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A Business Valuation Newsletter for Business Owners and the Professionals Who Advise Them

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Using Statistics to Assess Lost Profits During an Economic Downturn

The economic downturn has obviously had negative effects on many commercial enterprises, causing them to suffer financial losses. When a firm is a plaintiff in a business lawsuit, how can one evaluate how much of its losses were caused by the defendant versus deteriorating economic or industry conditions? This article discusses the use of statistical analysis to make this sort of assessment.

ATTRIBUTION OF LOSSES

If a firm had a profit of \$100 one year ago and this year it was only \$20, obviously its profits fell \$80. Suppose the timing of this decline coincides with events at the center of a civil lawsuit such as a claim for breach of contract or business interruption. Simplistically, someone might argue that if the defendant is indeed liable, the amount of compensable damages in the suit is \$80. But the plaintiff's profits might have declined for reasons unrelated to the defendant such as poor economic or industry conditions. How can analysts evaluate whether a firm's loss of profits was caused by the defendant or something else? Depending on particular facts in a case, cross-sectional statistical analysis might be a way to isolate effects.

REGRESSION ANALYSIS

Regression is a statistical tool that tests for relationships between variables. Ordinary least squares (OLS) regression is arguably the workhorse in statistical analysis on economic topics. With this tool it is sometimes possible to examine factors that have explained a firm's historical sales. For instance, a firm with business activities related to real estate development might have its revenues dependent on local real estate activity and other economic factors. In exploring these sorts of relationships using statistical analysis, one could collect historical data on those factors and empirically examine whether they indeed have a relationship with the firm's sales. If it can be established with a regression analysis that these sorts of relationships existed prior to an economic downturn, for instance, an analyst might use those historical relationships to estimate the effect of

changing external conditions on the firm's sales.

Using this sort of approach to analyze a firm's sales -- when economic or industry conditions have changed -- might help isolate the effect of a defendant's actions on the plaintiff's sales. First, a statistical model would estimate a firm's sales after an economic downturn began through the present using (1) economic or industry measurements since the downturn and (2) historical relationships between those factors and the firm's sales established by regression analysis. A decrease in a firm's sales using this sort of model could be attributed to deteriorating economic or industry conditions. From the earlier example, if a statistical model shows a change in economic conditions caused the firm's profits to fall from \$100 last year to \$25, one might say that the defendant at most caused damages of \$5 (\$25 minus \$20). Simply put, the firm's profits actually fell \$80 from a year ago but \$75 was caused by deteriorating economic conditions.



A GENERAL APPROACH

A detailed discussion of a statistical analysis of this sort is beyond the scope of this article. Nevertheless, a general approach for such an analysis might be as follows.

Identify a priori or from experience what economic or industry factors might have an effect on the amount of a firm's historical sales. Collect data on those economic or industry factors. The time horizon for the data would be before and

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FEATURED CASE

Estate of Samuel P. Black vs. Commissioner

CITATION

Estate of Samuel P. Black, Jr., Deceased,
Samuel P. Black, III, Executor, et al v. Commissioner
 133 T.C. No. 15, Docket Nos. 21388-05, 23191-05, 23516-06,
 December 14, 2009

COMMENTS

While the ruling is lengthy, the following summary captures the salient points of the case. Further, a close reading indicates that effective estate planning significantly reduced the Decedent's estate tax liability. Key points in the ruling included:

- Transfers of closely-held stock from the gross estate to an FLP were for full and adequate consideration and therefore not includable in the gross estate.
- Passive entities can be created for legitimate and significant nontax reasons (including preventing the sale of assets by grandsons who lacked ambition and preventing distribution to a spouse in an anticipated divorce proceeding).
- Date of death of surviving spouse was reasonable date for funding of QTIP trust given death of husband and wife were close together and estates were so intertwined.
- Interest on a loan to pay estate tax and associated fees was not deductible in this case.
- Significant portions of the estate's attorney and executor's fees were disallowed for one estate but includable in the other.

THE FACTS

Samuel P. Black, Jr. (the "Decedent", or "Mr. Black") engaged in sophisticated estate planning between 1988 and his death in November 2001. The Decedent created an FLP (Black Interests Limited Partnership, "BILP") and several trusts as part of his estate planning.

