

**ACCOUNTING FOR CONSTRUCTION CONTRACTS :
A CASE STUDY ON GAMA CORPORATION**

M.B.A. THESIS

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SEPTEMBER 1995**

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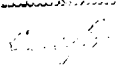

ACCOUNTING FOR CONSTRUCTION CONTRACTS :

A CASE STUDY ON GAMA CORPORATION

A THESIS

**Submitted to the Faculty of Management
and the Graduate School of Business Administration
of Bilkent University
in Partial Fulfillment of the Requirements
For the Degree of
Master of Business Administration**

**BY
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SEPTEMBER 1995**

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Assoc. Prof. Can Simga Mugan



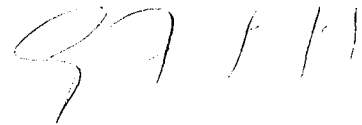
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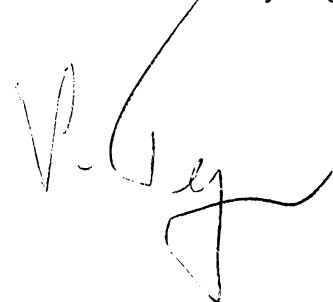
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ABSTRACT

ACCOUNTING FOR CONSTRUCTION CONTRACTS :

A CASE STUDY ON GAMA CORPORATION

BY

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SEPTEMBER 1995

This study focuses on the Accounting for Construction Contracts in Turkey, by giving examples from GAMA Corporation.

The major characters involved in contracts and types of contracts are discussed in the study. Main methods for the accounting of construction contracts are examined. The most favorable contract method for Turkey is selected.

Key Words: Construction Contracts, Long Term Construction Contracts, Percentage of Completion Method, Completed Contract Method, Contractors.

ÖZET

İNŞAAT KONTRATLARI İÇİN MUHASEBE : GAMA A.Ş. ÜZERİNE BİR ÇALIŞMA

D. HAKAN EGEL
TEZ DANIŞMANI : Dr. CAN ŞİNGA MUĞAN
EYLÜL 1995

Bu çalışma Türkiye'de inşaat kontratları muhasebesini GAMA A.Ş. den örnekler vererek incelemeyi hedeflemiştir.

Kontratlardaki ana karakterler ve kontrat çeşitleri tartışılmıştır. İnşaat kontratları muhasebesi üzerine ana metodlar incelenmiştir. Türkiye için en uygun metod seçilmiştir.

Anahtar Kelimeler: İnşaat Kontratları, Uzun Vadeli İnşaat Kontratları, Kısmen Tamamlama Yöntemi, Tamamlama Yöntemi, Müteahhitler.

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I. INTRODUCTION

A unique aspect of construction accounting centers on the problem of when profits are earned. For some construction contractors the problem is not significant since they have numerous short term contracts and can account for revenue, cost, and income in the same way as any other business.

What makes the construction contractor's problem different from the accounting in other businesses is the fact that most construction contractors are engaged in long term contracts. There is no clear definition of what constitutes a long term contract, for example a small paving contractor whose jobs average three or four weeks in duration would consider a three or four month contract to be long term or, a large design-build contractor whose contracts may average six to seven years in length would consider a one or two year contract to be short term. By custom, long term contracts are generally thought to exceed one year (or one accounting period) in length.

The operations of a long term contractor differs from another firm in three important aspects :¹

¹ Financial Accounting 1991 (Stickney, Weil, Davidson), p.p. 143 - 146.

1. The period of construction may exceed one accounting period.
2. The firm identifies a customer and agrees upon a contract price in advance (or at least in the early stages of construction).
3. The buyer often makes periodic payments of the contract price as work progresses.

This study is written in order to provide some insight about the accounting for contracts, especially for the long term ones. It will start with defining the contractual relationships, by identifying the participants and their roles. Then comes the part which informs the reader about the contract types. In the next section, accounting methods available for long term contracts are explained. The following part will discuss the comparisons of these methods by using GAMA case and considering the effects of inflation. Finally, the best method for Turkey is selected in the conclusion.

II. CONTRACTUAL RELATIONSHIPS

In general, to produce a constructed facility, a number of parties have to work together within a contractual relationship. The technical and financial responsibilities of each party need to be defined and interrelationships between the parties need to be established. "Fortunately, many of these relevant organizational matters have been resolved in practice and standard documents and model procedures which are accepted by the parties have been used for a long time. In addition, quite different new concepts have occasionally been proposed and a variety of types of organizations have been developed to carry out a wide range of construction work smoothly and efficiently".²

The party, who is the customer of the construction industry and who proposes to purchase either a constructed facility or one of the other services that are offered by the industry, is known as the **client, owner, promoter, developer** or **employer**. A client may be an individual, a group of people, a partnership, a limited liability company or local or central government authority. He is the initiator of construction.³

² Construction Accounting and Financial Management 1989 (Coombs, Palmer) p.p. 2-6

³ Fundamentals of Construction Estimating and Cost Accounting 1974 (Collier) p. 2

Among other things, a client not skilled in construction practice will probably need to obtain expert advice on one or more of the following:

- Feasibility studies,
- The design of the works that are proposed,
- Specialist equipment installations,
- The preparation of the contract documents and other contract procedures,
- Tendering procedures and tender evaluation,
- Construction programming and scheduling,
- The supervision of the construction of the works,
- The certification of completed work for payment,
- Dealing with variation orders and claims for additional payments.

