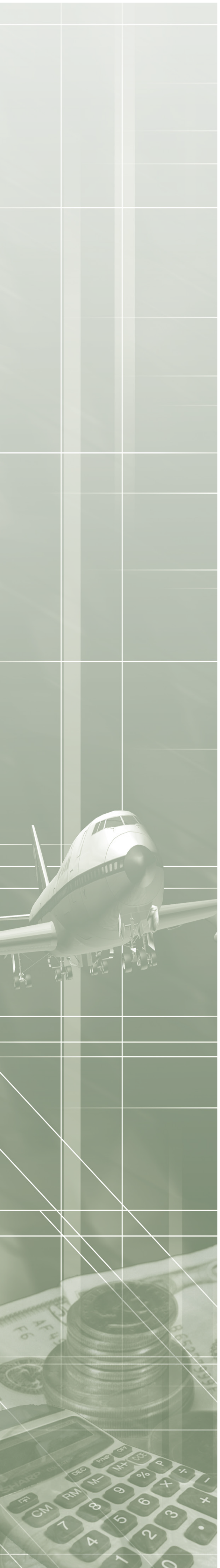

5. PRICE ANALYSIS

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5.1 PRICE ANALYSIS OVERVIEW

This chapter addresses the terms, concepts, techniques, and issues confronted when performing price analysis. Understanding the terms related to price analysis is essential. Table 5-1 provides a list of key terms and definitions.

Table 5-1. Price Analysis Terms and Definitions

Term	Definition
Contract Cost	The sum of the allowable direct and indirect costs allocable to a particular contract, incurred or to be incurred, less any allocable credits, plus any applicable cost of money.
Price	Cost plus any fee or profit involved in the procurement of a product or service. [FAA AMS, Appendix C (Definitions)]
Cost Analysis	The review and evaluation of the separate cost elements and proposed profit/fee of an offeror's proposal. [FAA AMS Procurement Guidance T3.2.3A.1.d]
Price Analysis	The process of examining and analyzing a proposed price without evaluating its separate cost elements and proposed profit/fee. [FAA AMS Procurement Guidance T.3.2.3A.1.c]
Cost and Pricing Data	All facts that, at the time of the price agreement, the seller and buyer would reasonably expect to affect price negotiations. Cost and pricing data are data requiring certification. Cost and pricing data are factual, not judgmental data, and therefore verifiable. [FAA AMS, Appendix C (Definitions)]

Price analysis is the process of examining and evaluating a proposed price without evaluating its separate cost elements and proposed profit. It may be accomplished by 1.) a comparison of submitted quotations; 2.) a comparison of price quotations and contract prices with current quotations for the same or similar items; 3.) the use of parameters (dollars per pound, for instance); and/or 4.) a comparison of proposed prices with independently developed cost estimates. Price analysis is the most commonly used method of proposal analysis and should be performed on all contractor proposals. Price analysis is the preferred method for evaluating competitive proposals [FAA AMS 3.2.3]. In contrast, cost analysis involves the independent review and evaluation of the individual cost elements and proposed profit (as well as the underlying assumptions applied in projecting from the data to the estimated costs) to determine price reasonableness. Cost analysis should be performed when factors affecting the procurement will not ensure a fair and reasonable price based on price analysis alone and/or when SIR Sections L and/or M indicate evaluation will include cost analysis and/or cost realism analysis. Even when cost analysis is performed to evaluate individual cost elements of a contractor's proposal, some form of price analysis is needed to ensure the proposed price is fair and reasonable [FAA AMS Procurement Guidance T3.2.3A.1.c]. The following case study demonstrates the need for price analysis:

CASE STUDY 5-1. NEED FOR PRICE ANALYSIS

Background:
Suppose the Government wants to purchase a new vehicle for Government use only. The Government decides to have a mechanic build the car from "scratch" instead of buying a pre-assembled vehicle. Competitive quotes are received on all the individual parts and necessary tooling. All workers receive minimum wage, and the mechanic asks for a very small profit.

