

Build–operate–transfer

Build–operate–transfer (**BOT**) or **build–own–operate–transfer** (**BOOT**) is a form of project financing, wherein a private entity receives a concession from the private or public sector to finance, design, construct, own, and operate a facility stated in the concession contract. This enables the project proponent to recover its investment, operating and maintenance expenses in the project.

Due to the long-term nature of the arrangement, the fees are usually raised during the concession period. The rate of increase is often tied to a combination of internal and external variables, allowing the proponent to reach a satisfactory internal rate of return for its investment.

Examples of countries using BOT are Pakistan,^[1] Thailand, Turkey, Taiwan, Bahrain, Saudi Arabia,^[2] Israel, India, Iran, Croatia, Japan, China, Vietnam, Malaysia, Philippines, Egypt, Myanmar and a few US states (California, Florida, Indiana, Texas, and Virginia). However, in some countries, such as Canada, Australia, New Zealand and Nepal,^[3] the term used is build–own–operate–transfer (BOOT). The first BOT was for the China Hotel, built in 1979 by the Hong Kong listed conglomerate Hopewell Holdings Ltd (controlled by Sir Gordon Wu).

Forms of project finance are listed in the sections below.

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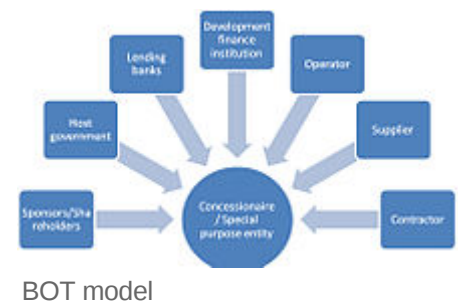
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BOT (build–operate–transfer)

BOT finds extensive application in infrastructure projects and in public–private partnership. In the BOT framework a third party, for example the public administration, delegates to a private sector entity to design and build infrastructure and to operate and maintain these facilities for a certain period. During this period the private party has the responsibility to raise the finance for the project and is entitled to retain all revenues generated by the project and is the owner of the regarded facilities. The facility will be then transferred to the public administration at the end of the concession agreement,^[4] without any remuneration of the private entity involved. Some or even all of the following different parties could be involved in any BOT project:

- The host government: Normally, the government is the initiator of the infrastructure project and decides if the BOT model is appropriate to meet its needs. In addition, the political and economic circumstances are main factors for this decision. The government provides normally support for the project in some form. (provision of the land/ changed laws)
- The concessionaire: The project sponsors who act as concessionaire create a special purpose entity which is capitalised through their financial contributions.
- Lending banks: Most BOT project are funded to a big extent by commercial debt. The bank will be expected to finance the project on "non-recourse" basis meaning that it has recourse to the special purpose entity and all its assets for the repayment of the debt.
- Other lenders: The special purpose entity might have other lenders such as national or regional development banks
- Parties to the project contracts: Because the special purpose entity has only limited workforce, it will subcontract a third party to perform its obligations under the concession agreement. Additionally, it has to assure that it has adequate supply contracts in place for the supply of raw materials and other resources necessary for the project

A BOT Project (build operate transfer project) is typically used to develop a discrete asset rather than a whole network and is generally entirely new or greenfield in nature (although refurbishment may be involved). In a BOT Project the project company or operator generally obtains its revenues through a fee charged to the utility/government rather than tariffs charged to consumers. A number of projects are called concessions, such as toll road projects, which are new build and have a number of similarities to BOTs.^[4]



In general, a project is financially viable for the private entity if the revenues generated by the project cover its cost and provide sufficient return on investment. On the other hand, the viability of the project for the host government depends on its efficiency in comparison with the economics of financing the project with public funds. Even if the host government could borrow money on better conditions than a private company could, other factors could offset this particular advantage. For example, the expertise and efficiency that the private entity is expected to bring as well as the risk transfer. Therefore, the private entity bears a substantial part of the risk. These are some types of the most common risks involved:

- Political risk: especially in the developing countries because of the possibility of dramatic overnight political change.
- Technical risk: construction difficulties, for example unforeseen soil conditions, breakdown of equipment
- Financing risk: foreign exchange rate risk and interest rate fluctuation, market risk (change in the price of raw materials), income risk (over-optimistic cash-flow forecasts), cost overrun risk^{[5][6][7]}