The **advisors** or **consultants** can be from the client's own staff or they can be appointed from outside organizations. The organizations to be drawn on may be those whose members have professional skills in engineering - whether civil, structural, mechanical, building services, etc. - or in architecture, quantity surveying, project management, etc.; also, with certain forms of contract, contractors may be employed who have suitable experience in design, construction and/or construction management.⁴

⁴ Fundamentals of Construction Estimating and Cost Accounting 1974 (Collier) p. 3

A **contractor** is an individual or company that contracts to carry out the construction works. He is the builder and the construction expert who does construction work for payment and who enters into a contract with an owner for this purpose. If only one contractor is appointed, the individual or the company may be known as the **main contractor**. It is likely that a contractor will subcontract some of the work to **subcontractors** who have specialist skills, experience and equipment to deal with specialized aspects of the work⁵. By doing this, subcontractors provides the main contractors the opportunity to concentrate on other fields of work.

The contractual relationships between the parties and indeed the professional and commercial skills of the parties involved, will depend upon the type of organization that a client chooses in order to obtain the construction of the work.

Organizational contractual relationships can be classified within three groups, as follows:⁶

- Traditional,
- Design and construction,
- Management.

⁵ Construction Accounting and Financial Management 1989 (Coombs, Palmer) p.p. 2 - 6

⁶ Management Accounting for Construction Contracts 1981 (Lucas, Morrison), p.p. 59 - 65

The **traditional** contractual organization is one in which a client has a direct contract with consultants to carry out the design of the works and also probably the supervision of the construction. The client also has a direct contract with a contractor. The contractor is likely to be in contract with suppliers of materials of all kinds and with subcontractors for carrying out specialist works and equipment installations.

The organization for a **design and construct** method involves a client having a contractual relationship with a design and construct contractor. In this relationship, the contract is for the contractor to design the proposed constructed facility and to build it. If the client does not have the necessary skills to arrange for tenders for the work to be submitted and then for their evaluation and the selection of a suitable contractor, a consultant may be appointed.

Management contractual organizations are generally formed to provide two types of services. The first is that of *management contracting*; the other is *construction management*. For management contracting, a client has a contractual relationship with a contractor who acts as a management contractor. Usually the management contractor provides only management services without undertaking the construction work. A client also contracts directly with consultants to provide design and cost consultancy services. The management contractor then contracts directly with other contractors to carry out the construction work. A construction management organization is one in which a client enters into direct contracts with a professional

construction manager, design and cost consultants and works contractor. The contractor undertaking the work is then in a direct contractual relationship with the client rather than with the construction manager. The construction manager will undertake such management functions as are delegated directly by the client. In this respect, the construction manager may act as the agent of the client.

III. TYPES OF CONTRACTS

An understanding of construction contracts is essential for accounting purposes. A **construction contract** is a contract for the construction of an asset or of a combination of assets that together constitute a single project. Examples of activity covered by such contracts include the construction of bridges, dams, ships, buildings, and complex pieces of equipment⁷. It is a binding agreement containing the conditions under which the construction of a facility will take place. It results from an offer made by one party to another, for a payment, to construct the works. The offer in construction is usually in the form of a tender and, when agreement about the conditions and the payment have been reached, the contract is accepted. There are a number of essential general conditions for a valid contract to be formed. The principal requirements are that the parties in the contract must have legal capacity, and that their objectives must be legal, and the parties must have the intention to create a legally binding association between them.

Types of construction contracts are based on the ways in which a contractor is paid for the work carried out. There are generally three classifications covering the majority of contract work, as follows:

⁷ International Accounting Standards 11, p 149.

- Unit price contracts,
- Lump sum contracts,
- Cost reimbursement contracts.⁸

III.I. Unit Price Contracts

Unit price contracts are based upon measuring the actual quantities of work carried out and valuing that work by applying the rates and prices mentioned in a contractor's tender. Thus the final contract sum is not known until the work has been completed. Such contracts are normally used where it is not possible to establish accurately the quantities of work required, at the time of tender. For unit price contracts, a contractor is required to submit a priced bill of quantities or a schedule of rates with his tender. A bill of quantities is a list of items of work which the quantities to be carried are entered. A contractor in preparing for the tender, is required to enter a unit rate or price against each item. Usually the quantities in the bill are approximate.

The main advantage of using unit contracts is the fact that clients can gain an advantage in the project program, since the work can be put out to tender before the details of the design and the drawings are finalized. However, there exists a risk that

⁸ Fundamentals of Construction Estimating and Cost Accounting 1974 (Collier) p.p. 5 - 11

arises from the uncertainty of not knowing the exact contract sum before the work is completed.

