How to Use the IBA Transaction Database

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Overview

The *IBA Transaction Database* is a proprietary database of information on transactions involving closely held businesses. The database presently contains more than 30,000 transactions covering more than 775 Standard Industrial Classifications.

IBA members can obtain information from the IBA Transaction Database by e-mailing a request, including the applicable Standard Industrial Classification (SIC) and/or North American Industrial Classification System (NAICS) number, to data@go-iba.org or by telephoning 954-584-1144, extension 15. (Information from the database is not available to non-members of IBA.)

Methodology

The IBA Transaction Database is intended for use in estimating values of small- to mid-size closely held businesses. Specifically, it is intended for use with the Direct Market Data Method or a similar method in which information on a large number of transactions is used to define the total market for businesses of the same kind (same SIC or NAICS classification) as the subject business.

The IBA Transaction Database is not intended for used with the Guideline Company Method or any similar method that attempts to compare the subject business in detail with a small number of transactions involving other, usually much larger, businesses.[1] This is because, among other reasons, the Guideline Company Method is based on the assumption that prices of large, publicly owned, businesses are somehow related to values of closely held businesses. Although still prevalent among some business appraisers, this assumption is being increasingly discredited.[2]

The Direct Market Data Method

The Direct Market Data Method is fundamentally different from other appraisal methods, including other methods under the Market Approach.

In the Direct Market Data Method, all known transactions in the same SIC or NAICS category are used to define the total market for all business of the same type as the subject business. Applicable valuation ratios (either price to revenue or price to earnings) are then applied

[1]Variations of the Guideline Company Method include the Guideline Public Company Method and the Guideline Merged and Acquired Company Method.

[2]See, for example Robert T. Slee, *Public and Private Capital Markets are Not Substitutes,* Business Appraisal Practice, Spring 2005.

to the subject business to obtain a preliminary indication of value.

This preliminary value is then modified ("adjusted") to account for differences between the content of the market transactions and the subject business as it is to be appraised.

Step-by-step procedure for applying the Direct Market Data Method

1. Determine the applicable Standard Industrial Classification (SIC) or North American Industrial Classification System (NAICS) category of the subject company
2. Decide on standard of value (kind of value) to be used
3. Decide on source(s) of transaction data to be used
4. Obtain transaction data from the selected source(s) for the applicable Standard Industrial Classification or North American Industrial Classification System
5. Edit the transaction data[3]
6. Choose performance ratio(s) (P/E and/or P/G) to be used in comparing the subject company to the market
7. Analyze the transaction data in terms of the selected financial performance ratio(s):
    a. mean
    b. median
    c. quartiles or deciles if number of market transactions is sufficient
8. Locate the subject business in the market spectrum
9. Apply the corresponding performance ratio(s) to the subject company
10. Adjust the preliminary value of the subject company to account for differences between the content of market transactions and the assets and liabilities to be included in the value of the subject company
11. Test the resulting value estimate.

Step 1: Determining the applicable SIC or NAICS Classification

Requests to IBA for transaction data can be in terms of either the SIC or NAICS classification.

There are various directories that list SIC or NAICS codes as a function of business category. For example, the U.S. Department of Labor website http://www.osha.gov is a searchable website. Other sources include the Standard Industrial Classification Manual published by the Office of Management and Budget, Office of the President,[4] and a Standard Industrial Clas-

[3]If more than one source of transaction data has been used (not recommended):

- combine the transactions from the selected sources
- Edit the combined list of transactions to eliminate duplicates
- Adjust key financial parameters to a common basis
- Proceed with next step

[4]Available from www.amazon.com

sification list published by the U.S. Securities and Exchange Commission, Division of Corporate Finance (http://www.sec.gov).

If neither the SIC nor the NAICS classification is known, the requestor can simply give a two-or three-word description of the business, which the IBA Data Manager will then convert to the applicable SIC.

If the subject business falls in more than one SIC or NAICS classification, the classification that accounts for the greatest part of the subject's business should be selected.