Evaluation:
- Even though cost analysis determined that the proposed costs for parts and labor are reasonable, the final price of this car will be much more expensive than a car bought off the assembly line.
- Parts purchased independently may be many times more expensive than when bought in bulk quantities to support an assembly line.
- The entire cost of tooling will be charged to one car, instead of thousands.
- Labor might be cheaper, but it will not be as efficient as assembly line labor.

Conclusion:
Even though all parts were purchased from competitive quotes and the labor rates are reasonable, this does not ensure the final price will be reasonable.

What determines a fair and reasonable price? The analyst may consider the following when evaluating reasonableness:

- The number of buyers and sellers in the market,
- Production costs,
- Quality of products and services,
- Profit,
- Intensity of demand,
- Availability of substitutes for a product,
- Intensity of the Government's need, and
- Product utility.

No one unilaterally set price is fair and reasonable to all viewpoints. Fair and reasonable describes the conclusion that the price is acceptable to both the buyer (the Government) and the seller.

5.2 PRICE ANALYSIS TECHNIQUES

The FAA AMS Procurement Guidance [T3.2.3A.1.c] provides the following pricing techniques to use when performing price analysis:

- Comparison of proposed prices received in response to the screening information request.
- Comparison of prior proposed prices and contract prices with current proposed prices for the same or similar end items and services in comparable quantities.
- Application of rough yardsticks (such as dollars per pound or per horsepower, or other units) to highlight significant inconsistencies that warrant additional pricing inquiry.
- Comparison with competitive published catalogs or lists, published market prices or commodities, similar indexes, and discount or rebate arrangements.
- Comparison of proposed prices with independent cost estimates.
- Ascertaining that the price is set by law or regulation.

5.2.1 Comparison of Competitive Bids

The analyst should compare the current price with prices of competing bids or offers for the procurement if adequate price competition exists. To determine whether adequate price competition exists, the analyst may examine proposed prices, the range of prices offered by competing companies, the production or performance experience of the offerors, and exceptions taken by any offeror to the specifications, delivery schedule, or other terms of the solicitation. Once adequate price competition (see definition in Chapter 1, "Planning Effectively") is determined to exist, price competition between proposals should be relatively elementary to compare.

When evaluating competing offerors' proposals, the analyst should compare not only the price, but the terms and conditions as well. Often, terms and conditions in the proposals will differ in regard to conditions such as delivery schedule and upgraded technology, to the point that a direct comparison between proposals cannot be made. The analyst must, therefore, "level" the proposals to meet the basic requirements of the solicitation to ensure the price evaluation is performed on proposals with comparable terms and conditions. This may be accomplished by removing additional or upgraded services or components from the overall proposed price, so that the price evaluation can be made only with regard to the terms and conditions explicitly stated in the solicitation.

5.2.2 Published Price Comparison

Law and regulations exempt contracts for products and services with established catalog or market prices from cost analysis if four conditions (discussed below) are met. Determining whether these conditions apply will give the analyst a basis for deciding price reasonableness. Once these conditions have been met, the need for cost analysis disappears. An **established catalog price** is a price (including discount prices) recorded in a catalog, price list, schedule, or other verifiable and established record that: 1.) is regularly maintained by the manufacturer or vendor; and 2.) is published or otherwise available for customer inspection. Examples of catalog prices include those found in the General Services Administration (GSA) catalog as well as in commercial sources such as the Government Technology Services, Inc. (GTSI) catalog. These catalogs provide established prices for multiple vendors' products and services that are available to the general public.

The following four criteria provide the basis for a catalog or market price before it can be used to determine price reasonableness:

1.) An established catalog or market price,
2.) A commercial item or service,
3.) Sold in substantial quantities, and
4.) Sold to the general public.

An **established market price** is a price that is established in the course of ordinary and usual trade between buyers and sellers free to bargain and that can be substantiated by data from sources independent of the offeror. For example, a window cleaner may quote a price per window; an accounting firm may quote a price per hour; or a local hauler may quote a price per ton-mile. The interaction of supply and demand in the marketplace establishes competitive prices.