III.II. Lump Sum Contracts

A **lump sum** contract is one in which the contract sum is fixed and agreed before construction work is completed. A client must have an exact idea of what is required in such a contract. Because of its nature, it is not expected that there will be any modifications to the lump sum basis once the contract is agreed, unless the requirements of the client are changed during the course of the construction. Payment to a contractor, is normally done throughout the different stages of the work, with the methods and sequences of payment being part of the contract terms.

Lump sum contracts have several advantages to clients; the overall price is known at the beginning, the client is not too much involved in the construction process, and it is possible to arrange for competitive tenders at the precontract stage. The evaluation of lump sum tenders is relatively straightforward. An additional advantage is that a considerable amount of the risk and responsibility for the outcome of the project can be transferred to the contractor.

Some disadvantages of a lump sum contract to a client are, firstly, in order to provide precise details of the works the duration of the overall project program is usually longer than by employing some of the other methods available. For any changes in the contract, reevaluation and consensus is necessary.

One popular form of lump sum contract is *all-in-contract*. It follows from the use of performance-oriented specification. The client briefly prepares the requirements for the works. This is then sent out to contractors for tendering. Each tenderer prepares a plan to provide the facility required by the specification and submits to the client the relevant design drawings, specifications, etc. and lump sum price with a completion date. The all-in-contract method has the advantage that the client pays a sum, established before construction starts, for the facility that the client requires, when the client wants it, and has no problem of coordinating the various services. On the other hand, the client is unable to make changes in the design and construction processes unless they conform with the original specification, because this is likely to arise considerable additional costs.

III.III. Cost Reimbursement Contracts

"Cost reimbursement contracts involve recording the total actual costs of materials, plant and labor, known as the **allowable** or **prime** costs, incurred in order to

carry out the works and then adding to them a previously agreed fee to cover profit and head office overheads".⁹ Such a contract is used for work when it is not possible to prepare clear definitions on the contents and nature of the works. Whenever a tenderer would find it difficult to prepare a realistic price either in lump sum or in unit price contracts, tenderer prefers to use cost reimbursement contracts.

Cost reimbursement contracts have a great deal of flexibility, so that the extent of the works changed easily. On the other hand, the method has the disadvantages that it is difficult to impose a ceiling on the amount of money to be spent. Also the contractor may abuse the system unless closely supervised. The method also demands considerable administrative input in supervising and recording expenditure, in giving approvals for work to be undertaken and in generally controlling costs.

There are several popular forms of this contract type like cost plus percentage fee, cost plus fixed fee and target cost plus fee.¹⁰

In a *cost plus percentage fee contract*, the fee consists of a previously agreed percentage of the total incurred prime costs. In such a contract, the contractor has little incentive to reduce total costs. So as to provide a greater incentive for a contractor to complete the work as efficiently as possible, a number of variations to the prime cost plus percentage fee for overheads and profit arrangement are developed.

⁹ Construction Accounting and Financial Management 1989 (Coombs, Palmer) p.p. 2-6

¹⁰ Management Accounting for Construction Contracts 1981 (Lucas, Morrison), p.p. 59 - 65

Another arrangement, more likely to encourage minimizing prime costs, is that of *cost plus fixed fee*. The fixed fee is either tendered by the contractor as a lump sum or it may be negotiated. The fixed amount is then added to the prime costs to give the total costs. The fixed fee may refer to a stated range of total prime costs and different fixed fees would then apply to different ranges.

One more alternative method, *target cost plus fee*, which is believed to be effective in reducing costs, is to agree a target for the prime cost of the work before any work is carried out. This is commonly affected by using a priced bill of quantities for the prime costs. Such a bill is useful in valuing any variations in the scope of work as well as dealing with fluctuations of cost as a result of inflation. It is often not easy to set this target accurately because of the nature of some types of work and there needs to be an awareness that setting it too high or too low may adversely affect any incentive to be efficient. The fee ultimately payable to a contractor is then established by adjusting the agreed basic fee (which is usually a percentage of the agreed target estimate). The actual fee payable is arrived at by increasing the basic fee, in accordance with a previously agreed scale, where the actual total prime cost is less than the target cost and decreasing it if the target cost is exceeded.¹¹

¹¹ Management Accounting for Construction Contracts 1981 (Lucas, Morrison), p.p. 59 - 65

IV. ACCOUNTING FOR CONSTRUCTION CONTRACTS

The feature which characterizes a construction contract is the fact that the date at which the contract activity is started and the date when the contract activity is completed, fall into different accounting periods.

The principal problem relating to accounting for construction contracts is the allocation of revenues and related costs to accounting periods over the duration of the contract.¹²

Under GAAP¹³, there are two acceptable methods of accounting for long term contracts¹⁴. These methods were formalized by the AICPA's¹⁵ issuance in 1955 of Accounting Research Bulletin No. 45, Long Term Construction Type Contracts¹⁶.

¹² International Accounting Standards 11, page 149.

¹³ GAAP, is the Generally Accepted Accounting Principles.

