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Financial Services in the Capital Goods Sector: Analyzing Financing Solutions for Equipment Acquisition

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Abstract

This paper contributes to a better understanding of financing solutions for equipment acquisition in the capital goods sector, which entails the subsectors of construction and material handling, over the equipment life cycle. We examine the users of the equipment, financing intermediaries, and creators of the equipment, and take a closer look at the drivers, benefits, risks, financiers' due diligence, and terms and conditions of the principal financing solutions and evaluate their significance. We demonstrate that the equipment's characteristics and the vendor have a substantial impact on the selected solution and showcase a trend in the capital goods market away from physical towards digital and use modality 'as a Service' business models. Our research findings result from content analysis of annual reports, financial statements, press releases, and scientific publications of selected European corporations and lenders. They should enhance the awareness of corporations in the capital goods sector seeking the best financing approach for their equipment.

Keywords: Financing solutions, Equipment acquisition, Capital goods sector, Construction, Material handling, Equipment life cycle, Financing intermediaries, Equipment users, Equipment creators, Drivers of financing, Benefits of financing, Risks of financing, Due diligence, Financing terms and conditions, Equipment characteristics, Vendor impact, Capital goods market trends, Digital business models, 'As a Service' business models, European corporations and lenders.

Introduction

For a country to achieve prosperity and robust economic expansion, the growth and development of its capital goods sector are crucial. The capital goods sector has a multitude of uses that range from the production of physical assets to infrastructure expansion and technological upgrades. Real growth, development, and progress are attainable through high-quality capital goods that are employed in an operationally optimal manner. Since the amount spent is substantial and the goods involved are vital from a long-term productivity and operational perspective, how they are financed is significant for the stakeholders involved. The concept of optimal resource allocation, which is reiterated in economic theory, is not merely a necessity; it must be realized substantially to obtain the desired or expected long-term gains. In a competitive and efficient world, each resource must be used to create maximum businesses, returns, and growth in stakeholder value. The resources must be retained or utilized prudently.

Traditional bank lending typically covers working capital requirements for organizations against a company's receivables or various other assets and, from a relative share standpoint, is the dominant source of funding for companies. It has also been the preferred funding mechanism for the capital goods sector. It is believed that the clientele for medium and large capital goods producers is diversified with excellent quality. However, since capital goods can be assets with elongated lives, traditional bank lending products do not provide a satisfactory response to companies. The revisiting of asset-liability mismatches and leverage, which still affect a substantial proportion of the banking sector, has not been a favorable signal for companies seeking such financing solutions. This is a latent market that can conclusively be catered to with specialized structures that create a win-win scenario from a

creditor and debtor perspective. Therefore, it is believed that viable borrowing models and structures are the key determinants of future growth.

1.1. Background and Significance

Corporate investment is critical to boosting the productivity and innovation of existing businesses. Investment in technology, new machinery, and physical capital allows workers to produce more output with their existing labor and increases the effectiveness of new workers who join the workforce. Investment also makes use of the latest technologies in business and manufacturing operations. This allows enterprises to remain competitive and provide better wages for their employees. While government investment in scientific research and development is essential for continued improvement in the growth of science-based technologies, research alone is not enough to translate these technologies into improved business performance. Companies need to be able to invest in these technologies. This requires both financial capital and equity investment in the development of relevant skills and infrastructure. The adequate availability of financing options provided for the acquisition of new capital goods is therefore critically important.

Underinvestment due to financing constraints can potentially help explain why investment rates have been relatively low in many developed economies. A large body of evidence demonstrates that financing constraints can limit the investment opportunities of businesses, particularly small and medium-sized enterprises, which lack access to public capital markets. The persistence of these financing constraints has been the subject of much concern for policy making. Government programs often aim to improve the transparency of the loan evaluation system on the one hand, as well as the marketability of business loans. Finance research on large companies has focused on the types of financing products more commonly associated with small businesses: working capital financing and lines of credit. The general unavailability of asset-based financing solutions and project financing is worrying where purchasing a specific set of equipment is the core of the financing requirement.

