Innovation and Learning Dynamics in the Chilean and Argentine Wine Industries

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In the modern wine industry, a remarkable number of scientific and technological changes have made possible a shift from the production of ordinary table wines to the production of fine, premium wines — that is, from a basic, undifferentiated commodity to an increasingly sophisticated and differentiated luxury good — induced by the changing demands of international consumers. This has become known in the specialized literature as the “wine revolution”. The term refers to a combination of technological advances and new equipment used for wine-making, establishing the predominance of the production of quality over quantity in wines. In the winery, these include temperature-controlled stainless steel tanks, bladder presses, the use of and frequent turnover of oak barrels for aging, and sophisticated bottling lines. In the vineyards, these include new trellising methods, drip irrigation, clone selection, mechanical harvesting and frost protection.

This paper focuses on the magnitude, variety, and sources of innovation introduced by the Chilean and Argentine wine industries during the past two decades. It analyzes whether the continued quality upgrading and prolonged export growth of Chilean and Argentine wines have been achieved by building the innovation capacity of local actors and creating domestic linkages with local grape producers, winemakers and input providers, or by relying exclusively upon FDI and knowledge flows generated abroad. It is widely acknowledged that developing countries cannot be only passive recipients of new knowledge, and that the acquisition of skills and resources from outside has to be matched by the generation of expertise internally. Also, according to evolutionary economics, the ability to exploit external knowledge is a function of the level of prior related knowledge, conferring the ability to recognize the value of new information, assimilate it, and apply it to commercial ends.

This paper assesses whether the continued export growth performed by the Chilean and Argentine wine industries in the last two decades was achieved by increasing the knowledge intensity of the local industry and by building domestic capacity, absorbing imported technology and creating domestic linkages, or by relying exclusively upon foreign direct investment (FDI) and continued imports of foreign knowledge. In order to achieve this objective, the paper measures, first of all, the innovativeness of the leading 25 Chilean and of the leading 25 Argentine exporters of bottled wines, and looks at the variety of innovations introduced, focusing not only on new methods of production, but also on the development of new products and new ways of organizing business. It then identifies the role played by external sources of innovation — such as FDI, as well as capital-embodied and codified knowledge flows — in triggering the phenomenal technological upgrading process described in the chapter. Finally, it looks at the role played by internal sources of innovation, namely at the creation of local tacit knowledge and incremental innovation, at the emergence of a wide pool of highly qualified human resources, and at the role of sectoral R&D programmes, local universities and research centres in the creation of endogenous technological capabilities.
The paper is structured as follows: Section 2 measures the innovativeness of the leading 25 Chilean and of the leading 25 Argentine exporters of bottled wines. Section 3 looks at the variety of innovations introduced, focusing – in line with the Schumpeterian tradition – not only on new methods of production, but also on the development of new products and new ways of organizing business. Section 4 looks at the triggering role of FDI in stimulating the phenomenal technological upgrading process of the Chilean and Argentine wine industries over the past two decades. Section 5 focuses on the importance of external sources of innovation in sustaining such a process, namely, on the importance of capital-embodied and codified knowledge flows channelled through imports of foreign machinery and quality certification mechanisms. Section 6 looks at the creation of local tacit knowledge and incremental innovation in the Chilean and Argentine wine industries, and at the emergence of a wide pool of highly qualified local oenologists, agronomists and viticulturalists. Section 7 analyses the role of sectoral R&D programmes and of local universities and research centers in the creation of endogenous technological capabilities. Section 8 concludes with some considerations on the longer-term sustainability of the export boom of Chilean and Argentine wines and points to the need to look at the systemic, geographically bound and interactive nature of innovation.