

# 13 ESTIMATING DAMAGES IN COMMERCIAL, ANTITRUST, AND LABOR CASES

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## 13.1 Introduction

Many of the issues and techniques of estimating damages in wrongful death and personal injury cases are also relevant in commercial, antitrust, and labor cases. Extrapolations of past data may be used to estimate "post-injury" losses; earnings growth rates versus discount rates may be important; and predictions of the length of time of future loss may be discussed. On the other hand, differences do arise in the use of an economic expert. In many cases, he or she may offer opinions relating to the liability portion of the case, rather than only focusing upon the amount of damages.

This chapter will briefly focus upon major issues which the economic expert may encounter in these types of cases. Hypothetical cases, based upon actual commercial, antitrust, and labor cases, are then emphasized.

### 13.2 Issues in Commercial and Antitrust Cases

#### A. *Commercial versus Antitrust Cases*

Commercial damages may be alleged when some event causes a business interruption, with some form of economic harm to the affected firm. This may be lower sales or profits or the closing of the business. Antitrust damages also involve some harm to a business, usually from the actions of another business or businesses. Unfair barriers to entry may halt a market penetration; monopoly or monopolization may lower sales and profits; or exclusive dealing, tying arrangements, or other unfair trade practices may similarly cause economic harm.

In the calculation of damages *per se*, few differences exist in issues and methods. Thus, antitrust damage calculations may be considered a subset of commercial damages in the general material which follows on compensatory damages. This will follow from the fact that certain antitrust cases may call for treble damages, and that, in antitrust cases, economists are even more likely to testify on issues other than the calculation of damages. They may offer opinions on the proper definition of the relevant product market, for example.

#### B. *Use of Data*

As with personal injury and wrongful death cases, specific data should be given more weight than general data in projecting economic losses. The best data to project the likely sales or profits of a firm X after a business interruption is, therefore, past sales and profit data of firm X. In the absence of such data, or as a supplement, the expert may look at profit data from comparable firms in the relevant market, preferably during the alleged period of loss. When dealing with a less-than-established business, these data may be the best available. It will be important for the economist to properly define the relevant product market and justify how he picked "comparable firms." As stated before, economists must commonly transcend simple calculations of money damages in such cases.

More general data, on economic conditions in the Standard Metropolitan Statistical Area (SMSA) of the affected firm, or the state, or the region, or even of the nation may play a role as a supplement to specific data. The defense might allege that, absent the business interruption, profits would have sharply dropped for the affected firm because of a downturn in business activity. Both sides may then present data on Gross National Product and equivalent local indicators and unemployment rates. In the housing industry, for instance, one might look at mortgage rates and housing starts. Even here, the more credible data are more closely tied to the geographical area in which the affected firm operates and to its specific product market.

#### C. *Direct Losses*

The estimation of direct losses, such as replacing or repairing equipment, may be very simple. An expert may not be needed, or an accountant can easily handle



the task. Yet, issues do arise which require the judgment of an accountant or economist. If a piece of equipment with a 10-year useful life is destroyed, what if it only had 2 years of life left? Is a fair remedy the full cost of a new piece of equipment? What if replacement equipment is more productive and/or has more uses?

Also, the firm may have used its employees in clean-up or repair. Should the firm be reimbursed for their wages during this time? Their fringe benefits? Or is the measure of damages the possible, higher value of what they could have produced in their normal activities?

#### D. *Causality*

The economic expert inevitably investigates and testifies about both the *fact* of damages and the *amount* of damages. Unless he does not see reasonable causality between the alleged business interruption and subsequent economic harm, there cannot be any amount of damages.

For example, assume a large retail firm had a track record of solid and positive profits. Assume further that conglomerates would have bought the firm for a sum much greater than the original net worth. Finally, assume that the firm had 10 years of varying levels of profits before a business interruption and two years of losses after the interruption, forcing the closing of the business.

Causality between the significant business interruption and the marked change in the fortunes of business would seem to be present. Yet, what if the years of losses were associated with a severe recession in the national economy? What if the single large manufacturing (and hiring) firm in the local area had massive layoffs or shut down? The business economist must usually render an opinion on whether, and to what extent, the business interruption actually caused lower-than-otherwise profit levels, or, indeed, actual losses.

#### E. *Going Concern Method of Estimating Losses*

Given an opinion that causality exists, the economic expert may choose to value loss by the "going concern" method. Here, the value of a business at the time of its destruction is estimated, in terms of what a buyer would have paid for the business. This is contrasted to the like-valued worth of the business after a business interruption either eliminates or lessens its value. The difference in value is economic loss. The going concern method does not force explicit projections of future profits or losses in the absence of an interruption. It usually requires, however, that some appraisal has been made of the business before the interruption or an offer to buy the business. Otherwise, someone must appraise *ex post facto* the pre-injury value, and this must implicitly consider the future stream of profits or losses.

Furthermore, a \$5 million offer could have been made to buy a business that was later destroyed. Yet, before trial, the technology of the business product line might become obsolete, so that losses and a shut-down would have occurred in the future. The going concern method would yield an unrealistic \$5 million loss and would fail a simple test of common sense.

#### F. *Year-by-Year Method*

### **General**

Normally, a year-by-year method of estimating economic loss is more straightforward



and logical than is the going concern method. In this second method, more fully discussed in this section, a past track record of sales and/or profits (net income) is projected into the future. From this is subtracted actual or anticipated profits or losses in each year as a result of the business interruption. The difference in the two post-interruption streams of income is economic loss.

#### **Sales versus Profits**

Profit, or net income, is the difference between revenues and costs. It is profit which is lost in a business interruption. The change in sales should be noted, but businesses survive on profits. If sales increase 40 percent but costs increase 60 percent, the business probably goes out of business.

Nevertheless, some insurance adjustors look at past profits-to-sales percentages and then focus upon post-injury sales. If sales drop, they use the historical percentage to predict the drop in profits. One of their arguments is that businesses may "pad" post-injury expenses to artificially lower post-injury profits. This is possible, but business firms, before the injury, attempt to influence both revenues and costs to seek an optimal bottom-line profit. It is the past profit variable which should be studied and used to project the future in a straightforward manner. The "sales proponents" are right in the sense that one should also review the revenue and cost components of profit to guard against a post-interruption "manipulation." Such occurrences are generally easy to discern in a series of financial statements.

A complication occurs in estimating lost profits when one or a few product lines or divisions of the business are affected by an interruption. Revenues associated with those product lines as well as attributable (variable) costs should clearly be considered. But should some overhead, or fixed costs be added to the variable costs, lowering the profit level from product lines affected by the business interruption? On the one hand, the "variable profit" would not have been obtained without the overhead support. On the other hand, the firm, after the interruption, must still pay its fixed costs and the foreclosed product lines do not contribute to meeting these costs. The second argument may be the more compelling. At any rate, the case law varies on whether fixed costs must be deducted from revenues in projecting lost profits, and the forensic economist and attorney must certainly confer on both the law and the economic logic of an approach to this issue.<sup>1</sup>

#### **Net Income Before or After Tax**

What is really lost to entrepreneurs is after-tax net income, or profits. The central issue is whether the damage award for lost profits will be taxable to the business entity. If so, before-tax profits should be projected, so that the business is not taxed twice. If not, after-tax profits are the measure of economic loss. Again, the lawyer must advise the forensic economist on this legal parameter.