Upon creation of BILP on October 12, 1993, the Decedent, as trustee of two of the trusts (Grandson Trusts), contributed nonvoting Class A shares of stock in a closely-held company ("Erie") on behalf of the trusts in exchange for limited partnership interests. Mr. Black also contributed all of his Class A nonvoting shares and almost all of his Class B voting stock of Erie in exchange for a large limited partnership interest and a 1.0 percent general partnership interest in BILP. The Decedent's son ("Son") also contributed most of his Class B nonvoting stock of Erie to the Partnership in exchange for a significant limited partnership and 0.5 percent general partnership interest.

According to the partnership agreement, BILP was formed in part to consolidate assets owned by the family of Mr. Black, to avoid division of certain properties, and to prevent family members from transferring interests in BILP without first offering them to other family members. The partnership agreement required written consent of the Partnership and all of the other partners to transfer an interest to unrelated entities or people. Additionally, the partnership agreement

granted rights of first refusal to BILP and its partners to purchase any interest subject to disposition, including via death of a partner or via divorce of a partner.

Mr. Black served as managing partner (in whom management of the Partnership was vested) until October 1998, at which time he ceded his general partnership interest and responsibilities to Son (and only other general partner). Between the time of formation and his death, Mr. Black gifted almost 7 percent of the limited partnership interests to his family members (including the Grandson Trusts) and charities. In August 2001, the Decedent transferred his remaining 77.0876 percent limited partnership interest to a revocable trust.

The revocable trust required the formation of a marital trust for the benefit of the Decedent's wife (Mrs. Black), should she survive him. The marital trust was to dissolve upon Mrs. Black's death. The fact that the Blacks died within six months of each other prevented the calculation of Mr. Black's bequest to the marital trust, and the marital trust was not funded as of Mrs. Black's death. Son, as executor of both estates and trustee of the revocable trust, intended to fund the marital trust with the large limited partnership interest in BILP owned by the revocable trust.

The Decedent's estate reported and paid a federal estate tax liability of \$1.7 million during September 2002 out of the estate's liquid assets. Mrs. Black's estate lacked the liquidity to pay estimated taxes due to the transfer of the large block of illiquid BILP limited partnership interests. Son, as executor of Mrs. Black's estate, attempted to borrow money from several commercial lending institutions in order to satisfy the tax liability. However, the terms required were unacceptable to Son. Son then tried borrowing money from Erie but Erie refused. Son's legal and financial advisors then suggested Erie participate in a secondary offering of Erie stock from Black LP. Erie agreed as long as BILP agreed to pay Erie's expenses associated with the secondary offering. On January 29, 2003, BILP sold 3 million shares (just over 1/3 of the Erie shares owned by BILP).

On February 25, 2003, BILP loaned \$71 million total to Mrs. Black's estate and to the revocable trust, subject to an agreement signed by Son as representative for both entities. Terms of the note required 6 percent simple interest, with all principal and interest due and payable not before November 30, 2007. The note did not allow for prepayment of principal or interest. Calculated interest for the note was determined to be just over \$20 million, which was deducted in full from Mrs. Black's estate tax return. Included in the \$71 million disbursed by the estate were costs to reimburse Erie for its participation in the secondary offering, a \$20 million bequest to a local college, \$1,155,000 in legal fees, and the exact same amount in executor fees.

DISCUSSION

Mr. Black's Estate:

IRC § 2036(a) requires estates to include assets from the value of the gross estates except in certain instances ("except in the case of a bona fide sale for an adequate and full consideration in money or money's worth"). In particular, § 2036(a)(1) includes in gross estates "the possession or enjoyment of, or the right to the income from, the property" which the decedent (in general) enjoyed even if a transfer of the property had taken place.

The estate of Mr. Black argued that the formation of BILP was for legitimate non-tax reasons, including, but not limited to:

- Long-term management and protection of the family's Erie stock holdings,

- Pooling the family's Erie stock holdings to allow the stock to vote as one block, thereby capitalizing on the block's swing vote characteristics, and
- To protect the Erie stock from creditors and divorce.

Further, the estate cited accomplishment of the goals of the Partnership in its argument. Additionally, the estate maintained the transfer was for full and adequate consideration.

The IRS rejected the estate's arguments and asserted that the formation of BILP was not necessary to further the family's goals. The IRS did not believe full and adequate consideration was paid and that Mr. Black maintained an interest in the transferred Erie stock, thereby allowing to be included in his gross estate.