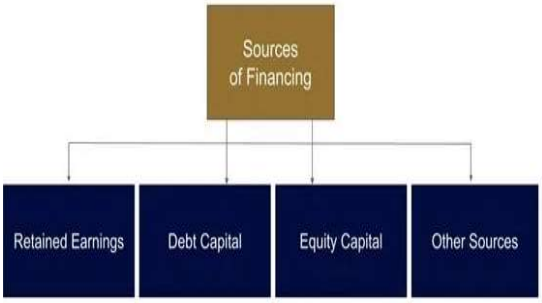

Fig 1 : Sources of Financing

1.2. Research Objectives

What are the corporate strategies related to external financing choices for capital equipment investment? Specifically, what are the characteristics of such financing solutions likely to sustain efficient allocations given the investment's nature, the production cycle, and its associated risks? What is the actual incentive behind providing long-term resources to capital goods transactions? More precisely, are the benefits of capital-goods-specific financing consistent with traditional soft-budget constraints that analyze lenders' incentives behind negotiating soft-term debts for firms in financial stress? What are the systemic consequences and their institutional implications linked with providing specific credit for capital equipment transactions?

These are the main questions that we address and around which we articulate this study. In most democratized market economies and the larger industrial conglomerates, today's corporate business strategies related to equipment financing are deeply related to restructuring policies, spin-offs, downsizing, and increasing reliance on independent business units. We offer significant empirical analysis of the role of such capital-good-specific financial relations. Observing changes in the way such financial contracts are set, in the contract term, and the loan's characteristics over different business cycles and across a collection of lenders. We illustrate it using a thorough financing data set.

Equation 1 : Cost of Financing (Interest Rate Model)

The total cost of financing equipment is often assessed using the interest rate and the terms of the financing. The basic formula for the total cost of a loan (e.g., through leasing or debt financing) can be calculated using:

$$C_{\text{loan}} = P \times (1 + r \times t)$$

Where:

C_{loan} = Total cost of the loan (including interest)

P = Principal amount (the price of the equipment)

r = Interest rate per period

t = Number of periods (e.g., years or months)

2. Overview of the Capital Goods Sector

A distinguishing feature of capital goods markets is that the products sold go beyond manufacturers' design and production skills to encompass usage know-how that is often provided by manufacturers themselves. Successful execution of the transaction is thus dependent on manufacturers' engineering capabilities as well as their technical and commercial reputation. The term 'capital goods' encompasses a broad and diverse family of products, including such items as machine tools, turbines, airplanes, telecommunication networks, cranes, ships, satellites, construction equipment, power plants, and medical equipment. These goods differentiate themselves from consumption equipment in three main ways. First, capital goods trades are characterized by a direct link between cost and revenue streams. In other words, the size and speed of the payment streams are generally such that cash flow constraints, which may affect trading patterns, are particularly important.

Second, a significant, possibly decisive, part of the quality of the commercial services related to capital goods is defined within the manufacturer's technical and commercial offer. The seller's product delivery and performance commitment, maintenance, hardware and software upgrades, and technical assistance are central components of the 'capital goods experience' and are integral to the seller's reputation and interface with the market. Consequently, the direct and financial implications of each sale are significant and can have material follow-up consequences for the seller. Finally, capital goods markets are characterized by highly concentrated supply structures featuring a limited number of manufacturers possessing dedicated production and innovation capabilities. In addition, capital goods products are often subject to frequent product improvement and increased customization requirements from final users.

This typically leads to significant price and quality differentiation. Indeed, this predisposes such markets to crises involving changes in scale or type of material capacities through lengthy timescales and significant mobility constraints. In contrast to consumption equipment markets whose cycles are generated by household preferences rather than industrial execution capabilities, capital goods demand is highly volatile and fluctuates according to the broader macroeconomic and business investment cycles. These three features have significant implications for the way financing can develop. The idiosyncrasies of capital goods markets mean that the traditional financial services offer, which concerns the part of the economy, in terms of both supply and use, exhibiting a greater degree of homogeneity, is not easily adaptable to the problems arising from the sale of large items such as those

produced by the capital goods sector.

Fig 2 : Capital Goods Sector

2.1. Definition and Scope

What are capital goods? The truck that delivers your groceries, the elevator in your house, the airplane that takes you home for Christmas, the street cleaner you complain about, and the machine that is making your car are all examples of a diverse and essential group of products known as capital goods. I aim to take a closer look at the financial aspect of this "quiet" sector of the economy. A building cannot exist if no legal entity owns it. This entity may be a natural person or a corporation. In all cases, however, it needs to have assets. This is certainly true for a corporation, whose creditors expect these assets to cover their claims if the company becomes insolvent.