#### **Economic Loss to Date of Trial**

In many commercial cases, economic loss begins with the business interruption and ends with the award to cover losses after the trial. Presumably, the plaintiffs

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<sup>1</sup> Robert L. Dunn. *DISCOVERY OF DAMAGES FOR LOST PROFITS* (Tiburon, California: Lawpress, 1981), 2nd edition, pp. 4-10.



are then made whole and can resume the normal operation of their business, as before. The major, and possibly the only, role for a business economist in such cases is to project post-injury profits based upon the pre-injury "track record" of profits.

Projecting future earnings based upon past earnings seems the same as in wrongful death/personal injury cases. Yet, people tend to move steadily upward in money earnings, whereas businesses are more likely to cycle up and down each year in their level of net earnings. Three possible track records therefore lead to three methods of projecting net income, absent a business interruption. If annual profits show a clear upward trend, then a trend rate of average annual earnings growth should be computed and used to project profits beyond the interruption. This is especially defensible when the upward trend was maintained despite downturns in the business cycle.

More typically, earnings will cycle up and down, so that a trend, if any, is "flat." Here, it makes intuitive sense to take a simple average of several years (if possible, at least 10) of past net income and assume this as the profit figure absent the business interruption.

Third, profits may show a downward trend, toward zero profit and/or losses. This downward trend may be projected. It is possible that losses would have occurred anyway and no economic loss because of the business interruption exists. An exception may be when unusual forces artificially depressed profits in the few years before the interruption and these forces changed for the better after the interruption. Assume a home building concern destroyed, for example, in 1981 after two years of losses—two years of historically high mortgage rates and low housing starts. In future years, home building came back to life, as measured by relevant variables. A multiple regression analysis could be employed to use variables such as mortgage rates and housing starts to predict net profits for the firm before 1981. If the statistical model accurately predicted actual net income before 1981, it might be used to predict a return to profit after 1981.

A special problem exists with less-than-established businesses, as no track record of net income exists. Some courts simply deny damages upon an interruption, although more courts attempt a realistic assessment based upon the facts of the case.<sup>2</sup> The economic expert must develop some "yardstick" of what profits would have been, akin to the wages of a "statistical person" in the case of a minor child.

As examples, the firm might have been a franchise, and profit records of similarly situated franchises might be used. Or, for other plants and firms, profit histories of plants or firms in the same product or service market and relevant geographical area might be used. Alternatively, the profit record of a successful business could be utilized in estimating post-injury profits.

#### **Economic Loss in the Future**

Economic losses may exist after the date of trial. A destroyed business, for instance,

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<sup>2</sup> See Dobbs, *Handbook on the Law of Remedies* (St. Paul, Minnesota: West Publishing company, 1973), p. 513; and Frank Lane Williamson, "Remedies-Lost Profits As Contract Damages for an Unestablished Business: The New Business Rule Becomes Outdated", *North Carolina Law Review* (1978), Vol. 50 p. 724.



may take a substantial period to re-start its operations, even with a lump sum award for past damages.

In such cases, it is very difficult to select an end date for the projection of year-by-year losses. This stands in contrast to personal injury and death cases, where loss ceases at the end of work-life expectancy. Rarely in commercial case law are loss projections allowed to extend beyond 10 years. A few cases use a standard of 10 years, a more common rule seems to be less than 10 years, and the most common rule is less than 5 years.<sup>3</sup> The economist must consult with his attorney on this legal parameter. He may also cumulate losses year-by-year for 5 or 10 future years, so that his written analysis contains an acceptable lump sum loss figure regardless of the court ruling on the end date issue.

Since these losses extend into the future, the dual issues of earnings growth rates and discount rates are relevant. Earnings growth rates should be based upon the pre-business-interruption track record of profits as discussed above. The issue of appropriate nominal or real interest (discount) rates is not theoretically different than as discussed in Chapter 3 for personal injury and death cases. However, it is more likely that the nominal growth rate of profits will be zero versus a discount rate that includes inflation.

If the damage award for future losses is taxable, as is usually the case, then one of the two effects of considering income taxes, as described in Chapter 3, applies. Net income *before* tax would be projected, so as not to tax the award twice. What has not generally been considered in commercial and antitrust cases is the second tax effect. If future earnings are discounted to present value because of interest earnings, and if these interest earnings will also be taxed, the lump sum of loss must be increased to provide the necessary after-tax interest earnings.

### 13.3 Commercial/Antitrust Hypothetical Cases

#### A. *Armin Drugs*

Armin Drugs was a retail drug store operating in a suburban mall. Its lease with the mall owner was a five-year lease beginning November 1, 1979, and the 5-year lease was renewed for the November 1, 1984–October 31, 1989 period. The lease contained an exclusivity agreement, in which the mall owner agreed not to allow another retail drug operation to compete with Armin within a one square mile radius of the Armin location. Nevertheless, on March 9, 1987, a national chain store was allowed to begin operation in the mall, and this store sold drugs and related items.

After initial work to determine that, in fact, the new store was a direct competitor in the relevant market, the attention of the plaintiff economist turned to the fact and the amount of damages. The net income of the store for five fiscal years was as shown in Table 1. Because the store had lost its profitability, it was closed by Mr. Armin in February 1988.

The economic expert for the plaintiff chose to consider Net Income Before Tax because any award was to be taxable. He looked at month-to-month net income for fiscal year 1986–87, when the breach of the exclusivity agreement occurred.

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<sup>3</sup> Dunn, *op. cit.*, pp. 271-277.

They were as shown in Table 2. The four months of net income after the breach were very much below the average of monthly net income for the eight months prior to the breach. Moreover, they were much below net income for the same months in the past year, so seasonal earnings in drug sales did not appear important. No events in the local or national economy appeared to explain the sharp downturn in net income.

The plaintiff's expert determined that the primary causal event in the change of fortune for the Armin store was the breach of the exclusivity agreement and proximity of a direct competitor. His first task was then to project economic loss from March 7, 1987 through the end of the lease on October 31, 1989. The annual net income of the Armin Store was clearly growing, and if the average net income of the first 8 months of fiscal year 1986-87 had extended for the entire year, annual net income would have been \$52,992. Economic loss for fiscal year 1986-87 was estimated as the difference between the \$52,992 which would have been earned and the actual net income of \$27,028. This loss was \$25,964.

**TABLE 1**

NET INCOME BEFORE TAX OF ARMIN DRUGS  
FISCAL YEARS 1983-84 TO 1987-88

FISCAL YEAR <sup>a</sup>	NET INCOME (LOSS)
1983-84	\$10,161
1984-85	7,354
1985-86	46,812
1986-87	27,059
1987-88	(6,892)

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<sup>a</sup>Fiscal year is July 1–June 30

**TABLE 2**

MONTHLY NET INCOME (LOSS) BEFORE TAX FOR ARMIN DRUGS  
FISCAL YEAR 1986-1987

MONTH	NET INCOME (LOSS)
July	\$ 1,903
August	3,308
September	2,110
October	3,007
November	7,507
December	11,624
January	5,444
February	424
March	2,500
April	3,929
May	(299)
June	(14,429)



The plaintiff's economist could have assumed that net income would have continued to increase at some growth rate based upon past growth of net income. Yet, particularly because the local economy was not strong in 1988 and 1989, he chose to assume that net income would have remained at the \$52,992 level had the breach not occurred. Loss for fiscal year 1987–88 was estimated as the \$59,884 difference between \$52,992 and the \$6,892 net loss which was actually incurred. In fiscal year 1988–89, loss was the \$52,992 which would have been earned, had the store existed in the absence of the breach, and loss in fiscal year 1989-90 was \$17,664, or the \$52,992 annual loss pro-rated through the October 31 end date of the lease. Total economic loss was therefore \$156,504 through the end of the 5-year lease.

