International Journal of Pioneering Technology and Engineering

Research Article

Sustainable Financing of Urban Transformation Projects in Environments with High Market Uncertainty: The Case of Türkiye

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Article Info

Article history
Received: 08.09.2022
Revised: 23.09.2022
Accepted: 27.09.2022

Keywords:
Financial Distress,
Project Finance,
Urban Transformation,
Sustainability,
Commercial Risk.

ABSTRACT

In the last decade, urban transformation (UT) activities have slowed down considerably in Türkiye due to the financial problems of construction companies originating from the market uncertainties. When large projects in Türkiye are examined closely, it is seen that the financing methods used have also an impact on the failure to ensure financial sustainability and the inability to resist environmental conditions. In this study, financing methods that are currently used, and have the potential to be used are examined and classified in terms of inclusion, and environmental sensitivity. Financing methods are classified according to their dominant characteristics, each class is examined, and compared in terms of its potential about financial sustainability under high uncertainties. Suggestions have also been developed to speed up the UT in the countries having high market uncertainty like Türkiye.

1. Introduction

Urban transformation (UT) is the activities of changing, and transforming the old urban texture for different purposes such as providing better working, accommodation, and resting conditions, by considering the socioeconomic conditions of the day[1]. UT is generally carried out for the reasons of renovating unhealthy buildings, restoring functions of leaving spaces, transforming structures that may be affected by disasters, renewing urban infrastructures, and transforming urban functions [1].

UT first emerged after the industrial revolution as interventions for demolishing, and rebuilding structures to find solutions to social and economic problems such as housing supply problem, insufficient infrastructure, unhealthy environment [2]. Although it is started with the aim of creating beautiful and modern cities, it has become a part of social policies in the post-war period [1]. Efforts for physically repairing damaged houses and cleaning up poor neighboring areas followed each other in later times [2]. Depending on the conditions of the period and the rapid population growth in the cities, it gained different functions in terms of population planning, and culture and it began to be considered in terms of more effective use of urban lands.

In Türkiye, UT operations started in the last period of the Ottoman Empire for the arrangement of fire areas in İstanbul and were expanded to make narrow, and winding streets suitable for modern transportation vehicles. After the war, the creation of new neighborhoods for the shelter of the population who migrated from the lost lands followed these projects, and legal arrangements were made for the control of urban interventions [2]. In the first periods of the Republic and afterwards, the focus was on restructuring, and rehabilitating illegal residential areas in big cities such as Ankara, İstanbul, and İzmir. In recent years, conservation, renewal, rehabilitative and exclusivity approaches have been used together [2]. Recent projects can be classified according to their characteristics as follows: (i) Transformation of slums, (ii) gentrification, (iii) transformation into a central province area, (iv) enhancing the region's reputation, (v) transformation for tourism purposes, (vi) protection of conservation areas, (vii) providing housing for the low-income, (viii) UT due to natural disasters [3]. Still, the main focus in UT projects (UTPs) is housing security. As a matter of fact, the aftermath of the Gölcük, Düzce, and Van earthquakes led to the need for legal regulation regarding transformation. In 2012, the "Law on Transformation of Areas Under Disaster Risk", which aims at the transformation of places under disaster risk, was enacted, and disaster risk areas began to be considered within the scope of "priority areas"[2]. However, before this law, nearly 20 laws such as zoning law, property law, municipality law, shanty law were made to establish the legal basis for UTPs, most of them in 2004 and later[4].

UTPs have been implemented in Türkiye as purely public activities for many years. Considering the conditions of the period over time, they have become projects based on public-private cooperation, organized with the participation of local authorities, construction companies, and financial institutions [1]. Although the arrangements made and new project structuring accelerated the transformation projects, criticisms about the financial aspects of the projects started to emerge. In particular, there are criticisms that UTPs are turned into a privileged and highly profitable source

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https://doi.org/10.56158/jpte.2022.32.1.02

of income for the contractor companies, that the regulations to reduce the financial burden of the citizens who are the subject of transformation are insufficient and that the public interest is not adequately observed [2-5]. On the other hand, bankruptcy, and suspension of bankruptcy of contractor companies have started to occur frequently in UTPs since 2017 due to the uncertainties in the markets, exchange rate changes, and raw material price increases, despite the "rental support" payments and the facilities provided to the contractor companies by state. The state provided additional support to the projects through its different institutions to reduce the grievances, but it was not enough to complete the projects [6]. The profitability of banks that financed these projects increased by 25-30% in the same period compared to the previous year [7-8]. The totals assets of the banks were also increased by 15-20% in the same period as seen in Table 1 [9]. The findings show that the failure of UTPs is due to the inability to achieve financial sustainability, and the financial distress of contractor companies.