The price of an item or class of items which is not itself a catalog or market priced commercial item may also be based on an established catalog or market price if it is sufficiently similar to a commercial item. **Commercial items** are discussed in detail in section 5.3 and can be considered as any item or service which has been sold at established catalog or market prices.

An item is determined to be **sold in substantial quantities** if there are sales of more than a nominal quantity based on the norm of the industry segment. In determining what constitutes a substantial quantity, the analyst should consider such things as the size of the market and how recently the item was introduced into the market. Models, samples, prototypes, and experimental units do not constitute substantial quantities. For services to be sold in substantial quantities, they must also be customarily provided by the offeror, using personnel regularly employed and equipment (if any is necessary) regularly maintained principally to provide the services.

The method used to establish sales may include sales order, contract, shipment, invoice, actual recorded sales, or other records, so long as the method used is consistent, provides an accurate indication of sales activity, and is verifiable. Data to support sales quantities may also come from other manufacturers of the same or similar items, industry associations or marketing groups, annual financial reports etc.

The **general public** ordinarily consists of buyers other than the U.S. Government or U.S. Government corporations. Sales to the general public do not include sales to affiliates of the offerors or purchases by the U.S. Government on behalf of foreign governments, such as for Foreign Military Sales. Sales for end use by the Government are not considered sales to the general public.

5.2.3 Comparative Price Analysis

Comparative price analysis involves the comparison of the current proposed price with quotes or prices for the same or similar items. The analyst should take into account the factors listed in Table 5-2 (in reference to the product being used for comparison) that may directly affect comparability to the present price.

Table 5-2. Comparability Factors for Prices

1.) History
- When was the product or service last purchased?
- Is the comparison commercial item similar?

2.) Delivery Schedule
- Did the Statement of Work require products to be delivered?
- Was delivery FOB origin or destination?
- Does price include or exclude transportation costs?

3.) Quantity
- Was the comparison purchase a quantity buy?
- Was it a one-time buy?
- Did the Government benefit from quantity discounts?
- What was the contractor's inventory level?
- What was the contractor's plant capacity?

4.) Competitive Situation
- Was the purchase a sole source or competitive procurement?
- Was the contract awarded to a small business?
- Were the Government's needs urgent and compelling?

5.) Start-Up Costs
- Were start-up costs included in the price of the product?

6.) Dollar Value Changes (as time progresses)
- Has the original comparison price been adjusted to account for inflation/deflation?
- What was the market demand for the item/service at the previous time of purchase?

7.) Specification Changes
- Have there been significant upgrades in technology since the last purchase?
- Is the item currently in production? If not, does the current purchase include start-up costs?
- Did the last purchase include non-recurring costs (current purchase will reflect lower price)?

8.) Special Terms and Conditions
- What were the terms of the warranty, if any?
- Was compliance with strict Government regulations required?
- Did the price include additional services?
- Were the Government's needs uncertain and/or changing?
- What were the contractor's distribution and support capabilities?

Assumptions that the last price paid was reasonable at the time are not always valid. If the quoted price is greatly out of line with historical prices or Government estimates, the issues must be researched to determine the significant price factors in each purchase. Several questions must be asked and answered. Has the market changed since the last purchase? Was the last purchase an urgent and compelling buy? Has the contractor's purchasing system changed (sources, quantities, production, start-up costs, terms of purchase)? How has the economy changed? The analyst must adjust the historical price accordingly so that a direct comparison can be made with the proposed price. There are several methods the analyst can utilize to adjust prices for direct comparison: estimated quantity relationships, use of indices, trend analysis, ratio analysis, and product variance.

Estimated Quantity Relationships

Prices vary with quantity. Usually, the smaller the quantity purchased the more the Government can expect to pay per unit. Unit prices must be adjusted to account for changes in quantity. For example, if the Government was going to buy one office computer, they could expect to pay the full retail price. However, if the Government bought 500 office computers, they could expect to pay significantly less than the retail price since a price discount is usually offered for sales of substantial item quantities.