Next, it was assumed that, absent the breach, the Armin store would have had its lease extended for another 5 years and at least earned \$52,992 in net income each year. This estimate in each future year was discounted to present value at prevailing rates of interest on U.S. government securities. Thus, with a zero growth rate and high interest rates, the net effect of the "teeter-totter" was in the range of –8.5 percent per year.

The major difference in the analysis by the defense expert was that he averaged a 3-year history of net income before the loss to say that annual profits would only have been \$21,442 absent the breach. The court awarded \$156,504 for the loss through the end of the lease and refused to consider losses beyond the end of the lease.

#### B. *Interstead, Inc.*

Interstead, Inc. was a producer of steel pipes and related products. In the production of pipe, iron ingots were converted to hot rolled band and the rolled band was later converted to pipe. The area of the plant where ingots were converted to band—the hot strip mill—depended upon an in-plant power source, which included a very large and heavy stator. On June 25, the stator malfunctioned, shutting down the entire production process of converting ingots to hot rolled band. A major electrical firm in a nearby city was contacted, and they assured Interstead that if the stator were transported to their location, it could be repaired and returned for a re-start of operations by June 29.

A contract was signed with a trucking firm, to transport the stator to and from the engineering firm. It was this firm, Harbuckle, which caused the problem. Because Harbuckle employees did not properly secure the stator on the flatbed truck, it slipped off the truck enroute and was very badly damaged. The engineering firm eventually repaired both the original problem and the accident-related damage. Yet, the stator could not be repaired, returned, and placed back into operation until July 15.

During this extended downtime, Interstead had very heavy demand for its steel pipe and could not shut down production. Therefore, it simply purchased hot rolled band on the market to replace what it would otherwise have internally manufactured. The economic expert viewed economic loss as the difference between the purchase price of hot rolled band and what would have been the internal, variable cost of each ton that would have been produced from June 29 to July 10.

The first task was to estimate the per-ton difference between purchase price and variable production costs. From purchasing records, the average per-ton purchase



price for the hot rolled band bought in the period could be easily derived. Fortunately, the cost accounting department also kept detailed records each month of production costs by profit center. The hot strip mill, converting ingots to hot rolled band, was one such center. For monthly periods before June 29, the economist could find the average per-ton cost of ingots, the yield of hot rolled band per ton of ingots, labor and other variable cost, fixed costs per ton of hot rolled band allocable to the profit center, and the hot rolled band tonnage produced. The economist could therefore use an historical period to compute total costs per ton of hot rolled band, subtract fixed costs per ton, and derive the variable costs of producing a ton of hot rolled band.

After fixed costs were subtracted, the variable production costs were a lower cost figure. These per-ton costs were subtracted from the average per-ton purchase price to arrive at economic loss per ton of hot rolled band which would have been produced. Logic dictated that fixed costs should be subtracted and thereby increase economic loss. During the June 29-July 10 period, the company still had to bear these fixed costs, which could not be allocated to produce hot rolled band. Also, the economist only used production cost data since the previous March 1. In February, an entirely new technological process and new machinery had been introduced into the hot strip mill, making previous production cost data irrelevant for estimating costs in future periods.

With a \$115.13 figure for economic loss per ton of hot rolled band, the economist used monthly production data since March 1 to estimate tons of hot rolled band which would have been produced per 8-hour shift. He then looked at the last year of production data to determine the likely number of shifts which would have worked during weekdays, weekends, and the July 4 holiday. Economic loss was the \$115.13 per ton loss times the number of tons which would have been produced per shift times the likely number of shifts which would have been worked from June 29 to July 10, plus the direct costs of the more extensive stator repairs.

The defense argued about the historical time periods used for the production cost estimates. They also quibbled over the allegation that the firm could have sold all of the steel pipe which it produced. If it could not, it could have deferred purchase of hot rolled band, suspended production, and continued hot rolled band and pipe production after July 10. Finally, the defense pointed out that approximately 6 months after July 10, the stator again broke down. An innovative engineer for Interstead rigged a temporary energy transmission from an adjacent plant and production continued. The defense alleged that this should have been done from June 29-July 10, to which the plaintiffs replied that the technology was not then available. A settlement near the loss estimate of the plaintiff's economist was ultimately reached.

### C. *Tennessee Petroleum*

Tennessee Petroleum, a large and diversified company, contracted with Angus Manufacturing to provide a "passivation" system for beer kegs which Angus wished to begin manufacturing. Such a system cleaned and sterilized kegs. Angus was primarily engaged in the manufacture of aluminum containers but desired to enter the beer keg market and sell to large beer companies, such as Suds Beer. However, two companies much larger than Angus were the only existing sellers of straight-sided kegs, and only Suds was purchasing these types of kegs.



The passivation system was originally to have been installed at Angus by March of 1982. It was not installed until July of 1982 and then simply did not perform as warranted. Angus did not allow Tennessee Petroleum to correct the problems but rather chose to use its own engineering and technical staff to correct the system. The system, in effect, could not be fixed and Angus's staff then spent considerable time and energy designing an entirely new system.

Suds bid major orders for straight-sided kegs only a few times per year. One major purchase was in September of 1982, and Angus was not allowed to bid because sample kegs provided had been marginal in quality and Suds apparently doubted the ability of Angus to produce. After a January 1983 request for bids, Suds ordered some kegs from Angus, but less than 15 percent of the total kegs; the remainder were split between the two large and established manufacturers. This was the last bid let for a dead industry, as even Suds discontinued the purchase and use of straight-sided kegs.

The economist for the plaintiff developed four alleged elements of economic loss suffered by Angus because Tennessee Petroleum's passivation system did not work as warranted. First, he calculated the Angus labor and materials expense in the attempt to correct problems in the Tennessee Petroleum system. Second, he calculated these same costs in the Angus design and installation of an entirely new system.

The third and fourth alleged elements of economic damage were much more significant in amount. The third element concerned lost profit from the kegs which Angus would have sold to Suds in September of 1982 and January of 1983, if the passivation system had been installed on time and if it had performed as warranted. Economic loss was calculated at an estimated profit per keg sold, using price and cost data, and an anticipated number of kegs which would have been ordered from Angus absent the problems of the passivation system. A key assumption was that Suds would have wanted to help a new supplier enter the market and would have, at worst, allocated the total kegs among the three bidders by the sum-of-the-digits method, known as a depreciation theory in accounting. Thus, the sum of the three suppliers is  $1+2+3=6$  and  $3/6$  of the business would go to one supplier,  $2/6$  to another, and  $1/6$  to the third. Economic loss for Angus was therefore calculated as the per-keg profit on  $1/6$  of the total kegs ordered on each of the two dates.