Table 1. Total asset size of banks in Türkiye

		Total Assets		Total Deposit		Total Equity	
		Amout (Billion TL)	Increase Compared to Previous Year	Amout (Billion TL)	Increase Compared to Previous Year	Amout (Billion TL)	Increase Compared to Previous Year
All Banks	2015	2.236,0	18,4%	1.250,7	18,3%	251,6	13,2%
	2016	2.595,3	16,1%	1.462,8	17,0%	288,8	14,8%
	2017	3.095,0	19,3%	1.713,2	17,1%	345,0	19,5%
	2018	3.656,4	18,1%	2.036,7	18,9%	405,3	17,5%
Top 3 Banks	2015	832,9	18,3%	481,2	18,2%	94,6	12,8%
	2016	953,5	14,5%	561,6	16,7%	109,9	16,2%
	2017	1.121,9	17,7%	651,3	16,0%	131,4	19,6%
	2018	1.332,0	18,7%	825,2	26,7%	136,1	3,6%

In this study, alternative financing methods of UTPs were examined and compared in terms of financial sustainability. In cases where market uncertainties are high, financing methods that will enable a more sustainable financial relationship to be established have been tried to be determined. The following part of the study is structured as follows: In Section 2, the concepts of financial sustainability, and financial distress, and in Section 3, the financing methods of UTPs are examined. In Section 4, the analysis and comparison of financing methods in terms of sustainability is made. In Section 5, the findings of the study are summarized and suggestions for future work are presented.

2. Financial Sustainability

Sustainability is defined as the ability to be permanent. Although sustainability is mainly discussed around non-financial indicators in terms of businesses, the sustainability of other elements is also possible by ensuring financial sustainability [10]. Financial sustainability means continuity of cash flow and being financially healthy [10]. In other words, the uninterrupted continuation of the company's activities is possible by making payments that may occur at uncertain times [10]. In the literature, the state of being financially unhealthy is called "financial distress" and can be defined as the inability of operating cash flows to meet the firm's obligations and having to take some corrective measures [11]. The cash flow cycle in businesses can be schematized as in Figure 1.

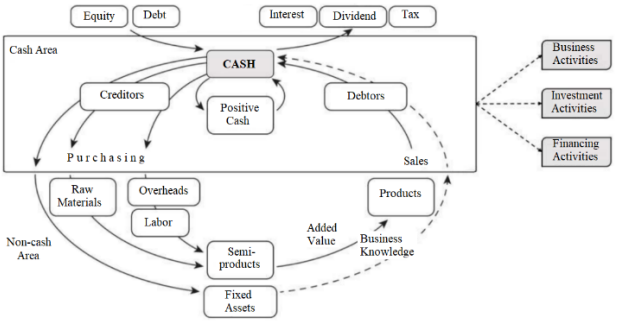

Figure 1: Business cash flow cycle [10]

Financial distress may result from faulty business operations, financial management approach or market conditions. Firms may face financial distress if they cannot generate enough cash even if they have high profits, or if they cannot provide sufficient cash inflows despite using cash continuously [10]. In cases where financial distress cannot be resolved, situations such as bankruptcy, liquidation, and concordat may occur. The process leading to bankruptcy begins with delay. At this stage, there is a decrease in the returns on the assets. In the following period, cash and financial difficulties begin to be experienced. While the firm cannot obtain the necessary cash to fulfill its obligations, and activities during the cash shortage stage, it becomes unable to fulfill its non-cash obligations during the financial distress stage. If the problems cannot be resolved at this stage, bankruptcy will be encountered [10]. These stages are shown in Figure 2.

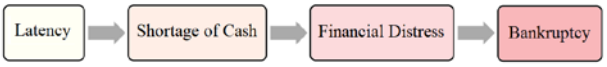

Figure 2: Stages of the bankruptcy process [10]

Although companies experiencing financial difficulties do not always go bankrupt, approaches such as solving the problem by borrowing can cause significant increases in execution and capital costs. At the same time, loss of customers and sales, layoffs, cutbacks, and savings in some business activities may also make the company very sensitive to environmental impacts. Indirect costs can usually amount to 10-25% of the firm's value [11]. On the other hand, bad financial decisions of big actors in the markets may cause the bankruptcy of companies that have become environmentally sensitive, as well as cause crises in the market. As a matter of fact, the financial distress experienced by a small number of companies and the bad financial decisions they took in the US mortgage crisis had a huge negative impact on the global markets [11]. For these reasons, financial sustainability is very important for the sustainability of companies, projects and even markets, and measures should be taken to avoid financial difficulties.