Step 2: Determining the kind (definition) of value to be estimated

Of the several kinds of value recognized by business appraisal theory, the most common are "fair market value" and "market value."

Market value is a real world term, and is the kind of value reflected in the IBA Transaction Database and in most other databases consisting of actual transactions.

Fair market value is a hypothetical concept promulgated by Revenue Ruling 59-60. It assumes "typical" buyers and sellers, free from compulsion and aware of the significant facts.

Business values estimated by using the Direct Market Data Method are real world market values. As a practical matter they are essentially the same as the "fair market value" contemplated by Revenue Ruling 59-60.

Step 3: Selecting the source of transaction data

The IBA Transaction Database contains more than three times as many transactions as any other database of information on sales of closely held businesses. Accordingly, there will be more SIC/NAICS categories with a useful number of transactions in the IBA Transaction Database than in other databases.

Sometimes appraisers are tempted to combine transactions from two or more different databases in an effort to obtain a larger number of transactions in the applicable SIC/NAICS category than in any single database.

This is unwise for at least two reasons. First, definitions of terms differ somewhat between different databases. Also, the possibility of duplicate transactions can adversely affect the definition of the market.

In any event, if the IBA Transaction Database contains a large enough number of transactions to be useful (see Step 7), there would be no advantage in combining transactions from the IBA Transaction Database with another source of transaction data.

Step 4: Obtaining transaction data

To obtain transaction data from the IBA Transaction Database, either e-mail your request to data@go-iba.org or telephone IBA at 1-800-299-4130. Include the applicable SIC or NAICS number with your request. (If the subject business falls in more than one SIC or NAICS classification, choose the classification that accounts for the largest portion of the subject's business.)

The data will be e-mailed to you, usually within a few minutes of your request.

There is no charge for this service to IBA members in good standing. However, data from the IBA Transaction Database is not available to non-members.

Step 5: Editing the transaction data

Although not absolutely necessary, it is recommended that the transaction data received from IBA be edited before being used to estimate the value of the subject business.

Because IBA obtains transaction data from a variety of sources, it is possible that there may be some duplicate transactions in the information received from IBA. If two or more sources of transaction data have been combined (not recommended), this may be the cause of some duplicate transactions.

Also, if there any obvious anomalies (such as business descriptions that do not match the applicable SIC or NAICS) in data received from IBA, they should also be eliminated.

Because appraisals should reflect only information that was known (or reasonably knowable) on the valuation effective date, any transactions that occurred after the valuation effective date must be eliminated.

It is also a good idea to eliminate any transactions involving businesses that are more than 10 times as large, or less then one tenth as large, as the subject business.

Finally, attention should be given to any "outliers" in the data. "Outliers" are transactions whose parameters are extremely far from the central portion of the distribution.

In editing the transaction data, it is important to remain completely objective, and to avoid any editing that amounts to "cherry picking" certain transactions based on irrelevant or incorrect criteria. Among other precautions, the description of kind of business as listed in the IBA data printout should not be relied upon when attempting to "match" the transaction data to the subject business.

If the edited data includes more than 20 transactions in the applicable SIC/NAICS category, it is permissible to delete the transactions in excess of 20. This is because studies have

shown that ability to define the total market with sufficient accuracy does not significantly improve with more than 20 transactions.

Although reducing the number of transactions to 20 is optional, it can have advantages for the appraiser.

First, it reduces the total number of transactions with which the appraiser must deal.

Second, although studies[5] have shown that values of small and mid-size businesses do not change appreciably over a period of at least several years, this may not be true for certain kinds of businesses.[6] This being the case, deletion of all but the 20 most recent transactions will help to minimize the effect of aging.

Step 6: Choosing the performance ratio

The market for businesses in a given SIC or NAICS category can be defined in terms of either price to gross sales ratio (P/G) or price to earnings ratio (P/E).