¹⁴ Insaat Taahhut Isletmelerinde Muhasebe Sistemi 1981 (Benligiray) p 36

¹⁵ AICPA, is American Institute of Certified Public Accountants.

¹⁶ You can find the whole bulletin in Appendix A.

IV.I. Completed Contract Method

Under this method, income is recognized only in the year of completion. This means that during the entire construction period, all collections on the contract price and all construction expenditures are recorded in "holding" accounts. All construction costs and expenses are debited to an inventory account, '*Construction in Process*'. At the completion date all of the related holding accounts are closed, and the net effect is the income from the construction project.

The client almost always provides progress payments for the contractor in the long term construction contracts.¹⁷ These payments are credited to an account 'Billings on Contracts'.

Under the completed contract method, when the contract is completed, the income recognized is the difference between the accumulated credit balance in the 'Billings on Contracts' account and the debit balance in the 'Construction in Process' inventory account. The accumulated amount of Billing on Contracts is the amount of sales revenue. The accumulated amount of Construction in Process Inventory on completion of the contract is the amount of cost of goods sold. Therefore, the difference between the two amounts is the pretax construction income earned on the project.

¹⁷ Intermediate Accounting 1989 (Welsch, Zlatkovich), p.p. 575 - 582

In some cases, firms use the completed contract method because the contracts take such a short time to complete that earnings reported with the other methods do not differ significantly. In these cases, firms use the completed contract method because they find it generally easier to implement. Firms use the completed contract method in situations when they have not found a specific buyer while construction progresses, as sometimes happens in construction of residential housing. These situations require future selling effort. Moreover, substantial uncertainty may exist regarding the price that the contractor will ultimately set and the amount of cash it will collect.¹⁸

The principal advantage of the completed contract method is that it is based on results as determined when the contract is completed rather than on estimates which may require further adjustments as a result of unforeseen costs. The risk of recognizing profits that may not have been earned is therefore minimized.

The principal disadvantage of the completed contract method is that periodic reported income does not reflect the level of activity on contracts during the period. For example when a few large contracts are completed in one accounting period but no contracts have been completed in the previous period or will be completed in the subsequent period, the level of reported income can be erratic although the level of activity on contracts may have been relatively constant throughout. Even when numerous contracts are regularly completed in each accounting period, and reported

¹⁸ Financial Accounting 1991 (Stickney, Weil, Davidson), p.p. 143 - 146.

income may appear to reflect the level of activity on contracts, there is a continuous lag between the time when work is performed and the related revenue is recognized.¹⁹

IV.II. Percentage of Completion method

Under this method an estimated amount of income from construction is recognized each accounting period based on percentage of completion. That is, if the project is 20 percent completed at the end of the first accounting year, that percent of the estimated total construction income is reported on the statement of income for that year. This means that at each year-end an estimate must be made for the cost to complete. This estimate is used with the (a) known contract price, (b) actual costs to date, and (c) income already recognized, to compute the period's estimated income from construction. At the end of each period the estimated income recognized is credited to income and debited to construction in process.²⁰

Income is recognized as earned each accounting period during construction and added to the account, Construction in Process Inventory. Because the actual total income on the contract will not be known until completion, an estimate of it must be made each period. The estimated total amount of income then is apportioned to each period on the basis of the percentage of the total contract completed during that period.

¹⁹ International Accounting Standards 11, page 153.

²⁰ Intermediate Accounting 1989 (Welsch, Zlatkovich), p.p. 575 - 582

The actual schedule of cash collections does not affect the revenue recognition process. Even if the contract specifies that the contractor will receive the entire contract price only on completing construction, the contractor may use the percentage of completion method so long as it can reasonably estimate the amount of cash it will receive and the remaining costs it expects to incur in completing the job.²¹

Percentage of completion usually is determined on the basis of either (a) engineering and architectural estimates of the work performed to date compared to the total work necessary to complete the contract or (b) the ratio of total costs incurred to date on the contract to the total costs that are expected to be incurred on the contract. The estimated amount of income recognized each period is accrued as a debit to Construction in Process Inventory and a credit to Income on Construction. The inventory account is debited for the income recognized because it adds to the contractor's ownership interest in the construction inventory.

Under either method, when there is a projected loss at any time, it must be recognized in full in the period in which a loss on the contract appears probable. The loss should be recognized by a debit to Loss on Construction and a credit to Construction in Process Inventory. The credit side of the entry removes from the inventory account the amount of costs in excess of expected recovery value. Also,

²¹ Financial Accounting 1991 (Stickney, Weil, Davidson), p.p. 143 - 146.

when a loss on the contract is probable, any income previously recognized should be "reversed" and reported as a loss in the period that such determination is made.²²

IV.III. Units of Delivery Method²³

Audits of Government Contractors, published by the AICPA, describes an alternative method which is referred to as the units of delivery and is a modification of the percentage of completion method of accounting for contracts.

The units of delivery method recognizes as revenue the contract price of units of a basic production product delivered during a period and as the cost of earned revenue the cost allocable to the delivered units; costs allocated to undelivered units are reported in the balance sheet as inventory or work in progress. However, in general, the units of delivery method is not applicable to construction contractors.