Firms follow different ways to get rid of financial distress. Common first-line solutions are market-oriented solutions such as voluntary exit from the market, involuntary exit from the market, and restructuring. While transactions such as asset sale, merger with another firm, cuts in capital, and R&D expenditures are classified as "asset restructuring", new share offering, new capital supply from outside sources, debt restructuring, debt-share swap (debtor's ownership financing), and bankruptcy. Transactions such as filing a lawsuit can be classified as "financial restructuring" [11].

Effective cash flow management, which will be achieved with a good understanding of the cash flow cycle, is one of the important elements for the sustainability of businesses [10]. For effective cash flow management, in addition to a good understanding of the cash flow cycle, it is important to classify business activities and monitor the cash flow trend of the business. Thus, it will be easier to create a future projection and understand where this trend is taking the business. Business activities can be basically divided into three classes: (i) operating activities, (ii)

investment activities, (iii) financing activities [10]. Cash shortage or excess cash occurs when cash from these activities is collected. The ideal scenario is to carry out business planning that will not fall into situations of cash shortage or excess cash, but cash shortage is more of a concern in terms of impact than a surplus cash situation. Because the uninterrupted continuation of business activities is ensured by making payments that occur at different times. Excess cash may not always be interpreted as bad. For example, a surplus cash budget can create a margin of safety for unforeseen costs or emergencies or take advantage of unexpected opportunities.

The relationship between the cash flow structure and the probability of financial distress is presented in Table 2. In the light of the information in the table, financial distress is not expected in companies whose operating activities provide positive cash flow. As an exception to this, it can be interpreted that the companies that generate positive cash flow from the sale of fixed assets and investment activities, although their operating activities provide positive cash flow, may not have enough positive cash flows from their operating activities and they are likely to experience financial distress. The sale of fixed assets can be made for purposes such as paying off debt or increasing productivity [10].

Table 2. Cash flow operating direction and financial distress expectation [10]

Cash Flow Activity Direction				
Business Activity	Investment Activity	Financing Activity	Business Lifecycle Phase	Signs of Financial Distress
+	+	+	Rare condition	Financial distress is not expected.
+	-	-	Successful business	Financial distress is not expected.
+	+	-	Declining or restructuring business	Predominantly financial distress is expected.
+	-	+	Growing business	Financial distress is not expected.
-	+	+	Downsizing business	Predominantly financial distress is expected.
-	-	+	Young business	Predominantly financial distress is expected.
-	+	-	Business going to liquidation	Predominantly financial distress is expected.
-	-	-	Rare condition	Financial distress is expected.

In the literature, classification models related to financial distress are generally carried out at the firm level and discussed in the context of the sustainability of firm activities. From the system point of view, similar inferences can be made between sustainability, financial distress and cash flow operating direction in larger structures or large projects with more than one stakeholder (public, firm, etc.). In addition to evaluating the assets, expenditures, financing opportunities, and financial structures of each stakeholder, the same evaluation should be made for the overall project/structuring. It should also not be ignored that the level of pressure exerted by environmental impacts on the cash flows of the stakeholders and the risks of financial distress will vary depending on the nature of the cooperation between stakeholders and the conditions of contract.

3. Financing Methods of Urban Transformation Projects

Recently, UTPs have been carried out with the involvement of the public and private sectors both in the world and in Türkiye. Construction companies mostly use financing methods such as build-sell, flat for flat and pre-sale, and the cash needed in this process primarily comes from their own resources. Institutions that realize UTP mostly prefer the methods of using equity (95%), production of housing and workplaces for financing purposes (77%) and improvement of zoning rights in the project area (77%) [12]. If the company's own resources are not sufficient and it does not have the necessary capital for the realization of these other methods, it requests loans from financial institutions, but there are collateral problems. Failure to meet the conditions required for obtaining loans, high loan interest rates and unsuitable loan repayment conditions are also factors that prevent housing manufacturers from investing. Since it is required to agree with the homeowners in UTPs, financing difficulties are felt more due to delays stemming from this process. Construction companies that are in financial distress need alternative financing sources [13]. Both the size of the projects and the results of the already tried methods have led to the search for different financing methods. In this context, both debt-based financing methods have been diversified within themselves and different market-oriented approaches have been put forward. There is also a diversity of type of public support.