The IBA transaction database includes information on both P/G and P/E ratios. Because the value of a business is more closely related to its earnings than to its gross revenue, it would be logical to assume that P/E ratio would be preferable to P/G ratio as a measure of the market. However, the data gathering process used by IBA and other transaction databases is subject to imperfections such that earnings are frequently a less reliable indication of market value than is gross revenue. For this reason, P/G ratio may sometimes be a better measure of the market than is P/E ratio.

The choice between P/G and P/E ratios as the measure of market value can be made by calculating the coefficient of variation of each set of ratios and then comparing the two coefficients of variation.[7] The ratio with the lower coefficient of variation can then be chosen as the ratio that best defines the market.

Step 7: Analyzing the transaction data

Remembering that the function of the transaction data is to help define the market for the subject business, the first thing to be done in analyzing the transaction data is to determine the degree of detail in which the market can be defined.

[5]See, for example:

Miles, Raymond C., *In Defense of "Stale" Comparables,* IBA publication P-299.1, 1992

Tatum, Toby, *Transaction Patterns – A Pictorial Review of the BIZCOMPS Database,* 2000

[6]Such as health care businesses, travel agencies, and others in which there have been substantial changes in the industry.

[7]The coefficient of variation is a measure for comparing the variability of variables that have different standard deviations and different means. Specifically, it is the standard deviation divided by the mean, usually multiplied by 100 and expressed as a percentage. (An excellent discussion of "The Mathematics of Business Appraising," including calculation and use of the coefficient of variation appears in the Summer/Fall 2005 issue of Business Appraisal Practice.

Thus, if the edited transaction data consists of . . .

- fewer than 5 transactions, neither the Direct Market Data Method nor any other method under the Market Approach should be used
- at least 5 but fewer than 10 transactions, the mean (average) or median value of the selected (P/G or P/E) ratio can be used as a *rough* estimate of the market mean or median
- at least 10 but fewer than 20 transactions, the mean (average) or median value of the selected (P/G or P/E) ratio can be used as a more accurate estimate of the market mean or median
- 20 or more transactions, the market for the subject business can be divided into quartiles
- 50 or more transactions, the market for the subject business can be divided into deciles.

Step 7a: Analyzing the transaction data with more than 5 but fewer than 10 transactions

If the edited transaction data consists of at least 5 but fewer that 10 transactions, the appraiser can use the mean (average) or median value of the selected (P/G or P/E) ratio as a rough estimate of the market mean (or median).

The mean can be determined either with the aid of a program such as EXCEL or by simply adding the several P/E or P/G values and dividing the sum by the number of transactions.

Step 7b: Analyzing the transaction data with at least 10 but fewer than 20 transactions

If the edited transaction data consists of at least 10 but fewer that 20 transactions, the appraiser can use the mean (average) or median value of the selected (P/G or P/E) ratio as a more accurate estimate of the market mean.

As in the previous Step 7a, the mean can be determined either with the aid of a program such as EXCEL or by simply adding the several P/E or P/G values and dividing the sum by the number of transactions.

Step 7c: Analyzing the transaction data with 20 or more transactions

If the edited transaction data consists of 20 or more transactions, the market for the subject business can be divided into quartiles.

This can be done as follows:

- Sort the market P/G (or P/E) ratios in order, say from highest to lowest.
- Count down one-fourth of the list and make a note of the corresponding ratio. This is the P/G (or P/E) ratio that separates the upper 25% of the market from the remainder.
    - o If the 25% point falls between two market ratios, the average of the two is the applicable ratio.

- Count down another one-fourth of the list and note the corresponding ratio. This is the median of the market.
- Count down another one-fourth of the list and make a note of the corresponding ratio. This is the ratio that separates the lowest 25% of the market from the upper 75%.

At this point, it would be useful to calculate the mean of the market P/G (or P/E) ratios. Make a note of it for comparison with the median and with the boundaries of the upper and lower quartiles.

Following is a table illustrating the foregoing steps.