²² Intermediate Accounting 1989 (Welsch, Zlatkovich), p.p. 575 - 582

²³ Construction Accounting and Financial Management 1989 (Coombs, Palmer) p.p. 19

IV.IV. Applications In Turkey²⁴

In Turkey, we see that Income Tax Law article 42²⁵ has great influence on the selection of accounting methods for the long term construction contracts. According to that article, the contractor companies shall select the completed contract method and that profits are to be recognized at the end of completion year and the taxes are paid upon that amount.

If we take a look at Appendix B for the financial statements of GAMA, which uses the completed contract method, we see that the accounts 'Expenses for Contracts In Progress' and 'Revenues from Contracts In Progress' are the names for the 'holding' accounts that have been written about. These accounts are used instead of 'Construction in Process' and 'Billings on Contracts' respectively.

In Turkey, for all the long term construction contracts, the client has to provide progress payments for the contractor, as specified previously in the contracts. The contractor upon receiving the payments, has to pay 5% of the payment as stoppage tax. This tax is designed to minimize the amount of income tax that the contractor is responsible to pay at the end of the project's completion year. By this way, government

²⁴ Tekduzen Muhasebe Sisteminde Insaat Isleri Uygulamasi 1995 (Mehmet Sayari) p.p. 5-6

²⁵ Income Tax Law Article 42 : Birden fazla takvim yilina sirayet eden infaat ve onarma islerinde kar veya zarar isin bittigi yil kati olarak tespit edilir ve tamamı o yilin geliri sayilarak meskur yil beyannamesinde gosterilir. Mukellifler bu madde kapsamına giren her infaat ve onarım isinin hasilat ve giderlerini ayrı bir defterde veya tutmakta oldukları defterlerin ayrı sayfalarında gostermeye ve düzenleyecekleri beyannameleri islerin ikmal edildiği takvim yilini takip eden yilin Mart ayi sonuna kadar vermeye necburdurlar.

is helping the companies which might have liquidity problems. This stoppage tax is held into the 'Prepaid Taxes' account.

To summarize, all the contractors receive progress payments. The ones who are using completed contract method, record their expenses to an inventory account, named 'Expenses for Contracts in Progress' and they record their progress payments to the account 'Revenues from Contracts in Progress' until completion year. (See Appendix B for the GAMA example). They also pay %5 of the payments as stoppage tax, as 'Prepaid Taxes'. On the completion year, these accounts are realized as 'Contract Revenues' on the revenues side and 'Expenses for Completed Contracts' on the expenses side. The companies who are using percentage of completion method directly records their expenses and the progress payments to their income statements and then they are due to pay income tax about 40%. If we have look at the following tables by assuming that a contractor and a client agreed on a contract that will be completed in 4 years and that the project will have a cost of \$8,000,000 which the contractor will receive \$10,000,000.

For the percentage of completion case :

Years	Expenses	Revenues	Earnings Before Taxes	Taxes (40%)	Earnings After Taxes	Present Value of NCF
1	2,000,000	2,500,000	500,000	200,000	300,000	166,667
2	2,000,000	2,500,000	500,000	200,000	300,000	92,593
3	2,000,000	2,500,000	500,000	200,000	300,000	51,440
4	2,000,000	2,500,000	500,000	200,000	300,000	28,578
Total	8,000,000	10,000,000	2,000,000	800,000	1,200,000	339,278

Table 1 - Cash Flow for Percentage of Completion Method, where $r = \% 80$.

For the completed contract method case :

Years	Expenses	Progress Payments	Stoppage Tax (%5)	Taxes (40%)	Earnings After Taxes	Present Value of NCF
1	-	2,500,000	125,000		375,000	208,333
2	-	2,500,000	125,000		375,000	115,740
3	-	2,500,000	125,000		375,000	64,300
4	8,000,000	2,500,000	-	650,000**	-150,000	- 14,289
Total	8,000,000	10,000,000	375,000	650,000	975,000	374,086

Table 2 - Cash Flow for Completed Contract Method, where $r = \%80$.
 ** The corporate tax for the last year is calculated in Table 3.

In the first table, expenses (column 2) and revenues (column 3) are immediately recognized, making a profit before taxes (column 4) of 500,000 for each year. Then corporate taxes (column 5) (estimated about 40 - 45 percent by the officials) are

calculated by multiplying column 3 with %40. This taxes column then deducted from profit before taxes to get profit after taxes (column 6). Finally, the present value of these profits are calculated in column 7, by the formula of $\text{Future Value}^n = \text{Present Value} * (1 + r)^n$ where $r = \%80$, assumed interest rate²⁶. In the second table, expenses and progress payments are recognized in the fourth year. Before that, only stoppage tax (column 4) is calculated by multiplying %5 of the progress payments (column 3). At the fourth year, the year of completion, only corporate taxes are given. This corporate tax is calculated in Table 3 below. Earnings after taxes column for the first three years are not recognized, they are put into receivables, but I treated them as recognized in order to make a break-even analysis.

