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The Role of Multi-National Enterprises in Global Shock Transmission

By Michael O'Grady¹

Multinational enterprises (MNEs) account for a large share of employment and economic activity in Ireland. In 2021, MNEs accounted for over 33 per cent of total employment in Ireland. At the sectoral level, foreign-affiliate ICT, Manufacturing, Admin & Support Services and Wholesale & Retail Trade enterprises account for 20 per cent of total business economy employment (Figure 1). While foreign-affiliate enterprises provide substantial contributions to the Irish economy, they also introduce direct and indirect channels through which external economic conditions can influence the domestic economy. Direct channels include changes in the economic conditions and level of demand in the markets where those firms sell their products. Indirect channels arise from the consequent change to the demand of these sectors for other goods and services produced in Ireland that they use in the course of their own production activity. With diminished production in MNE affiliates, there is both a reduced demand for the intermediate goods and services that contribute to the affiliates' output (backward linkages), as well as a reduced supply of the intermediate goods and services that the affiliate produces to be used in production processes across other sectors (forward linkages). These backward and forward linkages can be large, and act as the mechanism through which external shocks that affect MNE activities at the sectoral level propagate through to the wider domestic economy.² The purpose of this *Box* is to deepen understanding of Ireland's exposure to external shocks, by examining the effects of a potential adverse shock in the productive activities of foreign-

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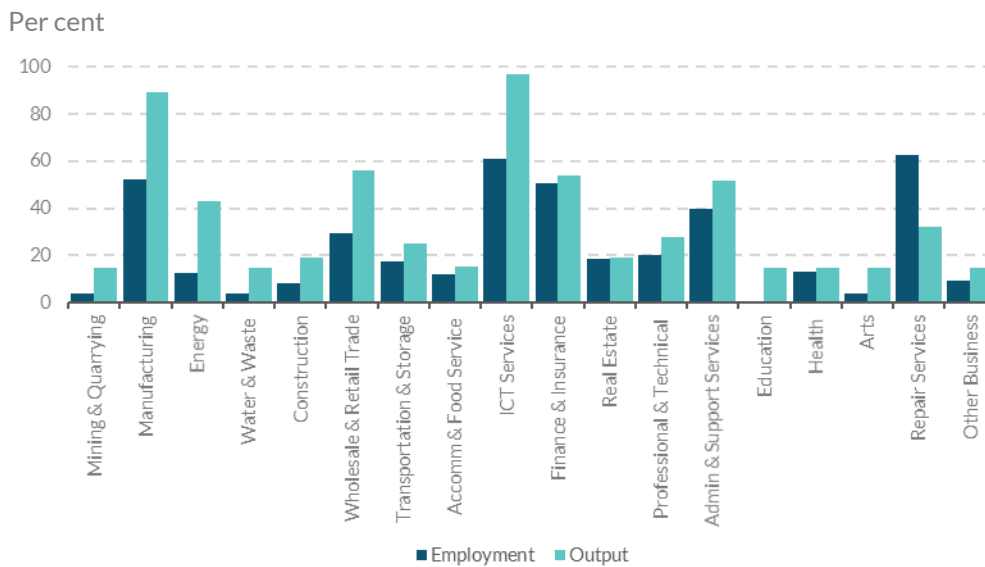
² The importance of these linkages has been identified and emphasised in the economic development literature as far back as [Hirschman \(1958\)](#).



affiliate enterprises in the Manufacturing sector of the Irish economy, highlighting the role of domestic supply-chain linkages.

Employment and Output Shares by Sector and Firm Ownership

Figure 1



Source: CSO, Eurostat, Author's Calculations.

To analyse these sectoral linkages, and the degree of sectoral interdependence within an economy, economists have historically made use of input-output tables. Input-Output Tables (IOTs) are data that provide a detailed analysis of the production process, the use of goods and services and the income generated in that production, at the sectoral or sub-sectoral level. By quantifying the supply chain across all sectors of the economy, IOTs can identify the aggregate change in output from a change in one or more specific sectors. These aggregate effects can further be broken down into direct, indirect and induced effects.

Given the importance of foreign-affiliate production in the pharmaceutical and computer hardware manufacturing sectors and the higher “upstream” position of their outputs in



the value chain, shocks to these sub-sectors are of particular relevance to the Irish economy.³

Additionally, estimates of IOTs at the ownership-sector level for 2019 suggest that the foreign-affiliate manufacturing sub-sector accounts for more than 22 per cent of the inter-sectoral use of intermediate goods and 44 per cent of total exports. Even accounting for the effects of distortionary globalisation activities (including IP transfer, merchanting and contract manufacturing), foreign-affiliate manufacturing remains responsible for 19 per cent of inter-sector intermediate consumption.⁴ Only the foreign-affiliate ICT sector uses a higher share of inter-sector intermediate goods (27 per cent), while no indigenously owned sector accounts for more than 6 per cent of between-sectors intermediates usage.