In their balance sheets, an important group of assets is referred to as capital goods. These goods are used by the enterprise in the running of its business. Trucks, trains, airplanes, ships, drilling platforms, generating plants, office buildings, warehouses, commercial ships and tankers, industrial machinery and tools, gas, and electric utilities – last but not least, computers and office equipment – all fall into the capital goods category. In economists' jargon, these goods are called production equipment or investment goods; the underlying idea is simple. Their role is very similar to that of the machines in an automobile plant (or, for that matter, of the warehouse in which the spare parts are stored).

2.2. Importance in the Economy

With the usual macro transmission mechanism from the supply of credit to economic growth, its main source, banks, can affect not only the overall economic growth but also the nature of this growth. They can play an important role in transforming savings into the real capital required for the process of economic growth. In the present stage of the development economic process, with international payment imbalances and prospects of relative prosperity in stability appearing as timid signs, capital inflows fit somewhere in this growth process. Capabilities to appropriately respond to both economic objectives, in particular, to promptly counteract incipient capital goods bottlenecks and to avoid doubtful capital inflows, are to be urgently developed. At this stage, our aim is limited to noting the relative importance for the Portuguese economy of capital goods as material assets that directly contribute to the supply of goods and services and the respective financial services as services that directly contribute to their acquisition.

3. Types of Equipment in the Capital Goods Sector

In the treatment of certain topics, a measure of generalization is required. Precise lines of demarcation are difficult to come by. This is true in the case of what exactly constitutes capital goods and equipment. In the strictest sense, the term applies only to those manufactured items included in the asset accounts and used during production processes. While this point would typically encompass the bases for classification as capital equipment, the classification is sometimes broadened to include products that meet a different criterion.

Definitional looseness - as long as it is recognized - is a necessity in the classifications presented in this section, especially in treating those other than specialist capital goods. By this term, we mean unique pieces of equipment that are custom-built to client specifications. Depreciation periods are generally long enough - often equivalent to the lives of these special-purpose tools - to qualify for special or unique financing arrangements. Uniformity at any given time is usually lacking. Examples of these assets include chemical or oil refineries, smelters, and aircraft.

3.1. Heavy Machinery

Capital goods in general correspond to all those goods used in the production process, supplying companies that produce consumer goods. Heavy machinery, implements, and equipment are included in the definition of capital goods. They are specific-use goods for the productive process and are related to fixed assets. This is a segment with considerable seasonality depending on rural harvests and other industrial sectors. The Christmas bonus and the 13th salary also influence the demand for the purchase of this type of machinery.

The most common operations are loans for the purchase of agricultural equipment and machines, subject to a warranty of the asset. The operations are made in the medium term with a guarantee of the equipment acquired, with money released at once by the financial institution. Heavy machinery is usually sold through loan facilitation contracts. The private individual or legal entity contracts a paid loan for the purchase of the asset from the financial institution, which releases the value of the property to the selling company in a 30-, 60-, or 90-day term, granting credit protection and guarantee in exchange. The company receives from the financial institution the amount of the property being sold.

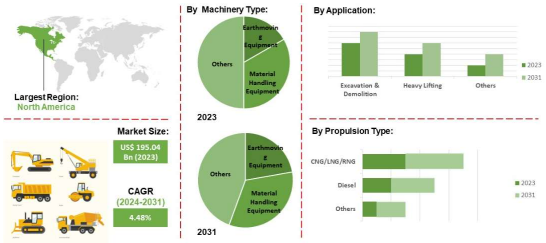

Fig 3 : Heavy Construction Equipment Market Size

3.2. Manufacturing Equipment

This subcategory includes all assets employed to produce manufactured goods and is generally known as machinery and equipment. Hence, its function is to enable the production transformation process by providing a means for workers to create value using materials, energy, and information. This definition goes far beyond traditional machinery and equipment. Among the most important groups of manufacturing machinery and equipment are electronic and printed circuit fabricating machinery; metalworking machinery; special industry machinery such as food production, stone, clay, and glass processing; textile machinery; and a variety of other special industry machines. Except for metalworking machinery, electronic and printed circuit fabricating machinery are the two largest subcategories. Metalworking machinery includes all-purpose, cutting, and metal-forming machines such as lathes or presses. Because technology is constantly evolving, it is also hard to keep up with the machinery and technologies required for manufacturing excellence. In this scenario, equipment suppliers are becoming an asset in providing and integrating technologies and solutions into the equipment. Moreover, as the world turns to smart manufacturing, another equipment attribute stands out and allows the asset itself to become an integral part of the information-based solutions offered to manufacturers.