Years	Progress Payments	Stoppage Tax (%5)	Revenues Liability	Expenses	Net Realized Profit	Corporate Tax for 4th year
1	2,500,000	125,000	2,375,000	2,000,000		
2	2,500,000	125,000	2,375,000	2,000,000		
3	2,500,000	125,000	2,375,000	2,000,000		
4	2,500,000		2,500,000	2,000,000		
Total	10,000,000	375,000	9,625,000	8,000,000	1,625,000	650,000

Table 3 - Calculating 4th year corporate tax for completed contract method

In table 3, column 2 is the progress payments column which you get with respect to your expenses in column 5. Except the completion year, companies are expected to pay stoppage tax of %5 from these progress payments. The net amount of 2,375,000 is

recorded in the `Revenues from Contracts in Progress` account for the first years. In the fourth year, these accumulated amounts are transferred to the `Revenues from Completed Contracts` as they are recognized as revenues. Upon the recognized revenue, the companies are expected to pay approximately %40 of it as corporate tax. The corporate tax that the firm in the example will give 650,000.

After transferring the corporate tax found in table 3 to the Taxes column in table 2, I have found that the break-even point for the two methods is at $r = \%38.92$. This means that, below the interest rate of %38.92 the percentage of completion method, above the interest rate the completed contract method provides a larger profit.

IV.V. Comparison of Methods

Both the completed contract and percentage of completion methods of accounting for income on long term construction contracts are appropriate under current GAAP. Over the entire construction period, both methods recognize almost the same total amount of pretax income.

Advocates of the completed contract method assert that it is more objective and more conservative because income is not recognized until all of the revenues and expenses for the completed job are known with certainty. However, this method is

viewed by some accountants as deficient because income recognition does not reflect performance in each accounting period during construction. Although most of the work may be completed prior to the period in which construction is completed, all of the income is reported in the last period.²⁷

The percentage of completion method is supported on the basis that the construction company earns revenue as it performs the work on the contract. However, some accountants consider the percentage of completion method as deficient because income during the construction period is measured subjectively, on the basis of (a) estimates of work done (percentage of completion) and (b) estimated total construction cost. However, income tax considerations and a desire to shift income among accounting periods often strongly influence the choice of method. The accounting profession has sanctioned the use of either method as follows:

The committee believes that in general when estimates of costs to complete and extent of progress toward completion of long term contracts are reasonably dependable, the percentage of completion method is preferable. When lack of dependable estimates or inherent hazards cause forecasts to be doubtful, the completed contract method is preferable.²⁸

²⁷ Intermediate Accounting 1989 (Welsch, Zlatkovich), p.p. 575 - 582

²⁸ Refer to Appendix A, for further information.

Contractors do not use the percentage of completion method even when they have a contract with a firm price if uncertainty obscures the total costs the contractor will incur in carrying out the project. If a contractor cannot reasonably estimate total costs, it cannot estimate the percentage of total costs incurred by a given date, and it can not measure the percentage of services already rendered.²⁹²⁹

²⁹ Financial Accounting 1991 (Stickney, Weil, Davidson), p.p. 143 - 146.

V. CONCLUSION

Among the two alternatives for construction contracting, the completed contract method is better than the percentage of completion method in several aspects. Firstly, the break-even point for the methods is %38.92, that is completed contract method provides the contractor with a larger profit margin if the interest rates are above %38.92. Also this method has easier implementation than the percentage of completion method. The completed contract method is more suitable for uncertain environments. In Turkey, the inflation rate is always above the expected levels, which leads to uncertainty. Companies can not make good estimations for the total purchasing amount of materials, the future of domestic currency, foreign currency etc... They can not even guarantee that they are going to make profits as stated in the contracts. In the percentage of completion method, the contractors are due to pay taxes from the progress payments in each accounting period. If the project results with a loss at the end, the contractor can not receive back the taxes that were paid. However, in the completed contract method, in the worst case, only the stoppage taxes are gone. Therefore, the risk of recognizing profits that may not have been earned is minimized. Although you can get back the amount you had paid, if you are on loss for the contracts, but the time value of the money is gone.

Although the completed contract method is better than the percentage of completion method, it also has several disadvantages. For example, if we have a look at the GAMA example on Appendix B, we can see that the 'holding' accounts

are huge because of the accumulation process. This is because of the chosen method, as all the expenses are accumulated in the asset account and all the progress payments received are accumulated in the liability account. This problem can be handled if both accounts are treated as contra accounts. Also, the use of completed contract method does not reflect the real level of activity for the companies as does the percentage of completion method. This is the only tradeoff that is found in this study for choosing the completed contract method.

APPENDICES

Appendix A - AICPA, Accounting Research Bulletin No. 45

This bulletin is directed to the accounting problems in relation to construction type contracts in the case of commercial organizations engaged wholly or partly in the contracting business. In general the type of contract here under consideration is for construction of a specific project. While such contracts are generally carried on at the jobsite, the bulletin would also be applicable in appropriate cases to the manufacturing or building of special items on a contract basis in a contractor's own plant. The problems in accounting for construction type contracts arise particularly in connection with long term contracts as compared with those requiring relatively short periods for completion.