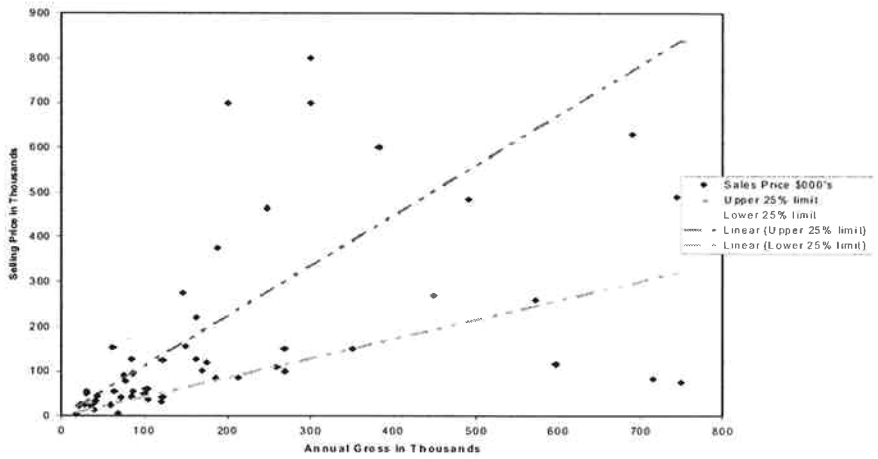
The Direct Market Data Method –
Ranking of P/G Ratios

P/G	P/G	P/G	P/G
1.38	0.57	Median>0.40	0.32
1.32	0.56	0.40	0.32
1.17	0.53	0.39	-25%>0.32
1.02	0.52	0.39	0.32
0.97	0.51	0.39	0.32
0.94	0.51	0.38	0.32
0.73	0.49	0.38	0.32
0.72	0.49	0.38	0.31
0.69	Mean>0.48	0.38	0.31
0.69	0.47	0.38	0.31
0.66	0.47	0.37	0.30
0.64	0.45	0.37	0.29
0.63	0.45	0.37	0.28
0.63	0.44	0.36	0.27
0.63	0.43	0.35	0.27
0.60	0.43	0.34	0.26
0.60	0.43	0.33	0.20
0.59	0.42	0.33	0.19
0.58	0.41	0.33	0.16
+25%>0.57	0.40	0.32	0.11

It might also be helpful to plot a chart of the transaction data showing upper and lower quartile limits.

Following is such a chart.

Scattergram of P/G Ratios showing Upper and Lower 25% Limits



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Step 7d: Analyzing the transaction data with 50 or more transactions

If the edited transaction data consists of 50 or more transactions, the market for the subject business can be divided into deciles.

The process is similar to that for dividing the market into quartiles, except of course that the number of transactions counted from the upper and lower limits of the data will be one-tenth of the total.

Step 8: Locating the subject business in the market spectrum

The market for businesses in the same SIC/NAICS category as the subject business has now been defined.

The next step is to determine where in the range of P/E or P/G ratios the subject business belongs. That is,

- Is the subject business above or below the market mean?
- Is it in the upper (or lower) 25% of the market?
- Is it in the upper (or lower) 10% of the market?
- Etc.

The answers to these questions depend heavily on the appraiser's informed judgment. However, this judgment can be aided significantly by some or all of the following steps:

- Review the financial history of the subject business.
  - Have operations been reasonably stable, or have sudden changes occurred?
  - Have revenues and/or profits fluctuated, and if so when and at what rate?
- The reason for the appraisal may suggest something about the value of the business. For example:
  - If the business is for sale, what is the (real) reason? Does this suggest that the business is having financial problems? If so, the business probably belongs in the lower portion of the range of market values - perhaps even the lower 25%.
  - If the appraisal to be used in connection with marital dissolution proceedings or other litigation, is it likely that the information you received is biased or incomplete? In which direction?
- Have there been substantial changes in the market for the products or service of the subject business? If so, are these changes positive or negative?
- What about changes in competition? Are they favorable, unfavorable, or neutral?
- If the applicable performance ratio is price to revenue (see Step 6.), compare the subject business' ratio of earnings to revenue with that of other transactions in the same kind to business, as follows:
  - Calculate the ratio of earnings to revenue (E/G) of each transaction in the complete set of transaction data.
  - Then arrange these E/G ratios in order and count off the top and bottom 25 percent (as shown in the preceding table of P/G ratios). Also find the corresponding mean and median ratios.
  - Now calculate the current and recent E/G ratio of the subject business.
  - Compare the subject's E/G ratio with those of the market. This should help you estimate where in the market spectrum the subject business fits from the standpoint of profitability.
- Compare the subject's detailed financial information (balance sheet and income/expense statements)[8] with corresponding industry information from published sources such as:
  - RMA's *Annual Statement Studies*
  - Financial Research Associates' *Financial Studies of the Small Business*