The fourth alleged element of loss was based upon an "opportunity cost" argument. It was alleged that the Angus engineering staff was about to start a major engineering project designed to significantly cut the per-unit cost of producing their aluminum containers. This was delayed for 6 months because of the shift of work effort to correcting the passivation system and then designing an entirely new passivation system. Ultimately, the Angus engineers returned to and completed the container project, reducing the per-unit cost of containers by various amounts, depending upon the container size. In effect, damages were estimated as per-unit savings times the number of containers produced in a six-month period when, absent the passivation problem, the per-container cost would have been lowered. To each of these four elements of loss was added pre-judgment interest to the date of trial.

Business economists for the defense then entered this case to scrutinize both the fact and the amount of each alleged element of damages. The major argument



against the first two proposed elements of damage was that Tennessee Petroleum had not been given any chance to make good its warranty. Otherwise, the defense economists did not debate the techniques used to estimate these two direct elements of damage. The costs were well documented, and the interest rate used for pre-judgment interest—assuming that this was allowable—was reasonable.

However, the defense economists attacked the sum-of-the-digits projection of lost sales. Profits were being estimated for an unestablished business attempting a market penetration against two much larger business entities which were well established in the particular market. A purchasing expert was used by the defense to show that nowhere in the purchasing literature was the sum-of-the-digits method ever mentioned as a technique of dividing orders among suppliers. He testified, and the leading texts stated, that if one could predict how any given purchasing agent would divide an award for purchases, the purchasing agent should be fired. The Suds purchasing agent would not predict how he would have divided the purchases in the two relevant awards of purchases, and he testified to non-passivation related problems in the sample kegs provided by Angus in late summer of 1982.

Regarding the fourth element of damages, the defense economists did not attack the calculations on lost savings per container. Rather, they attacked the entire methodology used by the plaintiff's economist in assessing loss. The container cost-savings project had been on the Angus waiting list for action since the mid-1970s. Was it the fault of the defendant that Angus had delayed the project so long, especially if it produced such tremendous cost savings? If the savings were so great, why not use the warranty to remedy the passivation problem or hire an independent engineering contractor to solve this problem? The defense argued that damages, at most, would be the costs which would have been incurred in contracting out the correction of problems with the passivation system. Or damages might be the overtime salaries of the Angus engineering staff to address both the passivation and container issues. Moreover, the defense questioned whether decreases in per-unit container costs necessarily meant more net income—dollar-for-dollar—when the nature of demand was also a significant factor.

The case was settled during trial for an amount almost equal to the sum of estimates of the first two elements of damages. Nothing was offered or received for the third and fourth alleged elements of economic damages.

#### *D. Crutchfield Motors*

Crutchfield Motors, owned by Elmer Crutchfield, sold the cars, trucks, and recreational vehicles (RV's) of a number of manufacturers. The dealership primarily served 3 rural counties and was located in the small town of Huntsville. One of the Crutchfield product lines consisted of RV's produced by Alpine Motors Corporation, of which Crutchfield was a franchisee. It was alleged that Alpine unsuccessfully pressured Crutchfield to sell its entire range of vehicles. The alleged pressure was applied in two ways.

First, Alpine allocated fewer vehicles to Crutchfield than were appropriate under its national allocation formula. Specifically, 100 vehicles were "shorted" in 1977, 100 in 1978, and 30 in early 1979—a period in which RV's were heavily in demand and easily sold. Secondly, Alpine opened a second dealership to sell RV's in



Midshore, only 10 miles from Huntsville. It was alleged that this also violated Alpine's own rules about the proximity of franchises, given the city and county populations involved. Crutchfield sued for damages under a state antitrust law regulating the treatment of franchises. This law provided for compensatory damages in the amount of lost profits.

The plaintiff's economist entered the picture and began work with Crutchfield's Certified Public Accountant (CPA) to obtain necessary financial data. Annual Dealer Financial Statements, which Crutchfield completed and sent to each manufacturer, turned out to be better data sources than were corporate income tax returns. These showed the annual RV's sold, gross profit on these RV's, variable profit (gross profit less variable costs) on all new vehicles as a group and all used vehicles as a group, and also variable profit for the service profit center and parts and accessories profit center.

One problem was that the balance sheets and income statements on the dealer financial statement weren't exactly the same as these two reports on the income tax returns for each year. The economist asked the CPA to "reconcile" data on each dealer financial statement with the income tax return. This was accomplished to eliminate a likely criticism of calculations based upon false data.

The economist wished to compute relevant (variable) profit per new RV each year, and then multiply this by the 240 RV's which were "shorted" and would have been sold. He then wanted to compute a similar loss on the 34 RV's sold at Midshore, which should have been sold by Crutchfield over the 1981–84 period. To arrive at an estimate of these two loss elements, the following assumptions, based somewhat on estimates by Crutchfield and other dealers, were made:

1. That 240 RV's were in fact shorted in 1977–79 and could have been easily sold.
2. That 34 RV's sold by Midshore from 1981 to 1984 should have been allocated to, and sold by, Crutchfield.
3. That Crutchfield lost profits on all these new RV's; on 60 percent of these RV's traded in and re-sold as used RV's in an average of three years; and on service and parts and accessories profits on each RV over a useful life of 6 years.
4. That the percentage gross profit margin advantage for RV's versus all new vehicles sold in a year can be applied as the difference in variable profit margin between RV's and all new vehicles in the same year.
5. That the percentage profit margin on used RV's sold in any year is the same as the profit margin on new RV's sold in the same year.
6. That the service and parts and accessories (P&A) profit margins per RV from 1977–1984 are the 8-year 1977–1984 average of profit per vehicle in each profit center. This is relevant (variable) profit for the profit center divided by total new and used vehicles sold in each year. Further, that this eight-year average of lost profit per RV in service and P&A must be twice reduced:
  - a. By 25 percent because only 75 percent of vehicles serviced by Crutchfield would be vehicles sold by Crutchfield.
  - b. By another 25 percent because RV's sold by Crutchfield would only



be serviced by Crutchfield, on average, for 75 percent of their useful life.

7. That the Dealer Financial Statements had been properly “reconciled” to the income tax returns.

The loss calculations might be illustrated by using 1977 as a sample year. Gross profit on the 111 RV's which were sold was \$74,823, or \$674 per RV. This was 61.3 percent higher than the \$417.90 average gross profit margin on all new vehicles sold. It was the variable profit margin which was relevant, and this was not broken down by type of vehicle. Variable profit on all 806 vehicles sold, however, averaged \$332.75 per new vehicle. The RV margin was 61.3 percent higher. This was a \$536.72 variable profit per RV times 100 shorted RV's, or \$53,672. Fixed costs were not subtracted, since Crutchfield still was forced to pay all of his fixed costs in each year.

Used RV loss for the shorted 100 vehicles was calculated using 1981 data, assuming a trade-in and re-sale three years later. Because gross profit margin data by vehicle type was only available for new vehicle sales, a 41.2 percent difference in profit margin was found for RV's above that of all new vehicles sold. The relevant (variable) used vehicle profits in 1981 were \$34,607 on 553 used vehicles sold, or \$62.58 per used vehicle. This was adjusted upward by 41.2 percent to become \$88.36 per used RV sold. This was multiplied by 60 RV's—60 percent of the 100 RV's sold new 3 years earlier.

