

Procuring Medical Devices: Evidence from European Public Tenders

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In both Europe and the US, the public procurement of medical devices is increasingly relying on auction mechanisms. This follows the trend in public procurement to move toward more transparent procedures and to promote competition between suppliers. Nevertheless, it is clear that this is an area in which quality of the products matters enormously and an improper auction design could be very harmful. In the US, the study by Merlob et al. (*Quarterly Journal of Economics*, 2012) has shown that auction for durable medical equipment that was recently introduced for the purchase of these goods in the Medicare system is a very poorly designed mechanism that it is unable to generate competitive prices and an efficient allocation of contracts. In Europe, although most of the healthcare sector is organized in country-specific ways, the procurement of medical devices is largely regulated through the harmonized system laid down by the EU Procurement Directives.

The aim of this research is to study the effectiveness of the auction-based public procurement procedures used in Italy (and, more broadly, in the EU) to procure medical devices. Among the main peculiarities of these procurements relative to those of the non-medical sector is the significant role of *framework agreements* and scoring rule auctions. Taken together, both these features suggest that this area of procurement is characterized by great flexibility in the choice of suppliers. Therefore, it is important to assess how the use of such discretionary procedures is associated with outcomes related to the cost and the quality of the devices procured.

To study the possible links between procurement strategies for orthopaedic prostheses and outcomes of the related interventions, we merge data on implantations of hip, knee and shoulder replacements, gathered in the RIAP project (the Italian registry of all the orthopaedic implants used) with data regarding public procurement in the healthcare sector in Italy. We focus on a well-defined subset of important procurements involving hips and knees prosthesis. For these products, the market is rather concentrated with the 7 largest producers (Biomet, Stryker, Depuy, Synthes, Smith & Nephew, Aesculap and Zimmer) winning most of the tenders. This is important because it gives us an easier way to assess the quality of the winning products by comparing: *i*) the life-expectancy metrics that these prosthesis manufacturers had to submit when launching their device in the EU and *ii*) measures of secondary interventions due to malfunctioning of the prosthesis. By exploiting these data on quality along with the procurement dataset on cost, we study how changes in the degree of discretion produced by changes in the EU procurement regulations caused differential price and quality effects. More specifically, thanks to these two types of data combined, we will be able to analyse for the first time the different nature of the demand for prostheses related to traditional public auctions and to public auctions that follow the scheme of European Framework Agreement. Furthermore, we will be able to analyse whether procurement strategies that generate public expenditure restraint translate into a deterioration in the quality of the implanted medical devices, which turns into potential higher costs in terms of secondary interventions.