Use of Indices

Price index numbers are ratios, usually expressed as percentages, indicating changes in values, quantities, or prices. Index numbers indicate the percentage change in price, over time, with respect to the base year. Sources of Government price indices include Producer Price Index, Consumer Price Index, and Commercial Price Indices. The example below applies an index to inflate a price for direct comparison. Indices can also be used to do the following:

- Deflate prices for direct comparison,
- Inflate or deflate costs to facilitate trend analysis,
- Estimate project price or cost over the period of contract performance, and
- Adjust contract price or cost for inflation or deflation.

EXAMPLE: APPLYING INDICES

Product: Computer Monitor
Objective: Adjust the 2008 price to the 2009 price levels by using ratio analysis.
Available Data: 2008 price (unadjusted)

$$\frac{\text{2009 Price Index}}{\text{2008 Price Index}} = \frac{\text{Adjusted Price to 2009}}{\text{2008 Price}}$$

$$\frac{110}{105} = \frac{\text{Adjusted Price to 2009}}{\$100}$$

$104.76 = Adjusted Price to 2009

Trend Analysis

This method of analysis is based on the assumption that the future will follow the same pattern or trends that have been indicated in the past. Often a series of purchases are made over a period of time and pricing trends may develop. These trends may or may not be distorted by inflation/deflation. The analyst must adjust the prices for inflation/deflation in order to analyze these trends. For example, trend analysis may be used when predicting the price for services. By analyzing the historical wage prices and adjusting for inflation/deflation, the analyst can attempt to predict future wage rates and thus the price of the service.

Product Variance

Similar products may or may not have similar costs. It is important to understand the product's technical features and capabilities in order to assess similarities and differences before comparisons are made. For example, when analyzing monitors that will be used by air traffic controllers, it is important to assess all features before comparing the price. Both monitors may be color monitors and have a 27" diagonal, but only one monitor provides the resolution necessary for functioning in the air traffic control environment. The high resolution option may cause the price of the monitor to increase significantly. Thus, it is imperative the analyst compare technical aspects of the product before comparing price. When comparing services, different skill levels of labor must also be considered before making a comparison.

5.2.4 Use of Cost Estimating Relationships (CERs)

Cost estimating relationships (CERs) are an extremely useful tool for analysis after completion of cost analysis. Cost estimating is defined as the process of projecting financial requirements to accomplish a specified objective. CERs range from general rules of thumb developed from practical experience to complex formulas. CERs use a performance or physical characteristic of an item to estimate its price. The characteristic need not be the cost driver, but instead may serve as a substitute measure for a variety of variables. As some physical or performance parameter(s) is changed, CERs reflect the change in price. For example, as the hard drive capacity increases, the price of the computer increases. If this relationship is constant, a CER can be developed and utilized to estimate the price of different computers based on hard drive capacity.

> A **cost estimating relationship** uses a mathematical expression relating cost as the dependent variable to one or more independent cost driving variables.

Before developing CERs for price analysis, the analyst must inflate (or deflate) the dollars to some constant year value by using the appropriate price index numbers. When used during competitive source selections, a most probable cost estimate is prepared to test the reasonableness of each competitor's proposal.

Evaluating a CER requires determining the validity of the relationship and the data on which the factor and relationship are based. The relationship between costs and the independent variable should be clear, causal, and supported by historical data drawn from similar projects or tasks. Consistency between the past effort and the current effort is vital. If there are changes in specifications, production techniques, or any other significant area, then the historical data used as a basis for the CER may be invalid.

A detailed discussion regarding the development and application of CERs is provided in Chapter 15, "Quantitative Analysis Techniques".

5.2.5 Comparisons to Independent Government Cost Est

In addition to performing other analysis, or when price comparisons and other analysis techniques are not possible, the analyst may compare the price of a good or service to an **Independent Government Cost Estimate (IGCE)** to establish price reasonableness. These estimates can be a valid standard for comparison if they are based on a realistic engineering analysis that accounts for factual information such as past purchase prices, quantities, physical inspection of the product, drawings, and reasoned data such as analysis of similar work.

