of buyers' market capitalization to the targets' market capitalization would be helpful, i.e., such research gives us a distribution just as we have distributions of acquisition premiums in, say, Mergerstat.

On a number of issues, the Court seemingly preferred what it considered to be objectivity to what is normally accepted as proper appraisal practice, applying reasoned judgment. The first instance was in the acceptance of management's sales forecast. If an expert chooses to deviate from a management forecast, then the burden is on the expert to convince the Court that any particular management forecast is not reliable and do so with corroborative evidence available at the date of value. The other instance of the Court favoring objectivity over standard appraisal practice is in Shapiro's treatment of comparable companies where he does strictly statistical selections with no analysis of the comparable companies' business operations, markets, or normality of financial statement. It is unfortunate in this case that Shapiro completely changed his position in his rebuttal essentially preventing petitioner's experts from effectively rebutting his Guideline analysis.

Most likely, the pivotal issues in this case were the selection of beta and an equity risk premium. We believe the Court made relatively good choices here although the reported opinion that a small stock premium was rejected is misleading since essentially the equity risk premium chosen in this case includes a significant part of a small stock premium. It should also be noted that the Court did not preclude the use of a small stock premium but opined that it was not appropriate because of the synergy element that the Court believed needed to be considered.

Although the measurement of beta was not actually discussed in the Court opinion, the PwC rebuttal effectively showed that the measurement period and interval are extremely important when calculating beta especially for small cap stocks that may not be frequently traded. The selection of beta comparable companies should be done with the mind that each guideline company's systematic risk characteristic should mirror that of the subject company.

The Court did not like company specific risk adjustments because it is contrary to CAPM theory. Although most appraisers recognize that company specific risk adjustments may be substitutes for direct adjustments to the cash flows (and are easier to apply from a mathematical standpoint), it may be prudent to make the more difficult cash flow

adjustments rather than simply adjusting the discount rate which has a certain purity in the Court's mind.

We believe it is appropriate appraisal practice to question inter-company charges. The license agreement in effect in 1989 was originally drawn up in 1974 and the economics of the business could have changed drastically in the interim.

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