Equation 2 : Monthly Payment (Loan Amortization)

For debt financing, a monthly payment can be calculated using the formula for an amortizing loan:

$$PMT = P \times \frac{r(1+r)^n}{(1+r)^n - 1}$$

Where:

PMT = Monthly payment

P = Principal amount

r = Periodic interest rate (annual rate divided by the number of periods per year)

n = Total number of periods (e.g., months)

4. Importance of Financing in the Capital Goods Sector

Reliable access to financing is vital for economic growth, as it is well-known that investments require long-term financing. Most firms rely on internal financing for investment, and external financing sources can be very volatile. At the same time, external financing is particularly crucial for firms whose ability to generate cash flows is more limited, as is the case with long-term projects, and all the more so when a durable good embedded in these projects can serve as collateral. Furthermore, prolonged market finance failure can significantly reduce the speed at which economies recover from a crisis, increase unemployment, and undermine human capital, which would weaken future growth.

Financing constraints mainly affect the dynamic and productive structure of an economy. First, they can reduce current investment and thus future growth either by limiting the installed capacity or the improvements in productivity resulting from innovation. Also, the perception that the lack of finance could hinder future projects makes investors more cautious and therefore reduces their willingness to invest. Second, financing constraints could alter the composition of investments, as companies might allocate too much investment capital to secure short-term profits, e.g., build small, low-return factories for the production of consumer goods or basic infrastructure, at the expense of more innovative and efficient projects.

4.1. Challenges in Equipment Acquisition

The equipment acquisition decision is an integral part of any business strategy. Also, investment in capital goods is essential for the modernization, expansion, and stabilization of the activities of any complex economy. However, the acquisition of equipment, particularly that of advanced technology, has become increasingly complex. The combination of a greater selection of these goods, many of them incorporating advanced technology with quick obsolescence, very substantial costs for the improvements it involves, and a credit cost that increased significantly as a result of the fiscal and monetary policies implemented in the countries require companies that manufacture these goods, especially those manufacturers of electronic products, to be increasingly more efficient. The credit currently used, usually that cost at the in-plant rate, is rigid and limits the companies' initiatives in adapting their production facilities through combinations of increasingly efficient labor, machinery, and equipment. The decision-making process, that is, whether to buy, rent, import, or finance with local or external resources, has a great degree of complexity since it must face a very substantial capacity to produce with investments in the industrialized countries. To date, credit operations have been timidly monitored if one thinks

about how important new investments are, and the decisions involving the various alternatives are taken up with little support from market consultants because the financial sector generally does not specialize in the financing of productive projects.

5. Analysis of Financing Solutions

In the following section, the detailed analysis framework will be applied. After assessing the customer's position, we will examine the several financing solutions available in the financial markets and the advantages and limitations of such solutions. In each case, we will judge whether and how customer risk parameters impact the credit content and pricing of each financial product.

5.1 Assessment of the Customer's Position Before trying to analyze and compare the different financing solutions offered on the financial markets and the aspects of the customer's position, it is necessary to assess the customer's position before any financing solutions are considered. In particular, these key points should be taken into account: • Place of the company in its business sector. • Objectives pursued by the company. • Existing financial structure. • Size of the asset to be financed and the variable repayment period. • Regulatory constraints. • Accounting and fiscal implications. It is only after having completed this work and this analysis that the company in question will be able to consider the different available financing solutions.

5.1. Traditional Bank Loans

Three basic loan types, in terms of the length of the amortization, are particularly useful for financing the acquisition of capital goods, namely, discount and interest-in-advance loans, balloon loans, and the standard installment loan. It is common for the term of a discount or interest-in-advance loan to be less than the expected useful life of a piece of equipment. The borrower receives less than the amount financed, and the finance charge is obtained indirectly at the time the loan is closed. By postdating each payment, most of the finance charge is recovered during the period of the loan, and the lenders' yield or APR is increased.