Considerations other than those acceptable as a basis for the recognition of income frequently enter into the determination of the timing and amounts of interim billings on construction type contracts. For this reason, income to be recognized on such contracts at various stages of performance ordinarily should not be measured by interim billings.

Generally Accepted Methods

Two accounting methods commonly followed by contractors are the percentage of completion method and the completed contract method.

Percentage of completion method

The percentage of completion method recognizes income as work on a contract progresses. The committee recommends that the recognized income be that percentage of estimated total income, either: that incurred costs to date bear to estimated total costs after giving effect to estimates of costs to complete based upon most recent information, or that may be indicated by such other measure of progress toward completion as may be appropriate, having due regard to work performed.

Costs as used here might exclude, especially during the early stages of a contract, all or a portion of the cost of such items as materials and subcontracts if it appears that such an exclusion would result in a more meaningful periodic allocation of income.

Under this method current assets may include costs and recognized income not yet billed, with respect to certain contracts; and liabilities, in most cases current liabilities, may include billings in excess of costs and recognized income with respect to other contracts.

When the current estimate of total contract costs indicates a loss, in most circumstances provision should be made for the loss on the entire contract. If there is a close relationship between profitable and unprofitable contracts, such as in the case of

contracts which are parts of the same project, the group may be treated as a unit in determining the necessity for a provision for loss.

The principal advantages of the percentage of completion method are periodic recognition of income currently, rather than irregularly as contracts are completed, and the reflection of the status of the uncompleted contracts provided through the current estimates of costs to complete or of progress toward completion.

The principal disadvantage of the percentage of completion method is that it is necessarily dependent upon estimates of ultimate costs and consequently of currently accruing income, which are subject to the uncertainties frequently inherent in long term contracts.

Completed contract method

The completed contract method recognizes income only when the contract is completed, or substantially so. Accordingly, costs of contracts in process and current billings are accumulated but there are no interim charges or credits to income other than provisions for losses. A contract may be regarded as substantially completed if remaining costs are not significant.

When the completed contract method is used, it may be appropriate to allocate general and administrative expenses to contract costs rather than to periodic income.

This may result in a better matching of costs and revenues than would result from treating such expenses as periodic costs, particularly in years when no contracts were completed. It is not so important, however, when the contractor is engaged in numerous projects, and in such circumstances it may be preferable to charge those expenses as incurred to periodic income. In any case there should be no excessive deferring of overhead costs, such as might occur if total overhead were assigned to abnormally few or abnormally small contracts in progress.

Although the completed contract method does not permit the recording of any income prior to completion, provision should be made for expected losses in accordance with the well established practice of making provision for foreseeable losses. If there is a close relationship between profitable and unprofitable contracts, such as in the case of contracts which are parts of the same project, the group may be treated as a unit in determining the necessity for a provision for losses.

When the completed contract method is used, an excess of accumulated costs over related billings should be shown in the balance sheet as a current asset, and an excess of accumulated billings over related costs should be shown among the liabilities, in most cases as a current liability. If costs exceed billings on some contracts, and billings exceed costs on others, the contracts should ordinarily be segregated so that the figures on the asset side include only those contracts on which costs exceed billings, and those on the liability side include only those on which billings exceed costs.

It is suggested that the asset item be described as, "Costs of uncompleted contracts in excess of related billings," rather than as "Inventory or Work in process, and that the item on the liability side be described as "Billings on uncompleted contracts in excess of related costs."

The principal advantage of the completed contract method is that it is based on results as finally determined, rather than on estimates for unperformed work which may involve unforeseen costs and possible losses.

The principal disadvantage of the completed contract method is that it does not reflect current performance when the period of any contract extends into more than one accounting period and under such circumstances it may result in irregular recognition of income.

Selection of method

The committee believes that in general when estimates of cost to complete and extent of progress toward completion of long term contracts are reasonably dependable, the percentage of completion method is preferable. When lack of dependable estimates or inherent hazards cause forecasts to be doubtful, the completed contract method is preferable. Disclosure of the method followed should be made.

Commitments

In special cases disclosures of extraordinary commitments may be required, but generally commitments to complete contracts in process are in the ordinary course of a contractor's business and are not required to be disclosed in a statement of financial position. They partake of the nature of a contractor's business and generally do not represent a prospective drain on his cash resources since they will be financed by current billings.