There are studies in the literature that include the analysis of methods that have not yet been actively applied in Türkiye but have the potential to be applied. Dündar [14], discussed the financing methods in terms of whether the projects are self-financing or not, and examined (i) opening land for non-residential facilities that will increase the value of the project area, thus providing additional rental income for residential areas and (ii) build-sell type project development approaches. He stated that the first approach reduces the amount of land allocated to social services and increases the total density, and the second approach cannot be used in the transformation of lands that are not advantageous for build-sell and cannot be applied to every UTP. Giray [15] examined the income in return for the sale of land model. In this approach, a gradually increasing value is created by transforming a land that is not open for development into a plot, providing infrastructure and transportation. The sharing of the value obtained through the plan change is determined at the beginning of the process. The main motivation that attracts private entrepreneurs to this method is that private sector entrepreneurs provide projects that they cannot realize on their own terms through public institutions. Although all risks are undertaken by private entrepreneurs after the tender, these projects with very high rents are seen as a great opportunity [15]. Erdoğan [16] discussed the market-oriented approaches such as mortgage-backed securities, and sukuk (lease certificate) approaches. Sukuk is a certificate that undertakes to generate income at a determined rate over real estate rental income. It is advantageous in that it assumes less commercial risk compared to bonds, since it does not commit a predetermined rate of return to the capital owner and the income is generated according to market conditions. In addition, it is a financing alternative with a high potential as it opens the way for interest sensitive investors to participate in the financing of the project. Real estate certificates are also an effective method that can be used to finance UTPs [16-17]. Unlike sukuk, these are certificates show the shares of ownership of houses and create value with the change of ownership in the

relevant exchange. In this way, individual investors with low purchasing power can become partners in large real estate projects through capital markets, while investors who do not have sufficient certificates or do not prefer to buy real estate can gain from the sale of certificates [13, 17]. Construction companies, which cannot realize their projects due to lack of financing, have financing at the beginning of the project and support the solution of financing problems experienced at the beginning stage[13]. In addition, by selling the project in the desired amount at any time, from the beginning of the project, it can be helped to balance the sector's exposure to economic fluctuations[17]. Real estate investment funds are another market-oriented financing approach. Real estate investment funds and participation-based initiatives can be managed securely and effectively using up to date blockchain and smart contract methods, thus creating a traceable and simple approach that can be used in solving valuation and financing problems [18]. In addition to lease certificates and real estate certificates, Öz [19] also examined the transfer of zoning rights, consolidation of zoning rights, public-private partnership, flat-for-floor model, build-give-sell model, project and tender financing models, and asset-backed securities methods. Tanınmış Yücememiş & Kurt [12] classified 63 financing methods under 3 main groups. He classified 26 of these methods, which are frequently used, as classical, 20 of which are limited in use or newly started to be used in Türkiye, as innovative, and 17 as alternative approaches that have the potential to be used outside of these two. In addition, these groups are classified into subgroups as (i) based on public support, (ii) based on the income generation capacity of corporate resources/project, (iii) based on project implementation method, (iv) based on outsourcing, (v) based on sectoral and institutional collaborations, (vi) securitization-based, and (vii) interest-free finance-based methods.

Public support-based financing models, which are the most preferred method in the financing of UTPs, are approaches in which the public contributes directly or indirectly to financing. Project implementation method-based financing models include models that benefit from expropriation cost savings or land valuation (utilizing the economic value of the UT area). Financing models based on the income generating capacity of the institutional source/project cover the creation of funds by utilizing the income generating capacity of the project or the use of equity, while the financing models based on the outsourcing refer to the methods in which the fund needs are met through borrowing. While models based on securitization aim to obtain funds by converting assets into securities and trading them in capital markets, models based on interest-free finance aim to create funds with the basic trading methods of Islamic law. Models based on sectoral and institutional collaborations are models that allow the private sector and public institutions to cooperate on profit-social benefit motivations. Recently, UTPs have been carried out worldwide with the cooperation of the public and private sectors [12].

In this study, the methods that can be used for financing UTPs in which the private sector is involved are examined in terms of sustainability. In the analyzes, both public institutions and private sector participants were considered as actors of the project, and for this reason, a different classification was made than the one made by Tanınmış Yücememiş & Kurt [12]. Methods that are similar in terms of the principles on which they are built, and their general mechanisms are grouped conceptually by considering their dominant nature. In this context, financing methods are classified as based on: (i) fund transfer (incentive, grant) (ii) borrowing, (iii) collaboration/partnership, (iv) leasing, and (v) sales. The financing methods in each group are given in Table 3. Some methods such as build-operate-transfer are in the nature of being included in more than one group. While creating the table, the dominant nature of this type of financing methods has been considered.