Service and P&A loss calculations began by dividing relevant annual profit in each service center by the number of new and used vehicles sold per year. These relevant (variable) profits per vehicle were averaged for the eight years to find average relevant profit per vehicle per year. This was then multiplied by the 6-year useful life of an RV to achieve relevant profit for the useful life of each RV. This figure, for each of the two profit centers, was then twice discounted by 25 percent, as explained in the above assumptions. The final two figures, proxies for lost service and P&A profits per RV over its life, were then multiplied by the number of shorted RV's in each year. Total loss was lost profits on new RV's, re-sold used RV's, service, and P&A. Parallel calculations, only for later years, achieved a loss estimate for the 34 RV's sold by Midshore.

#### E. A Mass Disaster Case—Acme Chemical

The authors have been involved in several mass disaster cases, and special problems and issues emerge in such cases. As one example, assume an air disaster which killed almost 250 military personnel returning home from overseas on holiday leave. An initial issue of where claims were to be filed emerged, and expert knowledge of the impacts of varying legal parameters on damages calculations was important. Other issues of predicting military separation and post-military earnings streams were no more difficult than preparation for the efficient and consistent processing of 250 loss analyses. Indeed, data management issues are common to mass disaster cases. These are highlighted in the Acme Chemical case, involving many categories of economic damages, and in the accompanying Appendix 1 to this chapter.

Assume that a chemical byproduct was released by Acme Chemical, Inc., into the sewer system of a metropolitan area, causing the sewers to explode with massive damage to streets, businesses, residences, and other property. Sewer, electricity, water, and other services were eliminated for various amounts of time, depending upon the location. Sewer and street repairs interrupted transportation for over a



year in many cases. Therefore, a class action suit was begun involving many businesses, homeowners, renters, and workers affected by the explosion. A problem existed from the beginning in actually knowing the size of the class.

The case is important because the business economists retained by plaintiff's counsel necessarily allied themselves with an expert in survey design, survey implementation, and data management. A massive task was surveying an area predominately occupied by individuals in a low socioeconomic category. It was decided that mail surveys of economic losses would simply not work, so individuals were trained to complete claim form instruments with claimants. Further, the claim form instruments were segmented and specifically designed for the type of claimant—business, property owner, renter, worker in affected area business, etc.

Besides the problems of claim form design, application, and data management, other aspects of this commercial case are of general interest to attorneys specializing in commercial damages. For example, did the explosion and resultant repair work cause a permanent loss in area property value, as compared to changes in property value for the remainder of the metropolitan area? This possibility was explored by averaging property values in the affected area before and after the explosion and property values in the remainder of the metropolitan area before and after the explosion. Then, the percentage change in property values for the rest of the city was determined. The stream of these values was much above the stream of average change in property values for the affected area. Moreover, the percentage change in the two streams had been very close before the explosion, so apparently the explosion had caused a gap in the stream of value of property, which represented substantial economic loss for the class as a whole. Interestingly, the defense argued that the repair work would ultimately make the affected property more valuable, and in a few years, the gap between property value absent the disaster and because of the disaster would at least be close.

In estimating the value of the loss of several types of utility services, it was decided to determine the total hours of lost electric service, for example, and value each hour at the average cost of electricity per hour in the area at that time. A difficult issue was the valuation of the economic loss of inconvenience. The number of hours of inconvenience was surveyed—including such types as excessive odor, dust and noise from the reconstruction efforts. Yet, how could each hour of inconvenience be valued? An arbitrary \$1.00 per hour figure was discussed, along with a more elaborate "escape" notion on what persons would have given up to be somewhere else—in higher rents or lower wages. The issues were similar to willingness-to-pay issues underlying hedonic damages.

The settlement formula in the case finessed some of these difficult issues. The total blast (and repair) area was divided into four zones, which were ever-widening concentric circles around the epicenter of the blast. Damage and inconvenience were more severe as one lived or worked closer to the epicenter.

Under the settlement formula, persons showing that they lived or worked in a given zone during the relevant period received an automatic "threshold" payment. This was higher in the more severe zones and covered inconvenience loss. Claimants could then show specific, direct damages and receive these compensatory damages plus an additional percentage-of-compensatory-damages payment that theoretically



covered punitive damages. The percentage was 250 percent for small claims and scaled downward as the claims grew larger.

Approximately 40 lost profits claims were involved in the claims procedure, under the tutelage of a federal Special Master. In general, the plaintiff's economist took a simple average of past profits of the firm and projected this average as the likely profit level, absent the explosion, for two post-explosion years before the settlement. Economic loss was this profit level less lower actual profits or losses incurred, or less \$0 if the business was forced to close. In some cases, the plaintiff also argued post-settlement damages, because a closed business required a start-up period before profits could reach their pre-explosion levels.

The defense disagreed with any losses beyond the settlement date and contested other aspects of some of the plaintiff's estimates. For example, the defense pointed out that a recession existed in the relevant two years and post-explosion profits would actually have been lower because of the economy. These issues were argued and settled case by case.

Perhaps the most interesting case was that of a large lumber company in the worst area of the blast. It incurred heavy losses in the two years after the blast and filed for bankruptcy. After over a decade of profits, the company had incurred two years of mild losses immediately before the explosion. The defense argued that poor management would have caused the bankruptcy anyway and that the explosion did not cause the problems of the firm.

The plaintiff economist knew that the two pre-explosion years were a time of historically high mortgage rates and low housing starts; these and related variables "turned around" for the better after the explosion. Working with a statistician, he built a regression model that very strongly showed past profits of the lumber firm moving with, and being explained by, these types of independent variables. Because mortgage rates, housing starts, and other variables turned for the better, the economist predicted a return to profits, absent the explosion. The substantial economic damage was the absolute difference between projected profits and the large post-explosion losses.

The defense hired economists and statisticians of their own, who eventually developed a model showing post-explosion losses. A "battle of experts" ensued, but a settlement occurred before trial.

### **13.4 Issues of Damages in Labor and Related Cases**

Issues of the amount of damages may arise in arbitrations over the application of labor agreements, in cases before the National Labor Relations Board (NLRB), in equal employment opportunity cases, and in a number of types of civil suits arising from employment relationships. The issue may be denial of employment, wrongful discharge, failure to promote, or wage losses by workers arising in commercial or antitrust cases.

The services of an economic expert are often not needed or used in these cases. Particularly in fixed-period cases, the calculation of wage loss may be very simple. Another generality is that there is more uncertainty than in tort cases as to the "rules" of calculating damages which may be favored by a particular arbitrator or government agency. Finally, economic experts and especially labor economists



may be asked to testify regarding more than the amount of damages. They may also offer opinions on whether unlawful discrimination did or did not occur and on defining the appropriate labor market, for example.

#### A. *Issues in Fixed-Period Cases*

By “fixed-period” cases, we mean cases where damages have a certain start date and a fixed end date at or before the date of the hearing or trial. Many of these damage calculations are straightforward, as when the grievant may be sent back to work with back pay. Back pay is at least lost wages and can be determined by historical average hours or days of work times a likely wage rate. Alternatively, a “representative worker” can be chosen, who performed work in the same job title, location, and with approximately the same seniority. The actual wages of this person may be the amount of loss. In a failure to hire case, for example, the “representative worker” method may be the only reasonable method.