Appendix B - Financial Statements of GAMA³⁰

Balance Sheet 31 December 1994

	1993	1994
	US\$ (in thousands)	US\$ (in thousands)
ASSETS		
CURRENT ASSETS	94 326	106 208
Cash Note 2	27 430	31 924
Accounts Receivable	37 368	36 822
Notes Receivable	25 466	0
Securities Note 3	0	9 997
Investments Note 4	4 062	27 465
EXPENSES FOR CONTRACTS IN PROGRESS Note 5	151 500	308 322
FIXED ASSETS	26 686	28 553
Land and Buildings Note 6	11 755	6 057
Machinery, Equipment, and Tools	24 728	35 939
LESS: Accumulated Depreciation	9 797	13 443
OTHER ASSETS Note 7	14 465	14 499
TOTAL ASSETS	286 977	457 582
LIABILITIES AND EQUITY	US\$ (in thousands)	US\$ (in thousands)
CURRENT LIABILITIES	16 200	18 427
Accounts Payable	13 421	14 959
Taxes Payable	2 719	2 310
Other Current Liabilities Note 8	60	1 158
LONG TERM LIABILITIES	71 012	27 264
Loan (Foreign) Note 9	3 235	4 004
Contract Advance Payments Note 10	66 463	22 867
Bank Loans Note 11	1 314	393
REVENUES FROM CONTRACTS IN PROGRESS Note 12	182 717	354 601
OTHER LIABILITIES	236	35 456
EQUITY	8 952	14 955
Paid in Capital	6 225	3 877
Legal Reserves	817	572
Optional Reserves	11	7 432
Asset Revaluation Fund	1 899	3 074
PROFIT	7 860	6 879
TOTAL LIABILITIES AND EQUITY	286 977	457 582

³⁰ These financial statements are taken directly from the 1994 annual report of GAMA.

Profit and Loss Statement

	1993 US\$ (in thousands)	1994 US\$ (in thousands)
REVENUES	15 260	51 499
Contract Revenues Note 14	7 167	12 591
Dividends Due From Participations	49	205
Factory Production Revenues	299	7 634
Lease and Service Revenues	2 459	3 932
Asset Sale Revenues	961	125
Insurance Indemnities	102	198
Interest Revenue and Exchange Rate Differentials	4 223	7 762
Export Revenues	0	19 052
EXPENSES	4 796	42 968
Head Office Expenses	2 079	2 054
Expenses for Completed Contracts	1 272	15 007
Factory Manufacturing Expenses	0	5 883
Development Expenses	1 077	431
Interest Expenses	0	380
Depreciation	342	374
Expenses for Exports	0	18 429
Other Expenses	26	410
INCOME BEFORE TAXES	10 464	8 531
Taxes (-)	1 524	3 557
NET INCOME	4 974	4 982

Notes to the Financial Statements (all figures are in TL in millions)

1. SIGNIFICANT PRINCIPLES

A) GAMA Endustri Tesisleri Imalat ve Montaj AS. 1994 Balance Sheet includes the accounts of our projects in CIS countries as well as domestic projects and also Ankara and Istanbul Metro projects on a pro rata basis to our scope in those partnerships.

B) All the fixed assets have been depreciated as allowed by the Turkish tax regulations, using the straight line method.

C) Gains and losses due to the exchange rate differential have been included in the profit/loss accounts.

D) Income Tax law 193 Article 42, states that contractual construction works can only be reflected in the profit/loss accounts after the receipt of the temporary acceptance.

For this reason the positive difference between the Revenues from Contracts in Progress and the Expenses for Contracts in Progress account is not included in the profit/loss accounts.

2. The breakdown of cash account as of 31 December 1994 is as follows :

Cash	52 486
Banks	1 182 560

3. This account consists of public sector bonds.

4. The breakdown of Investments account as of 31 December 1994 is as follows :

Material stock account	28 476
Raw materials	6 211
Semi finished products	5 771
Advances made for orders	998 876
Other	22 946

5. Expenses incurred for contracts as of 31 December 1994 are as follows:

Kirazdere Dam	105 707
Cayeli Copper Surface Facilities	294 562
Nuh, II. Kiln Precalcination Unit	166 049
Denizli Cement Plant	91 806
ITU Presidency Building	8 289
Kangal Thermal Power Plant	673

CIS Contracts 9 832 924

6. Land and buildings include the Antalya Resort Hotel and Mesbas Business Center.

7. Other assets as of 31 December 1994 include the following:

Participations	154 279
Guarantees and Deposits	51 500
Pre paid Tax	150 151
VAT for assets subject to depreciation	5 956
Temporary assets	181 289
Tax Withholdings	17 741

8. Other current liabilities include guarantee retainals from subcontractors.

9. Interest free long term loan from Phelps Dodge Corporation for Cayeli Bakir Isletmeleri.

10. The breakdown of Contract Advance Payments as of 31 December 1994 is as follows:

Domestic Projects	476 015
CIS Projects	408 643

11. Long term, low interest loan given as incentive for investments and foreign exchange earning services.

12. Revenues from Contracts in Progress represents the gross progress revenues accrued in relation to ongoing contracts. The breakdown as of 31 December 1994 is as follows:

Domestic Projects	2 970 854
CIS Projects	10 747 687

13. Asset Revaluation Fund represents increased book value of the fixed assets and the value of the accumulated depreciation to compensate for the effects of inflation as allowed by the law.

14. Revenues from contracts submitted to temporary acceptances, both in Turkey and in Russia.

15. The exchange rates used are as follows:

	1994	1993
As of 31 December 1\$	38 687.00	14 458.03
As of 30 June 1\$	31 163.55	10 860.24

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