Table 3. Classification of urban transformation financing methods according to their dominant characteristics

Financing Method	Dominant Attribute	Capitalist
Bond issue	Borrowing	Public
Retirement etc. sourcing from institutional funds	Borrowing	Public
Sourcing from real estate investment funds	Borrowing	Public
Sourcing from REITs	Borrowing	Public
Loans from the public budget	Borrowing	Public
QardhulHasan	Borrowing	Public
Salam	Borrowing	Public/Private sector
Bond issue	Borrowing	Public
Obtaining loans from national financial institutions	Borrowing	Banks
Build-operate-transfer	Borrowing	Public
Sharing between local governments	Borrowing	Public
Loans from local governments	Borrowing	Public
Free sourcing	Fund transfer (incentive, grant)	Public
Fill-empty	Fund transfer (incentive, grant)	Public
Income from events	Fund transfer (incentive, grant)	Public
Sourcing from the development agency fund	Fund transfer (incentive, grant)	Public
Public support mechanism	Fund transfer (incentive, grant)	Public
Obtaining free resources from public funds	Fund transfer (incentive, grant)	Public
Sourcing from the urban transformation fund	Fund transfer (incentive, grant)	Public
Taxation of value increase stemming from urban transformation	Fund transfer (incentive, grant)	Public
Assumption of the cost by the central administration	Fund transfer (incentive, grant)	Public
Free funding from the central budget	Fund transfer (incentive, grant)	Public
Evaluation of the idle building stock outside the project area	Fund transfer (incentive, grant)	Public
Project asset fund	Fund transfer (incentive, grant)	Public

Use of reserve immovables for financing purposes	Fund transfer (incentive, grant)	Public
Grants from international organizations	Fund transfer (incentive, grant)	Public
Grants, donations from foundations and non-governmental organizations	Fund transfer (incentive, grant)	Public
Consolidation of development rights	Collaboration/Partnership	Rights Holders
cooperatives	Collaboration/Partnership	Rights Holders
Mudarabah (labor capital partnership)	Collaboration/Partnership	Private sector
Musharakah (profit and loss partnership)	Collaboration/Partnership	Private sector/Market participants
Company stock issue	Collaboration/Partnership	Market participants
Ijarah (financial leasing)	Leasing	Private sector/Market participants
Sukuk (lease certificate) issuance	Leasing	Market participants
Income sharing in return for the sale of land	Sales	Land customers
Securitization of revenue sharing in return for land sales	Sales	Market participants
Issuance of land certificate	Sales	Market participants
Cross-financing	Sales	Contractor / Residential customers
Value-based model	Sales	Public/Residential customers
Housing, workplace production for financing purposes	Sales	Residential customers
Real estate exchange	Sales	Market participants
Issuance of real estate certificate	Sales	Market participants
Issuance of slum conversion certificate	Sales	Market participants
Participation of beneficiaries in financing	Sales	Rights holders
Issuance of zoning right consolidation certificate	Sales	Market participants
Issuance of zoning right transfer certificate	Sales	Market participants
Improvement of development rights	Sales	Rights holders
Transfer of development rights	Sales	Rights holders/Residential customers
Mortgage-backed securities	Sales	Market participants
Exception' (purchase to order)	Sales	Private sector/Residential customers
Flat rate	Sales	Rights holders
Housing certificate issuance	Sales	Market participants
Murabahah	Sales	Residential customers
Musawamah	Sales	Contractor
Equity use	Sales	Contractor
Shared ownership system	Sales	Market participants
Stock issue based on project value	Sales	Market participants
Increasing project income generation capacity	Sales	Public/Residential customers
Issuance of risky construction certificate	Sales	Market participants
Issuance of asset-backed securities	Sales	Market participants
Make-sell	Sales	Rights holders/Residential customers

Tanınmış Yücememiş & Kurt [12] conducted a large-scale study in which the opinions of more than 500 participants were sought to examine the potential of alternative and innovative financing methods to be used in our country. As a result of the study, the methods were classified in terms of their application capabilities based on expert evaluations. Cross financing, UT bond issuance, real estate certificate issuance, UT fund, evaluation of the income generating capacity of the project, building reinforcement model, public incentives for the private sector, evaluation of idle housing stock, Türkiye Emlak Katılım Bankası financing, İlbank infrastructure loan methods, current legal and environmental conditions were determined as the alternatives with the highest application capability under by making the necessary institutional, technical and legal arrangements, the potential of use of financing methods whose implementation capability is determined as "medium" and "low" can be increased [12].