Mrs. Black's Estate:

Although disadvantageous to the estate in terms of tax payments, Mrs. Black's son selected her date of death as the date of funding for the marital trust. In so arguing, the estate believed that was the earliest possible date at which the value of Mr. Black's estate value could be calculated and the amount passed to Mrs. Black could be determined.

The IRS held no position on the estate's date determination, stating that § 20.2044-1(c) provides no clarity to the funding date of a QTIP trust when the surviving spouse dies before the trust is funded.

The estate argued that the interest on the \$71 million loan was tax deductible. The estate believed Son exercised reasonable business judgment in executing the loan rather than causing a distribution or forcing redemption from BILP. Additionally, the loan was bona fide because there was

- A note,
- Security,
- Interest charges,
- Repayment schedule,
- Actual repayment of the loan, and
- Relationship between borrower and lender created a reasonable expectation or enforceable obligation to repay the note.

Additionally, the estate claimed deductions of almost \$1 million to BILP to reimburse the Partnership for monies it paid to Erie for the secondary offering. Estate also claimed \$1.155 million in legal fees and \$1.155 million in executor fees.

The IRS rejected the estate's arguments. The IRS' position on loan deductibility was:

- Repayment that the loan was created for the tax deductibility of the interest,
- Son was in a position to distribute from BILP enough Erie stock to cover the liability,
- Son was in a position to redeem at least a portion of Mrs. Black's BILP interest,
- The only way for BILP to repay the loan was to redeem Erie stock, which, made the loan pointless.

Further, the IRS sought to deny the full amount of reimbursement to BILP and any portion over \$500,000 in legal and executor fees.

CONCLUSION

Mr. Black's Estate:

The court ruled that the formation of BILP was for legitimate non-tax reasons. The Tax Court found Mr. Black had legitimate concerns about:

- his grandsons selling their Erie stock upon termination of their trusts and the resulting dilution of Erie stock, and
- his Son's marriage and dilution of Erie stock should the stock become marital property.

As a result of the preceding, the Court found that Mr. Black's transfer of Erie stock to the Partnership was a bona fide sale. Because the IRS acknowledged that the partners of BILP received partnership interests in proportion to the fair market value of the assets contributed, the full and adequate consideration prong of Estate Tax Regulation § 20.2043-1(a) definition of bona fide sale. Accordingly, only the fair market value of Mr. Black's limited partnership interests in BILP (not the value of the Erie stock the Decedent transferred to the Partnership) is includable in his estate under 2036(a).

Significantly, the Tax Court found in this case as in *Estate of Schutt v. Commissioner* "that a family limited partnership that does not conduct an active trade or business may nonetheless be formed for a legitimate and significant nontax reason."

Mrs. Black's Estate:

The court found that the value of the marital trust likely could not have been knowable as of the date of Mr. Black's death in December 2001, as the trust would be funded with Partnership interests. As evidence, the Court cited the date of valuation of the Decedent's interest in BILP (September 2002), more than 3 months after Mrs. Black's death in May 2002. Accordingly, her date of death was the latest reasonable date on which to consider the trust funded.

Turning to the loan to pay Mrs. Black's estate taxes and administration fees, the Court sided with IRS in ruling the loan interest was not a deductible expense. The ruling was determined primarily because the Partnership lacked sufficient income and distributions to partners to repay the loan without the sale of Erie stock at the loan's maturity date. If the sale of Erie stock was necessary and enforceable at the maturity date, it was necessary and enforceable at the date of death, making the loan unnecessary.

Finally, the court determined that only 49 percent of the secondary offering by BILP was used on behalf of Mrs. Black's estate. Accordingly, only 49 percent of the fee could be deducted. The court also held that because the executor for both Mr. and Mrs. Black was working on both estates simultaneously and because the estates were so intertwined, deductibility of executor fees should be split between the estates. Similarly, the court permitted deductibility of only one-half of the legal fees as only one-half of the work performed benefitted Mrs. Black's estate.

COMMENTS

In contrast to *Estate of Malkin v. Commissioner*, *Estate of Black v. Commissioner* shows that proper financial and legal estate tax planning can be invaluable to the tax payer, particularly in Mr. Black's case. Because of proper planning and documentation, the court found that although BILP was a passive entity it was still created for legitimate and significant nontax reasons. The case is a clear victory for use of the FLP in estate tax planning.