Assuming that the award is to be taxable, before-tax earnings must be projected, so that the claimant will not be taxed twice. Fringe benefit loss has also been calculated in many cases, but under various circumstances and methods. Defined employer pension contributions or credits for defined pension benefits, for periods in which a claimant could not work, are often restored. Accruals for vacations and sick leave may be provided in back pay awards. If the claimant had to buy replacement medical insurance or directly pay medical costs, he is sometimes reimbursed.

Income from collateral sources is also at issue during periods when a claimant was not allowed to work. If unemployment compensation was received, the NLRB will not deduct this from the amount of an award, but some arbitrators will do so. Usually, wages from other jobs are deducted, except for part-time jobs which were likely to have been performed anyway.<sup>4</sup>

Since fixed-period cases do, by definition, cease at least by the date of a hearing or trial, discounting of future losses is not at issue. Whether pre-judgment interest should be added to past losses is an issue. Economically speaking, the claimant is not “made whole” unless such interest is added to a lump sum award. The NLRB does allow pre-judgment interest, but arbitrators vary in whether it will be allowed. Moreover, there is wide variation in the rate of interest which will be allowed, so that an economist might be armed with several alternative calculations.<sup>5</sup>

#### B. *Issues in Open-Ended Cases*

Labor cases where damages extend into the future have been unusual. Yet, a worker may be fired in an age discrimination case, and the suitable award or settlement may not be a return to work. The older worker, with experience specific to that firm, may have few alternative possibilities of work. Thus, he may receive a lump sum or stream of payments to cover what he would have made for some future period. A similar situation may also exist for an older executive employed by a firm which was eliminated because of antitrust violations. And, of course, F.E.L.A. cases in the railroad industry are really “labor” cases involving future losses.

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<sup>4</sup> Marvin Hill, Jr. and Anthony Sinicropi. *Remedies in Arbitration* (Washington, D.C.: Bureau of National Affairs, 1981), pp. 71-73 and 83-86.

<sup>5</sup> *Ibid.*, pp. 197-199.



The calculation of lost future income differs little, if any, from the calculations in death or injury cases discussed in previous chapters. Wage and fringe loss would be projected into the future, and residual power to earn income would be subtracted to produce a stream of net loss. The stream would be projected to an estimated retirement age and/or LPE reductions would be made. Since future losses are involved, discounting to present value would occur. Finally, before-tax wages would be relevant if the award was to be taxable.

### *C. Issues in Pension Valuation Cases*

Frequently pension valuation issues are the subject of expert witness testimony by an economist. Pensions are an increasingly important part of financial analysis; it is estimated that pension funds own somewhat more than half the stocks and bonds in America. Pension analysis is required under several circumstances: (1) in a divorce where one party is entitled to a pension and the other party is entitled to share in that pension; (2) in personal injury or discrimination cases where valuing the pension as a separate benefit is important because it does not readily fit into a standard fringe benefits package; and (3) when a company terminates its pension plan and a determination of any withdrawal liability is required. This section extends the Chapter 4 discussion of fringe benefits to directly discuss pension valuation issues in these types of cases. A foundation issue is whether the particular pension plan is a defined contribution plan or a defined benefit plan.

#### **Valuing Defined Contribution Plans**

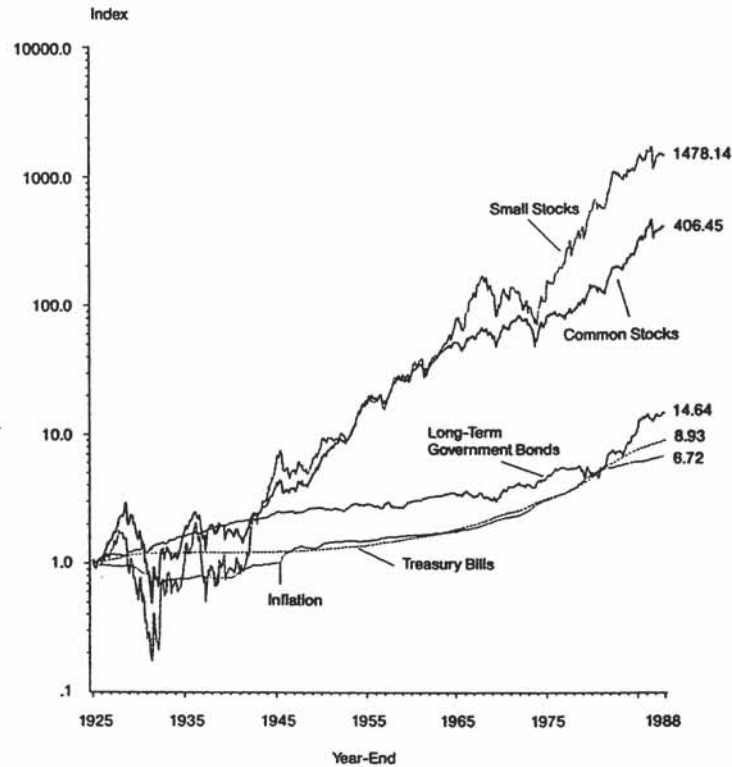
This type of plan is one in which the periodic (monthly, quarterly or annual) contributions by an employer are defined in advance. When the beneficiary is entitled to receive plan benefits, the value of those benefits is not determined solely by the contribution, but rather by the market value of those contributions at the time of retirement. For example, suppose that Jack Doe had participated, through his employer, in a defined contribution plan which required the payment of a certain sum per month to the plan. Generally, what Jack is entitled to upon retirement is the market value of his share of the securities in that plan at the time of the retirement. Depending upon whether the trustees of the plan invested in stocks, bonds, Treasury Bills, real estate, or other assets, Jack may have a widely different value in the plan.

As an illustration, Figure 1 is a graph of the wealth indices from 1926 for several asset classes. It shows what happens to the return starting with \$1.00 in 1926 for five asset classes: Stocks, Bonds, Bill, Inflation, and Small Stocks. It is interesting to note how stocks have outperformed bonds, and how short-term interest rates basically compensate for inflation and little else.

Jack may be entitled to much more than his employer contributed, or much less, depending upon the performance of the plan under management by the trustees and the money managers they retained. The plan benefits are dependent upon the contributions and the performance of the fund. These benefits are readily valued since a typical requirement of such plans is that the securities be liquid and readily marketable. Thus valuation is rather simple and straightforward.



**FIGURE 1**  
WEALTH INDICES OF INVESTMENTS  
IN THE U.S. CAPITAL MARKETS 1926-1988



SOURCE: Ibbotson Associates 1989 Yearbook Chicago, Illinois.

### Valuing Defined Benefit Plans

Suppose, however, that Jack Doe participated in a defined benefit plan. Participation in this plan also generally requires periodic payments into the plan, but the benefits to which Jack is entitled are defined according to a particular set of criteria, independent of the contributions and the fund performance. For example, upon retirement Jack may be entitled to receive 2 percent of his salary in his highest-paid year, for each year he worked for the employer, subject to a maximum of 70 percent of salary. Now, we see that these plan benefits are not dependent upon either the contributions or the performance of the fund. The benefits are defined in advance. The process of valuing this type of plan is more complex. One first has to value the participation that Jack had already earned in the plan. If Jack has worked 10 years, then he already has earned 20 percent of his salary upon retirement. This is a loss of benefits already earned, not subject to worklife or unemployment



adjustments. Some portion of this may be payable to the survivors, so that must be considered as an offset. Next, an estimate must be made as to the number of years that Jack would have been expected to work in the future. This estimate will determine the additional pension benefits that he might have earned. This estimate can be subject to worklife and unemployment adjustments. The present value of the stream of future benefits can be calculated in the same manner as future salary losses are calculated.