BOOT (build–own–operate–transfer)

A BOOT structure differs from BOT in that the private entity owns the works. During the concession period the private company owns and operates the facility with the prime goal to recover the costs of investment and maintenance while trying to achieve higher margin on project. The specific characteristics of BOOT make it suitable for infrastructure projects like highways, roads mass transit, railway transport and power generation and as such they have political importance for the social welfare but are not attractive for other types of private investments. BOOT & BOT are methods which find very extensive application in countries which desire ownership transfer and operations including. Some advantages of BOOT projects are:

- Encourage private investment
- Inject new foreign capital to the country
- Transfer of technology and know-how
- Completing project within time frame and planned budget
- Providing additional financial source for other priority projects
- Releasing the burden on public budget for infrastructure development^[8]

BOO (build–own–operate)

In a BOO project ownership of the project remains usually with the project company, such as a mobile phone network. Therefore, the private company gets the benefits of any residual value of the project. This framework is used when the physical life of the project coincides with the concession period. A BOO scheme involves large amounts of finance and long payback period. Some examples of BOO projects come from the water treatment plants. These facilities run by private companies process raw water, provided by the public sector entity, into filtered water, which is then returned to the public sector utility to deliver to the customers.^[9]

BLT (build–lease–transfer)

Under BLT a private entity builds a complete project and leases it to the government. On this way the control over the project is transferred from the project owner to a lessee. In other words, the ownership remains by the shareholders but operation purposes are leased. After the expiry of the leasing the ownership of the asset and the operational responsibility are transferred to the government at a previously agreed price. For foreign investors taking into account the country risk BLT provides good conditions because the project company maintains the property rights while avoiding operational risk.

DBFO (design–build–finance–operate)

Design–build–finance–operate is a project delivery method very similar to BOOT except that there is no actual ownership transfer. Moreover, the contractor assumes the risk of financing till the end of the contract period. The owner then assumes the responsibility for maintenance and operation. Some disadvantages of DBFO are the difficulty with long term relationships and the threat of possible future political changes which may not agree with prior commitments. This model is extensively used in specific infrastructure projects such as toll roads. The private construction company is responsible for the design and construction of a piece of infrastructure for the government, which is the true owner. Moreover, the private entity has the responsibility to raise finance during the construction and the exploitation period. The cash flows serve to repay the investment and reward its shareholders. They end up in form of periodical payment to the government for the use of the infrastructure. The government has the advantage that it remains the owner of the facility and at the same time avoids direct payment from the users. Additionally, the government succeeds to avoid getting into debt and to spread out the cost for the road over the years of exploitation.^[10]

DBOT (design–build–operate–transfer)

This funding option is common when the client has no knowledge of what the project entails. Hence he contracts the project to a company to design, build, operate and then transfer it. Examples of such projects are refinery constructions.^[11]

DCMF (design–construct–manage–finance)

Some examples for the DCMF model are prisons or public hospitals. A private entity is entrusted to design, construct, manage, and finance a facility, based on the specifications of the government. Project cash flows result from the government's payment for the rent of the facility. In the case of hospitals, the government has the ownership over the facility and has the price and quality control. The same financial model could be applied to other projects such as prisons. Therefore, this model could be interpreted as a means to avoid new indebtedness of public finance.

Economic theory

In contract theory, several authors have studied the pros and cons of bundling the building and operating stages of infrastructure projects. In particular, Oliver Hart (2003) has used the incomplete contracting approach in order to investigate whether incentives to make non-contractible investments are smaller or larger when the different stages of the project are combined under one private contractor.^[12] Hart (2003) argues that under bundling incentives to make cost-reducing investments are larger than under unbundling. However, sometimes the incentives to make cost-reducing investments may be excessive because they lead to overly large reductions of quality, so it depends on the details of the project whether bundling or unbundling is optimal. Hart's (2003) work has been extended in many directions.^{[13][14]} For example, Bennett and Iossa (2006) and Martimort and Pouyet (2008) investigate the interaction of bundling and ownership rights,^{[15][16]} while Hoppe and Schmitz (2013, 2020) explore the implications of bundling for making innovations.^{[17][18]}

See also

- Adelaide–Darwin railway
- Central Texas Turnpike System
- Pay on production
- Public-private partnership
- Privatization
- Project finance
- Private Finance Initiative
- Shadow toll

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