

the chain. To do so, we briefly discuss several types of supply chains which are useful to analyse firms diversity, and a taxonomy of roles inspired by the theory of networks.

In particular, our aim is to investigate if automotive firms in particular position along the supply chain show an higher technical efficiency than others or if something similar is valid for the degree of vertical integration. Moreover, we try to check if the different positions of the firm in relation to the efficient DEA frontier are distributed according to their roles along the supply chain or in relation with the degree of vertical integration. Finally, to summarize the main results, we adopt one of the most modern econometric techniques to identify the determinants of obtained technical efficiency scores.

The remainder of the paper is organized as follow. The section 2 briefly review the relevant literature, section 3 describes the DEA model adopted, while section 4 presents the dataset. Section 5 shows our main results and some general considerations conclude the work.

2. LITERATURE REVIEW: VALUE CHAINS, PRODUCTIVITY AND VERTICAL INTEGRATION

A supply chain is always a hierarchical set of firms linked at different level of a productive process ending with a final product. In vertical links (relation between suppliers of different layers) and even in horizontal links (relation between suppliers on the same layer) market power is evenly distributed. But, beyond the traditional, focused on pricing over marginal cost, what matters is the ability to influence technology and product characters, starting from the

projected final results, but involving also intermediate component which influence performances and quality appreciated by the customers. So our main interest reside in the analysis of three type of chain (defined by governance): “captive: when the ability to codify, in the form of detailed instructions, and the complexity of product specifications are both high, but supplier capabilities are low; relational: when product specifications cannot be codified, transactions are complex, and supplier capabilities are high; modular: when the ability to codify specifications extends to complex products, and suppliers have the competence to supply full packages and modules” (Gereffi et al., 2005).

Using these criteria it is possible to connect the shape of the supply chain with firms performances, through vertical integration and outsourcing in search of a model of organization which could enhance the productivity defined as the ratio between costumers’ utility and total cost of inputs over the whole vertical integrated sector. The uneven distribution of market power explained by a set of variables starting from property rights, to assets specificity and idiosyncratic relations, is a typical field of the theories of the firm, but can be approximated by some profitability indexes.

Some suggestion resides in the model proposed by Van Assche (2005). He proposes the distinction between: ideal outsourcing (each supplier sells to a specific final firm); standardized outsourcing (the burden of customization of components falls on the buyer) and customized outsourcing (when the burden falls on the seller, which adopt flexible manufacturing equipment). Unfortunately it is not easy to collect information needed to clearly classify suppliers.