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# The Valuation of Localization Investments with Real Options: A Case from Turkish Automotive Industry

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**Summary.** Localization investments are made mainly to increase the domestic content of manufacturing, thereby to reduce the costs and import dependency. Since localization investments include technology transfer, they positively affect the developing economies. The arrival of the new technology to the country has a positive impact on development of the equipment, workforce and the final product. It is often applied in automotive industry. Through localization investments not only improvement of OEMs, but also development of involved subsidiary industry can be induced. As a developing economy itself, Turkey encourages these kinds of investments and gives governmental incentives. The problem here is the valuation of these investment projects accurately by including all strategic impacts. Just because localization projects involve many future growth opportunities, conventional valuation tools cannot value those embedded opportunities correctly and the value of the project mostly appears negative or very low. This situation can cause a misjudgment at the incentives stage. This paper analyzes the localization project, first with conventional NPV analysis, then with real options analysis and finally compares the results. As for the options analysis, the results of potential involvement of various option types such as sequential options approach are used in the valuation of a case from Turkish automotive industry.

## 1 Introduction

Localization investments are mainly understood as import substitutions which minimize the foreign exchange loss, the burden of supply processes and foreign dependency. Frequently it is used to bring high technology into the country and help local industries to create their own technology and innovation basis. Also, they open new markets to local manufacturers and create chain reactions. They not only help the OEM's to improve but also help even the second and third degree tiers to grow. Here "growth" includes the R&D departments, the equipments and the workforce. Strategic importance of localization investments is more significant than their financial revenues. In a dynamic and uncertain business environment there is a need

for strategic valuation methods in decision-making rather than static methods. Real options is a methodology that includes dynamism[6]. Real options analysis helps to value the embedded opportunities in the investment project, which may not be valued with the conventional valuation techniques. Real options analysis helps to take the advantage of upside potentials and to avoid downside risks [3]. The lack of capturing these strategic opportunities causes misevaluation of the projects and sometimes even stops the improvement of the developing economies.

Turkey has a promising position in the automotive industry, mainly within the East Europe/Middle East North Africa (MENA) region [10]. Turkey also has low localization ratios then its competitors in the East Europe and a very high import dependency mostly on the crucial automotive vehicle parts. Turkey should start to build its own innovation culture and creativity in order to gain a competitive position in global economies. R&D and many other manufacturing processes must be localized and costs must descend with the advantages of producing and transporting locally. This is also accepted and supported by the Turkish government. In this sense the investment valuations should be done precisely in order to contribute to the Turkish economy and effective usage of the state budget resources.

This paper handles the localization investments as a strategic decision making process which can not be valued with conventional valuation tools but with real options. In this study, a case from the Turkish automotive industry is solved first with conventional NPV analysis, then with real options and a comparison has been made.

## 2 Classic Valuation Methods

Discounted cash flow (DCF) analysis evaluates the present value of any stream of future cash flows to a specific time and allows comparing two streams of cash flows in terms of their financial value [4]. It's been recognized that standard DCF criteria often undervalued investment opportunities, leading to myopic decisions, underinvestment and eventual loss of competitive position. In particular, DCF methods ignore the operating flexibility that gives management the option to revise decisions while a project is underway which often lead to short term results and ignore projects' longer term prospects [9].

The value of active management and project interactions is not captured in the standard framework of an accept-or-reject decision and post-audit analysis. In a turbulent business environment, new opportunities and old plans must be revised or abandoned. Option pricing combined with dynamic strategic planning and control models are better to capture these sources of value. The presence of managerial flexibility can make the investment opportunity economically attractive. Contrary to conventional popular belief, higher uncertainty, greater interest rates, or more time before undertaking a project does not necessarily make an investment opportunity less valuable [8].

## 3 Real Options and Sequential Compound Options

Sustainable competitive advantages empower companies with valuable options to grow through future profitable investments and to respond to unexpected adversities