

A network analysis of the Oil Linkages in the Mexican Economy using the 1970, 1980 and 2003 Input-Output Matrix.

Topic: Energy Policy II

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The oil sector has been the backbone of the Mexican economy for most of the twentieth century, albeit with different intensities and characteristics. Before 1976, oil production was mainly geared toward domestic demand; after the discovery and beginning of production from the country's largest oil deposit Cantarell however, oil production continued to fulfill domestic demand while also bringing the national government with important fiscal revenues from the revenue of exports. Many authors have proposed distinct impacts of these oil-related activities in the economic structure of the country, especially pertaining to how an increase in the oil windfall could entail an important change in economic structure. Some of these possible consequences of oil production can be analyzed through its linkages with other sectors. Therefore, the present article seeks to analyze, with the help of weighted graph theory, the relative importance of the oil industry to the rest of the Mexican economy for three different years: 1970 (before Cantarell), 1980 (during the oil boom after the discovery of Cantarell) and 2003 (a period where Cantarell dwindles and Mexico's main oil related activity is exports). For each of these years we will analyze the national matrix and the total matrix to highlight the importance of oil products imports. This will be done by analyzing various structural measures like node and edge centrality indexes, betweenness centrality as well as quantifying the relative weights of the linkages of oil, as compared to other important sectors. An additional measure of flow will be analyzed using distinct attributes of the edges connecting the oil industry to other sectors. A final comparison will give light to possibly different types of configurations of oil linkages, according to distinct utilizations of the resource in the national economic sphere, and the resulting change in economic structure stemming from oil activities.