Figure 2 presents the mapping of the largest 2 per cent of inter-sectoral connections for 2019, with NACE sectors split into indigenous (I) and foreign affiliate (F) enterprises. As can be seen from the network map, the foreign-affiliate manufacturing sub-sector (C-F) is highly interconnected, with multiple apparent transmission paths through which external shocks can propagate through to other sectors in the domestic economy.

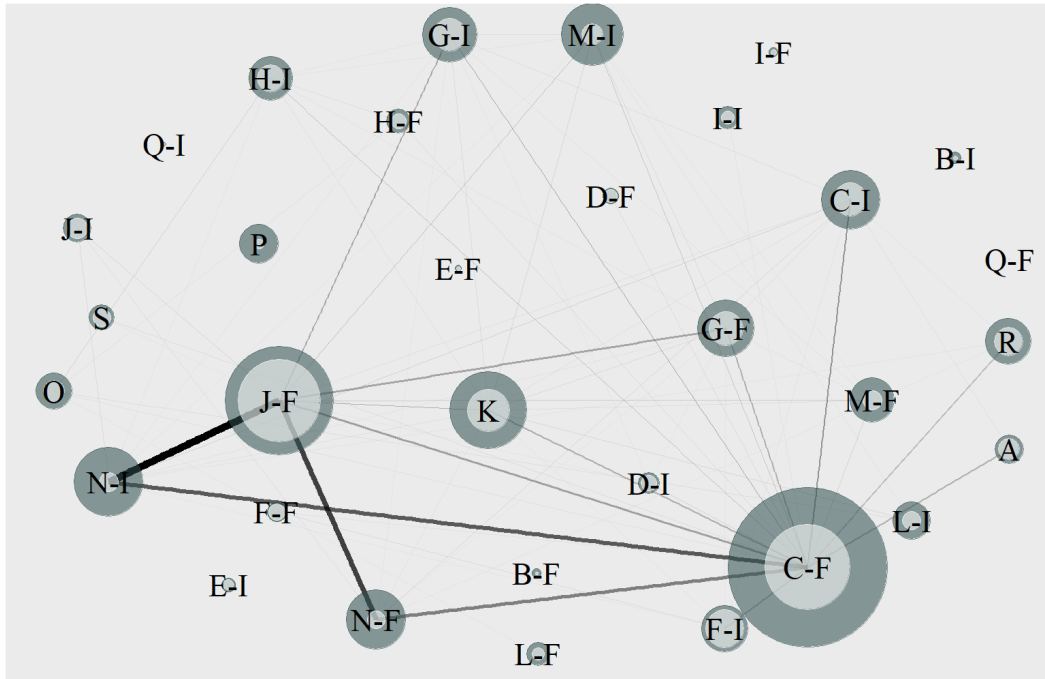
³ As discussed by Olabisi (2020), sectors that are more upstream display more output and export volatility in response to demand shocks. Kalemli-Özcan et al. (2014) show that firms in higher upstream sectors are more exposed to credit and interest rate shocks, as they have higher investment costs and maintain higher levels of working capital. Wang and Disney (2016) demonstrate that, as shocks to demand for final goods transmit through supply chains, industries that are further upstream have higher levels of output and employment volatility.

⁴ See [O'Grady \(2024\)](#).



Intermediate Consumption Network Map, Ownership Extended IOTs

Figure 2



Source: Author's calculations from CSO Supply & Use Tables, and Eurostat AES & FCE data.

Notes: Data refer to 2019. Sectors are represented by a circle (node). The lighter, inner portion of the node represents total intermediate consumption, while the darker, outer portion represents total inputs. The lines between nodes (edges) represent the cumulative value of intermediate consumption flows between both sectors. Legend: A = Agriculture, B = Mining & Quarrying, C = Manufacturing, D = Energy, E = Water & Waste Management, F = Construction, G = Wholesale & Retail Trade, H = Transport & Storage, I = Accommodation & Food Service, J = Information & Communication Technology, K = Finance, L = Real Estate, M = Professional, Scientific & Technical, N = Administration & Support, O = Public Administration & Defence, P = Education, Q = Repair of Computers & Household Goods, R = Health, S = Arts & Other Service Activities.