### **Valuation of Withdrawal Liability**

When a corporation is withdrawing from or terminating a defined benefit plan, it is responsible for making sure that sufficient assets are deposited in trust to pay for the pension promises already earned. Typically this happens when an employer withdraws from a multi-employer plan. Employees in the plan, and other participating companies, want to be assured that the withdrawing employer has paid his fairly estimated share of the benefits. Since swings in the stock market or the bond market can radically affect the market value of the assets at any given time, the amount that an employer owes to the fund at any time can also vary substantially.

In order to determine that amount, first an actuary must be employed to value the earned benefits payable for each year into the future. This is a complex process requiring specialized expertise. The result is a liability stream into the future. The next step is for the economist to value that liability stream. Since the benefits are now projected each year into the future, and since these benefits are defined at any given time independent of future inflation or other factors, the economist can discount these benefits by the real yield curve.

The yield curve is basically a graph of a set of interest rates that are expected to prevail in the future. The yield curve is published in many sources including prominent financial newspapers such as the *Wall Street Journal*. It can be calculated in a simple conceptual manner: Suppose for example that the total return to holding a 1 year bond is 8 percent and the total return to holding a 2 year bond is 9 percent. The prevailing interest rate over the first year is 8 percent. What is the market telling us about the interest rate expected to prevail over the second year? That rate is forecast to be  $(1.09)^2/1.08$ , or approximately 10 percent. Thus if someone buys a 1 year bond returning 8 percent now, and plans to buy a 1 year bond next year which is expected to return 10 percent, he can expect to obtain the same overall return as someone now buying a 2 year bond returning 9 percent.

In a like manner, a forecast for each future year's spot rate can be calculated, producing a yield curve. The spot rate for each future year can be used as a discount rate for that future year for the liability stream. Once the liability stream is discounted to present value, it can be subtracted from the known market value of the assets to determine if there is any unfunded liability which the employer would have to cover prior to withdrawal.

## **13.5 Hypothetical Labor Cases**

William Barry was a black male production worker and a union leader. His employer discharged him for violating the labor agreement by persuading his fellow workers to engage in a wildcat strike. He was the only employee discharged. His union



filed a grievance on his behalf, charging that scant evidence existed to prove Barry was the prime force behind the strike and that the company violated the anti-discrimination clause in the labor agreement when it singled out Barry. The union asked that Barry be restored to his job with full back pay.

Barry's discharge was upheld in the original arbitration, but he filed a separate action under the 1964 Civil Rights Act on the discrimination charge. The federal district court eventually ruled that Barry had been improperly discharged and should be restored to his job with back pay. The judge, union, and management agreed on a separate arbitration to determine the amount of pay. It was to cover a period of almost 24 months, between Barry's discharge and his return to the job.

An economist employed by the union chose the earnings of a "representative fellow worker" as a proxy for Barry's likely wage earnings during the 24 months. This worker was hired one day before Barry, had the same job title, and worked on the same production line. Thus, he assumed that Barry would have worked the same hours (including overtime), earned the same wage rates and differentials, and received the same seniority and merit raises. By using the week-by-week hours of this representative worker, the economist automatically lowered economic loss for the 6 weeks "the representative worker" was on temporary layoff. The layoff had been strictly by seniority.

Elements of fringe benefit loss were added to wage loss. The economist added in the two Christmas bonuses received by the representative. The employer paid 100 percent of a health care plan, and Barry had bought his own plan at high individual rates. The economist gave him his 24 months of premiums as a "replacement cost" loss. Finally, the economist assumed that the arbitrator would restore the two years of service credit under the defined benefit pension formula.

For the last 12 months, Barry had worked four hours each evening in a part-time job; the economist was unaware of this. He did reduce the loss estimate by the 26 weeks of unemployment compensation for which Barry had qualified. The economist then added on pre-judgment interest at the 10 percent average of interest on U.S. government securities over the period, but he also showed alternative loss estimates at 9 and 11 percent.

The arbitrator adopted the work of the economist with three exceptions. He reduced the award by the amount of Mr. Barry's part-time earnings. Since Barry would have worked on the evening shift, he could not have moonlighted in this job. Next, he did not allow the award to be reduced for unemployment compensation, using this as a collateral source payment. Third, he opted for the conservative 9 percent rate of pre-judgment interest.

#### A. *Clarksburg Enamel's Failure to Hire*

The Clarksburg Enamel case involved a labor economist working in both the liability and damages aspects of a labor case. Clarksburg Enamel manufactured toilet seats and was located in semi-rural Leo County, adjacent to Pooky county with the large city of Chattahoochee. Three blacks alleged that Clarksburg Enamel failed to hire them because of their race and that they should receive both the next open job and back pay starting with the failure to hire date. At issue was whether there existed a "pattern and practice" of failing to hire blacks and, if so, the proper amount of damages.



The labor economist for the plaintiff was first asked to deal with the “pattern and practice” issue. In the relevant job and EEO category, Clarksburg Enamel employed 4 percent of workers who were minorities. The percentage of minority persons available for work was 5 percent of the labor force in Leo County but 15 percent in the more urban Pooky County. The fundamental issue concerned the relevant labor (recruitment) market for Clarksburg Enamel. If it was Leo County only, the firm seemed to be hiring available blacks at about the same rate as available whites. If it was a combined Leo and Pooky labor market, the 4 percent employment figure fell far short of the approximately 13 percent two-county availability of blacks and seemed to imply discrimination in the hiring of black workers.

The labor economist for the plaintiff looked at state employment security data on workers who lived in Leo County but worked in Pooky County, and *vice versa*. This was the best available proxy for whether the two counties were a single labor market or separate labor markets. He found that 30 percent of those living in Leo County worked in Pooky County and 15 percent of those working in Pooky County lived in Leo County. His judgment was that there was a sufficient cross-flow of workers that the relevant labor market, for purposes of the availability of blacks, was a two-county market. He therefore testified that 4 percent of blacks were hired versus a 13 percent availability in the relevant labor market. This was combined with specific evidence on problems with hiring practices to generate a verdict on discriminatory practices.

The same labor economist projected economic damages for the three blacks who were not hired. In essence, damages were wages plus fringe benefits for each worker had he been hired by Clarksburg Enamel less wages and fringe benefits earned since the failure to hire. Again, “representative workers,” hired around the same time and in the same job category, were chosen as proxies for the likely job experience of the three black workers.

#### B. *Bordoh Steel*

Bordoh Steel was a diversified manufacturer which made a line of steel piping at a subsidiary based in Charleston, West Virginia. For 15 years, this subsidiary company had been run by Chief Executive Officer Charles Burkhardt. The net profits of the subsidiary had steadily increased and were equal to, or above, the percentage of net income to equity of the other profit centers of the company. Starting in the late 1970s, however, Mr. Burkhardt warned top management that the technology of the primary production process had to be updated or competitors would overtake the predominant position of the subsidiary in the industry. The company did not take his advice. In 1982, during a severe national recession, Mr. Burkhardt’s division actually incurred losses. Mr. Burkhardt was fired. He was 53 years old and sued, alleging age discrimination under the Age Discrimination in Employment Act (ADEA).