In many business loans, the amount of the loan repayment is relatively large about the previous period's ending balance. An installment loan that provides for a relatively large portion of the indebtedness to be paid off at the end of the loan's term is called a balloon loan. The final payment is most often equal to the residual value of the property securing the loan. Business lenders may be willing to make a loan with a repayment structure that lacks periodic payments that equal the true time value of the net change in the loan balance since the property used to secure the loan is subject to considerable output risk and the portion of the collateral's value that is contingent on the income that can be generated from the staffing of the capital good is unlikely to be recovered. Balloon loans are particularly useful for new or small firms that expect to grow rapidly in the future, in the manufacturing or telecommunications industries for mature firms that finance acquisitions using property as a reverse-engineered loan, and construction and equipment loans to highly leveraged firms.

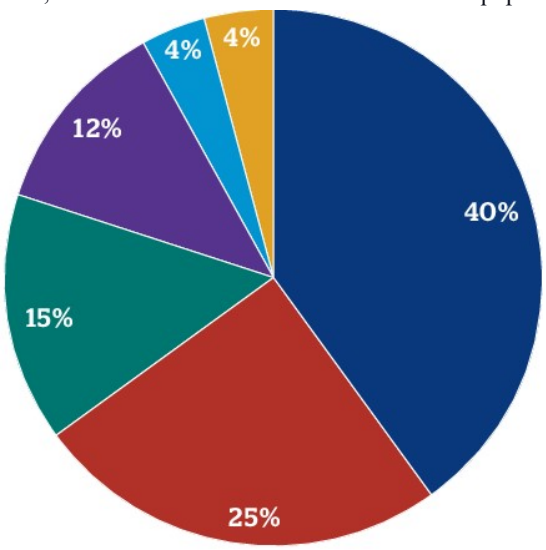

Fig 4 : Financial Services Sectors Represented in the Survey Sample

5.2. Leasing and Hire Purchase

Leasing is a popular way to finance business low-value added equipment. This is particularly the case for vehicles,

machines, office equipment, and IT equipment, including software. Indeed, the product offered by manufacturers or equipment vendors often includes leasing as an additional service. Specific leasing companies or bank entities are specialized in providing leasing financing to companies. They purchase the equipment and let the user rent it for a duration generally matching the equipment's gap in its depreciation. Once the lease is over, the user may acquire the asset by paying a small residual value compared to the total initial purchase price. This distinguishes the financial leasing practice in some countries from others. The latter is comparable to full payout leasing. It implies that the total rental payments would cover almost the full capital value of the asset and service costs. In our context, financial leasing is more commonly used instead of direct bank borrowing for acquiring equipment, namely when a bullet repayment is required. Overall, manufacturers and equipment vendors sometimes present leasing opportunities as rent while you have the option to buy.

Hire purchase works along the same principles, except that the user intends to acquire the asset. Hire purchase requires the contract to be signed between the vendor of the asset and the final user. The bank pays the purchase price of the equipment to the vendor and leases the asset to the company, which pays the price in the form of lease payments, including principal and interest. The difference is that with a hire purchase, at the end of the contract, the asset becomes the user's property against payment of a token purchase option. If the company does not exercise its purchase option, the equipment returns to the vendor. That is why hire purchase financing is used to help companies, particularly SMEs and self-employed entrepreneurs, acquire equipment without mobilizing their financial resources or doing without.

5.3. Vendor Financing

In vendor financing, the company selling the goods (vendor) also provides financing. The extended services provided by the vendor can be in the form of warranties, maintenance, installation, and at times even training. These financing arrangements can also be made for customized systems and services that are developed by the firm to meet the unique needs of the customer. Funds for vendor financing come from the vendor either through its finance arm or through an alliance with a third-party lender. Vendor financing associated with equipment leasing agreements often has elements attached to it, such as the equipment purchase cannot go to any other vendor. The same vendor often sells more sophisticated types of equipment on credit after the buyer has successfully used an earlier version. Although restrictions on capital intensiveness and an increase of credit risk limit competition in this industry, the industry of vendor finance is suppressed with poor use of capital.