4. Investigation of Financing Methods in terms of Sustainability under High Uncertainties

The failure rate of UTPs is not low in Türkiye. Of the 264 institutions (private and public) having UT experience, 56% have at least 1 UTP that has been interrupted. 40% of the mentioned institutions have projects that were completed in a longer time than planned and the rest had projects that were abandoned, canceled, or discontinued. Institutions with at least one interrupted project have an average of 1.6 interrupted projects [12]. The interruption of these projects is usually due to economic

and financial reasons. Among the economic and financial reasons, the reasons that have the biggest share are “the cost increases experienced after the start of the project”, and “the inability to obtain the necessary financing”. One fourth of unsuccessful projects experience failure due to these two economic reasons. The ratios of the reasons for interruption of the projects are shown in Figure 3 [12].

Figure 3: Reasons for interruption of projects

4.1. Methods Based on Borrowing

In this study, instead of analyzing all financing methods one by one, each group given in Table 3 has been examined in terms of cash flow imbalance risk and thus financial distress risk potential, and the most resistant group against environmental effects was tried to be determined.

Debt-based financing methods are often used in combination with fund transfer/public support or sales-based methods. Usually, the financing necessary to make other methods work is met by borrowing. Because UTPs are very large projects, the own resources of the contractor companies will not be enough to finance these projects from start to finish. In environments where borrowing costs are very low, even if there is equity capital available to use in the project, most companies do not want to be tied to this resource and borrowing is preferred.

Debt-based financing methods can provide sustainable financing in environments where the market is stable and borrowing costs are low. Of course, the produced housing stock must also be salable to be able to pay the installments on time and to prevent the debt from being followed up. If the implemented project is suitable for the urban texture and social structure of the neighborhood or if it adds value to the environment and meets the expectations of the target audience, the first of the obstacles to the easy sale of the houses will be removed. The second important point is that the market conditions are favorable for the people who will buy the house and that suitable payment conditions can be provided. These, in turn, often require stable market conditions. If the risk analyzes and future projections covering the project process show that these conditions will be met, UTPs can be completed by financing them with borrowing-based methods. However, in debt-based financing methods, all commercial risk is undertaken by the borrower. This causes the borrower to become overly sensitive to environmental effects and market conditions. As a matter of fact, although environmental effects such as raw material price increases may put the borrowing contractor company in financial distress, the lender is not affected by this and expects to collect its installments on time without changing the amounts. When collection problems begin, it also minimizes the financial risk it undertakes by resorting to additional mechanisms such as following up the loan and securing its receivables over the assets provided as collateral. For example, in 2017 in Türkiye, when bankruptcies began to occur in large UTPs due to uncertainties in the markets, exchange rate changes, and raw material price increases, traditional banks and participation banks that financed these projects announced an annual profitability increase of 25-30% [7-8].

In all debt-based financing methods, except for QardhulHasan, the interest/return rate and maturity to be received by the lender are determined at the time of the contract and must be respected throughout the contract. However, since the future market conditions are not yet known, the inflation rate predicted when the interest rate is determined is never exactly the same with the realized one. Therefore, in this type of contracts, one of the parties will gain (real) benefit compared to the originally envisaged one, and the other will face with loss. In other words, in an interest-bearing transaction, the financial risk and the trade risk (if there is a trade in debt) cannot be shared fairly because the initial contract is binding no matter how the market conditions change. As long as things are going well, there is no interaction and accountability between the parties (compared to partnership-based methods) other than debt installment payments. This adds a significant attraction to the financing method be preferred by the borrower. It is attractive for the lender too since it reduces future uncertainties and facilitates planning. However, the further market conditions diverge from what was originally envisioned, the more likely the parties (usually the borrowers because they take on more risk) will experience cash flow problems and subsequent financial distress.

As a result, in today's conditions, where there are many global environmental factors affecting the economies of countries, debt-based financing methods are not preferable in terms of financial sustainability. Financing methods with a predominant borrowing aspect are also not financially sustainable, although they have more than one feature together. For example, the build-operate-transfer model (through operating the facilities established in the transformation areas, etc.) will not be a sustainable financing alternative in the current market conditions, since the borrowing aspect is predominant. Although the customer-guaranteed build-operate-transfer model is seen as an alternative with higher financial sustainability by the contractor firm, it should be evaluated in the light of the examinations made under Section 4.2, since the transfer of public resources is dominant.

4.2. Methods Based on Fund Transfer

Although the UTs carried out/planned in Türkiye have different qualities, the main focus is on housing security. Legislation regarding UT has also determined these regions as priority areas in order to accelerate the transformation of places under disaster risk. It is estimated that one third of the buildings in Türkiye are not safe against earthquakes [20]. For this reason, UTPs continue to take place in the social policies of the state. As it is known, UTPs are large, multi-stakeholder and complex studies. For this reason, it is often difficult to organize entirely with the initiatives of the private sector. In order to solve legal problems (for example, disputes arising from shared title deeds) and to provide financial support to projects, public institutions are involved in the works both as regulators and as project

stakeholders.