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VALUATION INDUSTRY Q&A: APPLICATION OF RESTRICTED STOCK STUDIES FOR DLOM

Question: In applying the restricted stock studies (RSSs) for determining a discount for lack of marketability (DLOM), it seems most appraisers are automatically assuming at least a two-year holding period applies for the stock of a closely held company in order to apply the higher discounts afforded by the pre-1990 RSSs. If there are no contractual restrictions affecting the sale of the closely held stock, isn't it likely that it could be sold in a period less than two years-- (maybe even less than one year)-- making the post-1990 RSSs more applicable? To me, this makes sense. But how often have you seen a report start with the post-1990 RSSs and qualitatively adjust up or down for other considerations (the same way you would if you started with the pre-1990 RSSs)?

Answer: The RSSs are used as a proxy for lack of marketability as we all know that there is usually little or no market for a minority interest in a private company without either a substantial discount or lots of bells and whistles, e.g., liquidity event. The two-year studies are only a starting point. Many appraisers believe that the discounts should be higher since most minority interests in private companies do not even have a two-year window for a liquidity event. While you theoretically can sell a minority interest, absent restrictions, at any time, there is little or no market. Who are you going to sell it to? One other thing-- the two-year restriction period is probably longer, and in some cases, much longer, because it is a two-year restriction and then, where applicable, the 144 dribble out rules kick in making the marketability period longer than two years, or longer than one year for that matter.

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after conditions began changing. Next, using statistical analysis, observe the relationships between the firm's sales and each potential factor *prior* to the time economic or industry conditions changed. As mentioned earlier, we are assuming the downturn coincides with the disputed events in the lawsuit. Time lags in this sort of analysis may be appropriate. Essentially, time lags are used in observing the relationship between a firm's sales at time *t* and an economic or industry factor at another time such as *t-1*. Further, correlation statistics are one measure to preliminarily examine whether factors have an effect on revenues.

Using OLS regression, perform exploratory statistical analysis by regressing one or more economic or industry factors on the firm's sales prior to the time conditions deteriorated. Next, observe the output created by the computer for signs of statistically significant relationships. If a model is found that shows signs of statistical significance, investigate whether the general assumptions of linear regression have largely been met.¹ Those assumptions are beyond the scope of this article but are discussed in statistics texts. Some main assumptions in OLS regression are: the relationship between the predictor variable(s) and the outcome variable is linear; and the regression 'residuals'² have a constant variance, are randomly distributed, and are uncorrelated with each other. These sorts of regression assumptions can be evaluated with graphical or statistical tests.

If a model is found that is statistically significant and the assumptions of linear regression are largely met, if relevant, observe the parameters from the OLS regression output.³ A model would describe the relationships between the factor(s) in the model and a firm's sales before the decline in economic or industry conditions. Using the model's parameters and recent economic or industry data, estimate the firm's sales after conditions began deteriorating. Put another way, use the statistical model by applying post-event economic or industry data to pre-event relationships between the factor(s) and the firm's sales. But consider whether those relationships are still relevant during the post-event horizon.

Next, compare sales predicted by the model to the firm's actual post-event sales. The difference can be attributed to factors other than the economic or industry variables used in the model. Depending on the particular facts, the entire difference might be attributed to the defendant's actions. In that case, the difference represents the firm's lost sales over the time horizon. Next, apply cost factors -- determined from a separate analysis -- to the lost sales to estimate the firm's lost profits. In other words, subtract the estimated costs that are related to the lost sales from the amount of lost sales to measure the firm's lost profits.

As mentioned earlier, this approach is a general one. The facts and circumstances of a particular case may alter the general approach or lead to a different analytical approach altogether.

CONCLUSION

In summary, in a commercial lawsuit, isolating a firm's economic losses caused by a defendant is a basis for claiming compensatory damages. Separating a firm's actual losses between those caused by a defendant and those caused by other factors, such as poor economic or industry conditions, can be assessed with statistical analysis.

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¹ Whether OLS regression assumptions matter in a particular case depends on how the statistical results are being used or the hypothesis. Essentially, this issue goes to how the regression results are being interpreted.

² Imagine a X-Y scatterplot with a trend line drawn by the computer. Residuals are the distance between each observation and the corresponding point on the regression line.

³ OLS parameters consist of a 'constant' and coefficient for each predictor variable.