> An **Independent Government Cost Estimate (IGCE)** is an internal Government estimate, supported by factual or reasoned data and documentation, describing how much FAA could reasonably expect to pay for needed supplies or services [FAA AMS Procurement Guidance T3.2.3A.2]. It serves as:
>
> (a) The basis for reserving funds for the procurement action;
>
> (b) A method for comparing cost or price proposed by offerors;
>
> (c) An objective basis for determining price reasonableness when only one offer is received in response to a solicitation; and
>
> (d) A means of detecting offeror buy-ins and identifying unbalanced prices.

To determine if the basis of the IGCE is reliable and can be used as a standard for comparison, the analyst must account for the following factors:

- What was the source of the information?
- What information and techniques were used?
- How reliable were earlier estimates?
- Is the IGCE based upon the same technical approach as the current product or service?

The analyst must consider whether the requirements or the assumptions of the solicitation have changed since the IGCE was performed. Often, an IGCE is prepared early in the acquisition process; by the time the solicitation is issued and offers are received, specifications and requirements have changed. This may cause the price or the nature of the product or service to change significantly, rendering a direct comparison to the IGCE invalid.

When there are differences greater than 15% between the price of the offer proposed for award and the IGCE, the CO should notify the program official for appropriate remedial actions.

5.2.6 Market Research Comparisons

Market research is conducted to ascertain the availability of commercial products and/or services to meet the Government's needs and to identify market practices of firms engaged in producing, distributing, and supporting these products. Market research and analysis ensures that the Government's needs are met in a cost effective manner. The extent of market research will vary depending upon such factors as urgency, estimated dollar value, complexity, and past experience. Market research can be conducted in various ways, depending upon the product or service that is being researched. The analyst may simply be able to use market research data gathered by the CO, or call a commercial company and obtain a price quote, or use a published catalog if the complexity of the product is relatively low. The analyst may also need to interview technical personnel if the product has advanced capabilities beyond anything currently on the market.

When a new product is being procured, no past purchase history will exist. The analyst may find it necessary to perform a market research analysis of several commercial vendors offering the product for sale. If the product is not commercial-off-the-shelf (COTS), it becomes necessary to include the Government technical team as part of the analysis team. The technical team will provide input to assist the analyst in determining how similar the product's specifications are to existing COTS products. This will provide the analyst with a better understanding of the product and a basis on which to begin price analysis.

5.2.7 Auxiliary Techniques

Auxiliary techniques can be considered "sanity checks" and are supplementary to the previously discussed price analysis techniques. They should be used in conjunction with other analyses in order to perform a complete price analysis.

Value Analysis

Value analysis is a systematic and objective evaluation of the function of a product and its related costs. Knowledge of the product, its functions, and its use is essential for the analyst to provide a complete pricing analysis. The purpose of value analysis is to ensure optimum value to the Government.

Value analysis attempts to eliminate extra costs having no useful value. A simple example comes from the purchase of a pen. There are many types (Bic, Cross etc.) with many different variations (ball-point, calligraphy, fine tip, erasable). If the option (such as erasable) provides no additional value, it would not be wise to spend the extra money to purchase an erasable pen.

How does the analyst determine if the Government is receiving the best product for the value? The following questions must be answered:

- What must the product do? What other ways can the function be performed?
- Can any part of the product be eliminated?
- Can a "standard" replace a "special"?
- What does the product cost? Can a lower cost material or method be used?
- What price will the Government pay?
- What are the product's operation and maintenance costs?
- What will the alternatives cost?

Visual Analysis

Visual analysis is simply a visual inspection of an item, or the drawing of an item, in order to develop an approximate estimate of its value. Visual analysis is concerned with the obvious external features of the product and is normally one of the first analyses performed in determining value and the related price. Visual analysis alone will rarely answer all questions. It should be used to verify tentative conclusions reached after price comparison. Visual analysis is generally most applicable to the areas of size, color, texture, feel, and style.

5.3 EVALUATING COMMERCIALLY AVAILABLE ITEMS

The FAA AMS encourages contracting officers to procure commercially available equipment whenever possible. The agency should conduct market research to determine whether commercial items or nondevelopmental items are available that could meet its requirements. If those items are available, the agency should acquire such items.