Multi-sector rationalization of business activities and competition for customers is, however, attracting other types of institutions that have begun to commit funds to vendor finance programs using strategic marketing alliances. Vendors must contract with two major types of finance providers. One is to provide the funds necessary to finance the equipment through its life cycle. Another is to finance the customers to buy and lease the goods. Some vendors are also beginning to function as a principal with the customer company's leasing of its products by using third-party funds that they can draw on to selectively relieve residual investment risk when it arises. Third-party firms purchase equipment directly from the vendor and lease it to the customer, with the vendor guaranteeing the quality of the credit and promising to reduce some or all of the residual risk to the investor. The vendor is then not required to extend a new line of credit even though it provides the lease to one of its customers. Financial institutions have been slow to respond to vendor finance activity, but they are beginning to recognize the opportunity to expand their presence in both the direct and the vendor finance markets. Small to medium-sized companies just looking for asset-based finance can also expand their means of financing through an increase in vendor lending.

Equation 3 : Net Present Value (NPV) of Financing Options

When considering different financing options (e.g., leasing vs. buying), it's useful to calculate the Net Present Value (NPV) of future cash flows. The NPV can be used to compare the cost-effectiveness of each option:

$$NPV = \sum_{t=1}^{T} \frac{CF_t}{(1+i)^t} - I_0$$

Where:

CF_t = Cash flow at time t

i = Discount rate (or cost of capital)

T = Total number of periods

I_0 = Initial investment (the cost of the equipment)

This equation helps determine the present value of future payments or expenses associated with financing.

6. Conclusion

After analyzing multiple financing solutions for equipment acquisition in the capital goods sector, it is clear that there are many options to choose from. Finance companies have historically been involved in the leasing industry when it comes to equipment acquisition in the form of financial leases. Now, they can also be involved in operating leases, financial leases, equipment rental, and conditional sales. Those institutions are also used by suppliers who would like to speed up their cash collection and avoid credit risk. However, financial institutions can seem unfavorably small compared to banks. By granting asset-based loans, banks can be a partner for finance companies. Some banks also offer to rent or lease equipment that was financed by other types of financing just to keep their clients and avoid losing the money they lent to the company. Consequently, it is now clear that different solutions are suitable for different players in the economy. Whom, each banking institution can seem important or not, according to the type of financing they offer or to the procedures they apply. As such, it is essential to have as much technical information related to each financing and to compare as many terms and conditions as possible before choosing a solution. This is even more critical in periods of economic uncertainty, and given the magnitude of the amounts involved in equipment acquisition, it is important not to commit any error. To avoid this, major international banks also have the know-how and expertise to structure complex transactions that involve different types of financing, with the help of the investment banking division.

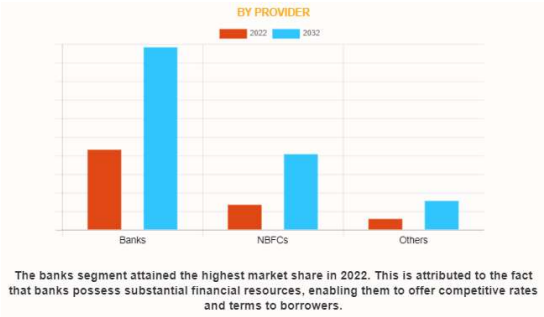

Fig 5 : Equipment Finance Services Market

6.1. Future Trends

As we discussed, the capital goods sector has undergone several recent transformations in the provision of services. Power generation, transportation, and heavy industries are examples of sectors that have changed by providing alternative services. These solutions have led to new challenges for those who provide credit and present opportunities for these participants to develop their businesses. Innovations in infrastructure will arise initially from the desire to increase the availability and reliability of networks, seeking energy efficiency gains from intelligent level management and monitoring in real-time, as well as contemplating the entry of electric vehicles, with long-term perspectives.

In energy, raising current energy efficiency levels is a clear trend, which also comes through the development of smart grid mechanisms. The theme of using more efficient forms of energy consumption is increasingly present in new buildings and existing buildings for offices, shopping centers, and others, in the choice of lighting facilities and air conditioning, although at the residential level, there is still much to be done.

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