The financial support of the public can be in different ways. Financial burdens of contractors are tried to be alleviated through direct financial support as well as methods such as the allocation of public goods with financial value. In the fill-empty method, the construction/allocation of houses that will allow the temporary residence of the citizens whose houses will be renewed on the lands allocated by the public can be given as an example of these two types. Public resources are created by taxes and deductions collected from citizens. For this reason, it should be spent by establishing a balance with other budget items. This pushes to look for different resource accumulation methods in order to allocate more resources to UT. As a result of these searches, different local and national funds were created and approaches to support with these funds were determined. The accumulated funds can be used through methods such as grants, incentives, and long-term debt with no repayment for a certain period of time.

The most important disadvantage of such methods based on public fund transfer in terms of financial sustainability is the limited resources. For this reason, it is not always possible to eliminate the problems experienced in the project due to environmental factors. In such cases, there is also public pressure, as value-added outputs have not been completed yet, although public resources have been spent. The loss of image brought about by public pressure may continue to have a negative impact when alternative financing methods are used to procure resources. In favorable environmental conditions where these conditions are not experienced, this financing method seems sustainable. However, every new project supported by the public resources will bring a contraction in cash flexibility. At the same time, both commercial and financial risks are taken on by the public, as the contractor firm takes on the least risk. In addition, a strict supervision obligation of the public will arise. Such large projects cannot be sustained in the long run with public resources alone. In terms of sustainability, methods such as allocation of tangible public goods and incentives, in which private entrepreneurs can undertake/share commercial risks, seem more convenient considering the sense of justice of the society. Thus, more, and larger projects can be financed using fewer public resources. However, it should be kept in mind that the sensitivity of the contractor firm to environmental impacts will depend a lot on these preferred methods, since other financing sources will be used in addition to public resources in financing in this way.

4.3. Methods based on Collaboration/Partnership

These methods are based on the principle of meeting the financing need by more than one participant in a collaboration. The project is realized as each participant puts forth capital or labor according to their own strength and the added value obtained is divided among all cooperating stakeholders. In this approach, commercial risk is shared among all stakeholders because loss, like profit, is shared among stakeholders, and no fixed/determined return is promised to any stakeholder while making the contract. Although this may seem like a disadvantage of this method at first glance, it has a high potential for collective return as it provides motivation to all stakeholders to ensure the success of the project. When produced homes are sold at a good price, they have the potential to generate income well above the established interest yield in the market. In addition, since the commercial risk is shared by all stakeholders, environmental conditions are collectively resisted by all project stakeholders. In this respect, it is advantageous compared to the methods based on borrowing in terms of the sustainability of the project. Because in debt-based financing, the contractor firm, which has mortgaged its assets by borrowing and is relatively weak, is trying to manage all the commercial risk of the project, which has a value far above its own equity. However, in collaborative methods, the total equity of the stakeholders may exceed the value of the project and additional resources can be provided through ways such as increasing the share to solve the cash flow problems during the execution of the project.

Although collaborative methods are basically based on a similar principle, they can be very different from each other and their inclusiveness changes accordingly. For example, while the right holders of housing establish a cooperation in cooperatives, all market participants can become project stakeholders in the issuance of stocks. From a different perspective, while cooperation in mudarabah was established within the framework of labor-capital exchange, in mudarabah it is based on the principle of joint provision of capital. Although these methods require relatively less financial public support, they do require legal regulations. Because all of these methods need a relationship of trust and the assurance of law. Any conflict situation should be resolved quickly and an atmosphere of distrust among the stakeholders should be prevented. Market-oriented approaches seem to be more sustainable in terms of providing legal assurance and supervision and high inclusiveness. When the necessary infrastructures are established, there is a high potential to implement many successful projects without burdening the public. It is a financing method that can be used in periods when the market is stable and active. Because cost increases are often followed by product price increases. An important issue for the success of market-oriented approaches is that the interventions in the market should be minimal (political, cyclical, populist interventions should be avoided, and the market should be allowed to follow the free market principles). Otherwise, product price increases and cost increases may not follow each other, and the capital value losses experienced may reduce the appetite for future collaborations.