The plaintiff’s attorney employed an economist and a statistician, who worked together on both the liability and damages portions of the case. On liability, information was obtained on termination rates of Bordoh executive employees aged 40 and above versus the same rates on all Bordoh employees classified as executives. It was found that a statistically significant difference existed in a higher rate of termination for older employees. The probability that this difference occurred by chance (versus by conscious practice) was less than one percent.

The labor economist, who also had significant experience as a Chief Personnel Officer of large companies, testified regarding the likelihood that Mr. Burkhardt would have been fired except for his age. He used historical profit performance, the national economic decline in 1982, and Mr. Burkhardt's excellent performance appraisals in the past as data militating against a termination.

Regarding damages, Mr. Burkhardt had been immediately employed by Bordoh's leading competitor. He had been making \$80,000 plus approximately \$29,000 in fringe benefits and bonuses at Bordoh and made a \$40,000 salary plus approximately \$10,000 in fringes with the competitor. Economic loss was projected as the difference between the two income streams. Loss ended at age 62, when Mr. Burkhardt said he would have retired.

#### *C. Acme Chemical*

Because of the sewer explosion in the Acme Chemical case (Section 13.3(E), above, and Appendix 1 to this chapter), the largest lumber company in town was forced to close because its surrounding streets could not be used for over a year. Three officers of the corporation, who owned the majority of the stock, lost their jobs. One was about to retire anyway, his son was in his early 30s, and the treasurer and accountant of the corporation was 53 years old. He had spent 25 years with the lumber company, and his experience (and value as an employee) was largely with this company.

Economic loss for the father and company President was valued at lost wages and fringes plus bonuses, for the two years before he would have retired. Loss for his son was wages and fringes plus bonuses for the 1½ years between the sewer explosion and the date of trial. After all, if he was recompensed for damages, he could start a new business.

The Treasurer was different. If the lumber company did not reopen, he was stuck with a \$25,000 job as an accountant versus the \$60,000 wage-plus-benefit package he had at the lumber company. Economic loss was estimated as the difference between pre- and post-explosion streams of income through the end of his worklife expectancy.

### **13.6 Summary**

Some methods and procedures of loss estimation in personal injury and wrongful death loss estimates parallel those used in commercial, antitrust, and labor cases. However, differences do exist in loss estimation and have been described in this chapter. Case examples have also been emphasized, due to the wide range of fact situations that exist in these types of cases.



## APPENDIX 1

### DATA COLLECTION AND MANAGEMENT IN MASS DISASTER CASES

Data collection and the management and analysis of data are often crucial in mass disaster cases. The particular types of data that should be collected vary greatly depending on the characteristics of the mass disaster and the lawsuits that arise from it.

Some social science research techniques that should be considered in mass disaster cases are:

- (1) Sample surveys and population surveys
- (2) Use of data from the U.S. Bureau of the Census/demographic analysis
- (3) Use of local data and official records
- (4) Statistical analysis and simulations
- (5) Economic forecasts and projections

(1) *Sample Surveys and Population Surveys*—Sample and population surveys provide a basis for estimating what happened to the people living or working in the area of the mass disaster or those directly affected by the disaster. Using surveys, preliminary estimates of economic and hedonic damages can be made. Using well-established scientific procedures that courts throughout the country will accept, such surveys collect data that often cannot be gathered in any other way. Surveys should not be attempted without the assistance of a survey research expert.

(2) *Use of Data from the U.S. Bureau of Census*—The U.S. Bureau of the Census is an important source of information on all areas of the United States regardless of whether the area of interest is as small as a single block in a major city or as large as an entire state. At a minimum, a plaintiff's or defense attorney can find out how many people and households live in the area where the mass disaster occurred. Often a great deal more can be ascertained, such as the income levels of the people who live there, what they pay in rent, and the number of children they have. This information can be vital in estimating economic or hedonic losses. As with surveys, it is wisest to retain professional assistance in locating and analyzing appropriate census data.

(3) *Use of Local Data and Official Records*—It is not necessary to delineate the importance of official records. Property tax records, land surveys, and zoning or building codes are standard fodder in legal cases. Because of the large number of people often involved in mass disasters, official records can be an inexpensive source of valuable information.

(4) *Statistical Analysis and Simulations*—Substantial amounts of data collected in surveys, culled from census data, compiled from local records, or gathered from other sources must be analyzed. Such analysis nearly always consists of some form of statistical analysis, which is best done with professional guidance. An interesting additional capability that can be grafted onto statistical analysis is simulation.

Simulations are especially useful in establishing compensation or settlement strategies. Using simulation methods and data collected from various sources, a consultant can help the plaintiff's or defense attorney estimate what different types of settlement formulas or plans will generate. One side in a case without such



assistance is at a serious disadvantage if the other side has professional expertise available to conduct simulations.

(5) *Economic Forecasts and Projections*—Mass disasters often affect various organizations and individuals, changing their economic prospects. Economic and statistical techniques can often be used to estimate how the financial prospects of those entities were changed by the mass disaster. Compensation can then be allocated on the basis of the difference between what would have happened and what did happen to those organizations or individuals.

#### **A Case Study—Acme Chemical**

An actual mass disaster in a major U.S. city illustrates the use of many of these techniques. Acme Chemical Company (a fictitious name) released thousands of gallons of flammable chemical into the sewers of two neighborhoods in the city. A spark ignited the chemical vapors, resulting in a tremendous explosion that destroyed many of the neighborhood's sewers and streets. For all intents and purposes, all semblance of routine economic and social life in these neighborhoods ceased for anywhere from a few months to several years. The closer a person or business was to the epicenter of the blast, the greater the devastation and disruption.

Many lawsuits were filed, with most eventually being combined into a class action. The class was defined as almost all individuals, workers, and businesses in the affected area. The plaintiff's lawyers retained a business economist and survey statistician to assist with data collection, management and analysis. For most of the case, the defense attorneys had no such assistance.

Using census data, the plaintiff's experts were quickly able to ascertain the number of people and households in the affected areas. Local business tax records established the number and names of businesses in the area as well as estimates of the number of employees in those businesses.

With the permission of the court, a sample survey of households in the affected area was conducted. This gave the experts the data they needed to estimate the amount of damage to real property, personal property, and the level of inconvenience caused by the blast damage and reconstruction.

Based on the census data, local records, and survey data, the consultants were able to experiment with different compensation formulas. The potential models for compensation to the plaintiffs were simulated using these different formulas. The plaintiff's attorneys had the advantage in settlement discussions of knowing what effect various parts of the settlement formulas had on total compensation, whereas the defense attorneys did not appear to have such information. The cases were settled, including many lost profits claims, and a formula was developed to cover such "inconvenience" damages as dust, noise, and odor.

Interestingly, the job of the consultants did not end with the settlement. Because thousands of people were involved in the settlement and most were due differing levels of compensation, a complex claims procedure was required. The consultants designed the claims process and all the forms and procedures used in establishing the individual levels of compensation. Professional insurance adjusters were used to run the claims office.

Social science research techniques provide powerful tools for defense and



plaintiff's attorneys in mass disaster cases. The burden on the attorneys is to recognize the need for and acquire the professional expertise that is required.

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SOURCE: Contributed by Alfred J. Tuchfarber, Ph.D.; Institute for Policy Research; University of Cincinnati.