5.3.1 Definition

For the purposes of this chapter, a **commercial item** is (FAA AMS, Appendix C):

> *Any item, other than real property, that is of a type customarily used by the general public or by nongovernmental entities for purposes other*

than governmental purposes and that has been sold, leased, licensed to the general public; or has been offered for sale, lease, or license to the general public.

5.3.2 Information Sources for Commercially Available Items

Data on commercially available items are readily available. Information on commercial products and services may be acquired from the following sources (this is not an all inclusive list; see Chapter 6 for more detail):

- Source lists for similar items maintained for contracting activities,
- Catalogs published by manufacturers, distributors, and dealers,
- Informational requests for price quotes,
- Responses to advance notices and solicitation synopses published in Commerce Business Daily,
- GSA Federal Supply Schedule,
- Other Federal agencies, and
- Thomas Register.

5.3.3 Considerations Regarding Contract Type

Government agencies should use firm-fixed-price contracts or fixed-price contracts with economic price adjustments for the acquisition of commercial items. Indefinite delivery contracts may be used where the prices are established based on a firm-fixed-price or with economic price adjustment.

> A **fixed-price contract with economic price adjustment** provides for upward or downward revision of the stated contract price based upon the occurrence of specific conditions specified in the contract. [FAA AMS Procurement Guidance T.3.2.4A.2.c]

Use of fixed-price contracts for commercial items is necessitated due to the low contractor performance and cost uncertainties, low complexity of the item, defined requirements, experienced contractors, stable market conditions, and insignificant financial risks.

5.3.4 Financing Implications

The Government may be authorized to provide contract financing that is appropriate and/or customary in the commercial marketplace. Although it is normally the responsibility of the contractor to finance the contract, in some markets the provision of financing by the buyer is a commercial practice. In these circumstances, the contracting officer may include appropriate financing terms for commercial contracts when doing so will be in the best interests of the Government. Commercial interim and advance payments may be authorized under the following circumstances:

- The contract item financed is a commercial supply or service;
- The contract price exceeds the simple acquisition threshold;
- The contracting officer determines that it is appropriate and customary in the commercial marketplace to make financing payments;
- Authorizing this form of contract financing is in the best interests of the Government;
- Adequate security is obtained;
- Prior to any performance of work under the contract, the aggregate of commercial advance payments shall not exceed 15 percent of the contract price; and,
- The contract is awarded on the basis of competitive procedures or, if only one offer is solicited, adequate consideration is obtained if he financing is expected to be substantially more advantageous to the offeror than the offeror's normal method of customer financing.

COMMERCIAL ITEM FINANCING TERMS:

Commercial advance payment is a payment made before any performance of work under the contract.

Commercial interim payment is a payment that is not a commercial advance or delivery payment. Payment is made after some work has been done by the contractor.

Commercial delivery payment is a payment for accepted supplies or services, including payments for accepted partial deliveries.

To determine the customary financing methods of a particular market, the analyst may conduct market research and consider the following:

- The extent to which other buyers provide contract financing for purchases in that market;
- The overall level of financing normally provided;
- The basis for any payments equivalent to commercial interim payments, as well as the frequency, and amounts or percentages; and
- The methods of liquidation of contract financing payments and any special or unusual payment terms applicable to delivery payments.

5.4 SUMMARY

Regulations surrounding contract pricing are under constant change. Past regulations required extensive supporting data from the contractor which had to be analyzed in detail at the cost element level. There has been a shift in acquisition policy to minimize cost analysis when possible and to part with requiring the contractor to provide certified cost and pricing data. Price analysis now plays the lead role in determining price reasonableness and fairness, and it becomes the responsibility of the analyst to research and gather pricing data from sources other than the contractor. As a result, the analyst must understand the fundamentals of performing price analysis. Accordingly, the purpose of this chapter is to present an overview of price analysis and current governing regulations as well as analysis techniques that may be utilized by the analyst to determine a fair and reasonable price.