To quantify the potential effects of a foreign-affiliate manufacturing shock to the wider domestic economy, we employ the hypothetical extraction method (HEM): a prominent empirical approach used to measure inter-industry linkages and the importance of industries to aggregate economic growth. The HEM estimates a counterfactual scenario in which a certain sector operates at a diminished level of productive capacity. The output of the new "hypothetical" economy will be reduced, partly due to the reduction in the extracted sector's output, but also from the decline in purchases from / sales to the remaining sectors, and their subsequent loss of linkages elsewhere in the economy.

Figure 3 presents the results of a HEM scenario using modified Irish input-output tables for 2019, designed to disaggregate sectors into indigenous firms and foreign-affiliate

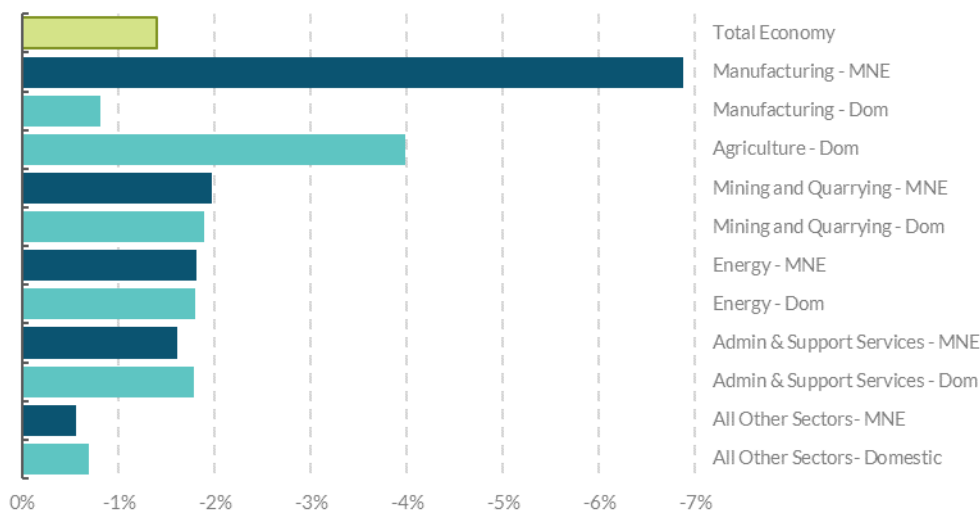


enterprises, and to remove the economic distortions introduced by the globalization activities of multinational firms in specific sectors.⁵ Under this scenario, the foreign-affiliate MNE sub-sector reduce their sales and purchases of intermediate goods in the Irish economy by 5 per cent, with corresponding reductions in final demand goods.⁶

This direct effect represents an aggregate decline in intermediate usage of 1.6 per cent within the economy. However, further losses occur throughout the economy, as the reduced demand for intermediates previously purchased by the foreign-affiliate manufacturing sector (and the reduced availability of intermediates previously produced by the sector) cause output losses across other sectors. In turn, these cause further output losses as a result of the reduced purchases to make their outputs, and lower sales of these outputs that are used by other sectors in their production processes.

GVA loss from a 5% decline in Foreign-Affiliate Manufacturing sales/purchases

Figure 3



Source: Author's calculations from CSO Supply & Use Tables, and Eurostat AES & FCE data

The aggregate effect of this 5 per cent reduction in the foreign-affiliate manufacturing sector results in total intermediate consumption and production losses of 2 per cent, and an aggregate GVA decline of 1.4 per cent. Of the sectors that are most affected by the

⁵ See [O'Grady \(2024\)](#) for a full discussion of the process used to generate these modified input-output tables for Ireland.

⁶ Such a reduction could be caused by a foreign-affiliate's parent firm anticipating a decline in global demand conditions, or shifting some production from the Irish affiliate to an affiliate located in a third country.



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contraction, Agriculture (-4 per cent), foreign-affiliate Mining and Quarrying (-2 per cent) and indigenous Admin and Support Services (-1.9 per cent) experience large relative declines, due to their dependence on the foreign-affiliate manufacturing sector purchasing their output.

In conclusion, our analysis shows the potential economy-wide output losses from a contraction in the foreign-affiliate Manufacturing sector. Primarily consisting of a relatively small number of MNE subsidiaries in the pharmaceutical, chemical and computer hardware sub-sectors, firms in these industries are more exposed to changes in global financial and economic conditions and, consequently, provide an additional transmission channel through which external shocks can affect indigenous Irish firms. As a small open economy that is already dependent on external trade markets, these indirect effects add an additional element of volatility to the Irish outlook that may arise from a decline in global, sectoral or firm-specific economic conditions.