4.4. Methods Based on Leasing

These financing methods are based on the principle of providing benefits by owning a property that cannot afford to buy and lease. The owner of the goods, on the other hand, earns income by making someone else use the product that he does not need to use. In this way, more effective use of the acquired resources throughout the society is ensured. In this respect, leasing is a very useful approach in terms of economy. However, the assets in these large UTPs are often of a value that few actors can hold. In this case, there is usually a need for a highly coordinated and transparent management entity that brings together a large number of owners. For this reason, these approaches (although they can be organized through financial institutions) can often be managed more effectively with a market focus. Another advantage of market-oriented approaches is that assets can be jointly owned by more than one person with more than one certificate. In this way, it becomes a highly inclusive investment instrument as the capital of small investors can also be benefited from. While ijarah (financial leasing) is more suitable for leasing the equipment to be used during production, sukuk (lease certificate) is suitable for use over the finished housing stock. Since the rental prices will be determined according to the market conditions, the commercial risk is also partially divided between the contractor firm and the financiers. However, this division is not as identical as in partnership-based methods because the contractor firm must have earned a return to pay these rents during the lease term. (Unlike these two methods, the fact that the sales amount of the equipment at the end of maturity is predetermined in conventional Leasing creates an interest-bearing borrowing relationship.)

Another disadvantage of leasing-based methods is that they have limited use alone and require additional financing methods. Because the equipment leased with ijarah/conventional leasing requires additional capital to operate, or a value that can be rented with sukuk must be produced and an income must be used to pay the rents. In construction projects, income cannot be obtained until the project reaches a certain stage. Considering the risk of

financial distress caused by environmental effects, the use of additional financing methods at the point where they will be most effective in terms of sustainability will make leasing methods a useful alternative.

4.5. Methods Based on Sales

Sales-based methods are the group with the highest variety of methods. Basically, it is based on the wholesale or gradual sale of the value-added products. Since the direct positive cash flow is provided by the sale transaction, new projects can be financed without financial difficulties when the cash obtained is well evaluated. Therefore, it can be ensured that more than one project can fund each other. The target audience of sales transactions is also quite wide. The sale can be made to right holders as well as to legal and natural persons. In addition, sales can be made on exchanges using market mechanisms. Thus, small investors can also enter the target audience.

The disadvantage of these methods is that they need additional financing. Because the process of producing a value-added product that can be sold must also be financed. Although it is possible to sell the designed but not yet completed houses through market mechanisms by being certified to reduce this need, the project design and land acquisition processes also have costs and must be financed. Another disadvantage of these approaches is that confidence in a fictitious sale is not easily obtained. The establishment of this trust may also bring additional costs in itself. Negative experiences in Türkiye reduce the demand for such methods. However, with the necessary legal regulations, the demand can be increased. Even if demand is created with such a public intervention, the contractor firm will have assumed a significant commercial risk, since sales will be made in advance and production will be made gradually. It should not be forgotten that the contractor firm will have taken a serious risk of financial distress in conditions of high environmental impacts. In such cases, the more correct approach in terms of financial sustainability would be methods such as build-sell, and musawamah (sale of finished housing stock). Of course, in order for these methods to be functional, a certain amount of value-added products must be produced by means of borrowing, and using equity capital.

5. Conclusion

In Türkiye, UTPs are generally financed by methods based on borrowing and public support. In recent years, especially UTPs, where financial public support is relatively limited, have been adversely affected by market movements and some UTPs could not be completed as targeted due to the withdrawal of contractor companies. When the projects are closely monitored, it is seen that the most important reason for the failure is the inability of the contractor companies to provide financial sustainability and the financial difficulties. The increase in costs and other environmental effects brought about by the fluctuations in the market caused the contractor companies, which borrowed in large amounts compared to their own resources, to be unable to maintain their cash balance. Although the contractor companies, which had liquidity problems due to the uncertainties in the market, tried to balance with new borrowing, they could not provide sufficient collateral or borrowed at higher costs. Depending on this, many companies could not overcome the financial distress. An important point that draws attention here is the increase in profitability of both conventional and participation banks that provide financing for these projects during the period between 2017-2018, when many contractor companies declared bankruptcy. This situation makes it necessary to examine the financial sustainability of alternative methods that can be used in the financing of UTPs for contractor companies and financing institutions.

In this study, traditional and innovative financing methods that are used or have the potential to be used for the financing of UTPs are examined. They classified according to their dominant characteristics, their potential to provide capital is evaluated, and the risks they pose to the project stakeholders are investigated. When considered from this point of view, the most sustainable alternatives to environmental impacts collectively were determined as market-oriented approaches where the commercial risk is shared among the stakeholders. In addition, the high potential of these approaches to provide capital brings significant flexibility in terms of creating action plans by increasing capital in possible crisis situations. Thus, the risk of financial distress caused by cash flow irregularity can be minimized. As a future study, some of these methods can be simulated on the real data of a sample UTP and their benefits can be analyzed in detail. It can be determined what kind of legal regulations and additional mechanisms will be needed by examining the effects about eliminating or reducing the problems already experienced in that project.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to concerning the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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