- Keep in mind that approximately 68% of all values lie between plus and minus one standard deviation of the mean, and that approximately 98% lie between the mean and plus or minus two standard deviations.

The objective of all of the foregoing is to assist the appraiser in reaching a reasonable, subjective judgment as to where the subject business belongs in the spectrum of market values;

[8]Because financial information in the referenced sources is based on standard accounting procedures, the comparative information on the subject business must be "raw" accounting data and not the "adjusted" information that is used in other aspects of the Direct Market Data Method.

that is, the P/G or P/E ratio that should be applied to the subject's forecast revenues or earnings.

Remember – the end is not to achieve great precision, just a reasonable judgment based on the available facts.

Step 9: Applying the selected performance ratio(s) to the subject company

Once an appropriate P/G or P/E ratio for the subject business has been determined, this ratio should be multiplied by the subject's forecast revenue or earnings, as applicable.

This produces a *preliminary indication* of the subject's market value.

As explained in step 6, choice between the P/G and P/E ratio as the measure of the market should depend on which of the two market ratios has the lower coefficient of variation. It is neither advisable nor useful to apply both P/G and P/E ratios to the subject and then attempt to combine the two resulting value estimates to arrive at a single estimate.

Step 10. Adjusting the preliminary indication of value

Once the preliminary indication of value has been determined, next attention is on the likelihood that this preliminary value may need adjustment. Transactions in the IBA Transaction Database represent what is included in a "typical" sale, which may not be the basis on which the subject business is to be appraised.

Possible adjustments to the preliminary value estimate include the following:[9]

- Adjustment for cash to be included in the appraisal. Because cash is not included in the sale prices as shown in the IBA Transaction Database, the preliminary value will need to be adjusted by adding any cash that is to be included in the subject business as appraised.
- Adjustment for additional liabilities. Transactions in the IBA Transaction Database are *asset* sales, and do not include liabilities except for those directly related to so-called "fixed" assets included in the sale. Thus the preliminary value needs to be adjusted to reflect any additional liabilities, such as short-term payables, that are to be part of the subject business as appraised.
- Adjustment for real estate to be included in the appraised value. Prices in the IBA Transaction Database do not include any real estate. If real estate is to be included in the subject appraisal, its value must be added to the preliminary indication of value.
- Inventory adjustments. Non-perishable inventory is normally included in businesses as sold. Accordingly, adjustments to the preliminary value are required only if the subject

[9]There are some exceptions to the general rule regarding content of the IBA transaction database. These exceptions involve certain kinds of businesses for which the content of a typical sale differ from the majority of business types. Further information on the content of sales as reported in the IBA transaction database can be found in *What is Included in the Sale Price,* Part XXVII of the IBA publication, Technical Studies of the IBA Transaction Database.

business has abnormal amounts of inventory or receivables. However, some kinds of businesses (grocery stores, for example) have perishable inventory. Perishable inventory is not included in the sale prices in the transaction database, and must therefore be added to the preliminary value if it is to be included in the subject business as appraised.

- Adjustment for receivables: Accounts receivable are normally included in businesses as sold. Accordingly, adjustments to the preliminary value are required only if the subject business has abnormal amounts of receivables.
- "Discretionary earnings" as shown in the IBA Transaction Database exclude owner's compensation. Depending on the specifics of the appraisal assignment, adjustments for owner's compensation (reasonable or actual, depending on the appraisal assignment) may need to be made to the preliminary value.
- Likewise, discretionary earnings as shown in the IBA Transaction Database are before taxes. Depending on the specifics of the appraisal assignment, adjustments for taxes may need to be made to the preliminary value.
- Minority discounts, control premiums: Transaction data from the IBA Transaction Database reflects 100% ownership. If required by the terms of the appraisal assignment, discounts for less than full control should be applied as when using any other appraisal methodology.
- Discounts for lack of marketability: All transactions in the IBA Transaction Database are of closely held businesses. This being the case, and because marketability is *relative*, there is ordinarily no need to apply a discount for lack of marketability when using transaction data to value a closely held business. An exception may exist, however, if the market for the target business is approaching saturation. If this is the case, the target business may be more impaired as to marketability than the transactions with which it is being compared, and a discount for lack of marketability may then be in order.
- Date of sale: Empirical data from the IBA Market Data Base indicates that, at least for the great majority of business types, there is no significant relationship between date of sale and the price for which a business is sold. Accordingly, transaction data may ordinarily be used in valuing the target business without regard to the age of the transaction data.[10] For businesses in industries that have undergone major structural changes,[11] it is advisable to eliminate transactions occurring prior to the change. Also, if the total number of transactions is more than 20, the analysis of the market can be limited to the 20 most recent transactions.
- Size of business: There is a growing body of empirical evidence of suggesting a relationship between the size of a business and the P/G or P/E ratio for which it should sell. However, the information available at this time indicates that the relationship between size and value is not a strong one in the statistical sense. Appraisers who are concerned with the size phenomenon as it affects value can effectively limit size effects by choosing guideline transactions whose size is within a factor of 10 of the target business.

[10]As previously noted, transactions occurring after the valuation effective date should be excluded because the information would not have been available at that time.

[11]Such as health care businesses, travel agencies, and others.

- Terms of payment: Empirical analysis of the IBA Transaction Database seems to indicate that there is no significant statistical relationship between percent down payment and either P/G or P/E ratio. This means that the transaction data is a valid representation of the market regardless of the terms for which the individual businesses sold. It does not mean, however, that there is no relationship between the terms of payment for a business and the price that a seller will accept and a buyer will pay. In fact, terms of sale of a business can significantly affect the price that a seller will accept and that a buyer will pay.
- Location: Except for the effect of occupancy costs on profitability, there is very little available information as to the relationship between the location of a business and its market value. However, empirical evidence from the IBA Market Data Base seems to be conclusive that there is no significant variation from one major area of the United States to another. As to other effects of location, the appraiser should apply common sense as to the kind of area in which the target business should most desirably be located.

Step 11. Testing the final value estimate

The last step in the process is to test the final value estimate.

First, of course, the appraiser needs to be certain that all mathematical operations leading to the final value estimate are correct.

This done, the final estimate still needs to be tested for reasonableness.

Tests for reasonableness can include the appraiser's asking himself/herself, "With what I know about the subject business, does this value make sense?" "If I were called upon to testify in court, could I defend the value effectively?"

What is the client's reaction to the value estimate, and how should I interpret this reaction in view of the client's possible bias?

Another test is to compare the final value estimate with values reached by other appraisal approaches/methods, such as the Income Approach.

Also, it is helpful to compare the value estimate against a "rule of thumb" for values of businesses of the same kind as the subject business.[12]

The "justification for purchase test" provides still another test of the appraisal result.[13]

[12]An excellent source of Rules of Thumb is the annual volume, *Business Reference Guide,* published by Business Brokerage Press, PO Box 247, Concord, MA 01742.

[13]An excellent explanation of the Justification for Purchase Test is given in the article, *"The Justification for Purchase Test,"* by Rand M. Curtiss. The article appeared in the Fall 1999 issue of Business Appraisal Practice.

Wrapping it all up

Properly used, the IBA Transaction Database and the Direct Market Data Method offer appraisers a powerful means of estimating values of closely held businesses.

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