

# The Changing Landscape of International Trade: New OECD Research on the Changing Landscape of Global Trade, Technology, and ‘Tastes’: With Some Implications for Employment and Inequality

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## **Summary**

The panel was charged with addressing the changing landscape of global trade. These remarks flesh out observations based on new research at the Organisation for Economic Co-operation and Development (OECD). Section I considers data, hypotheses and analysis for how and perhaps why the landscape of global trade is changing. Section II considers implications of this changing landscape of global trade for inequality, in the broader context of forces affecting the labor market. Observations include: 1) Broad measures of trade integration have attenuated in recent years, although competition along the product spectrum has become more intense, particularly for complex products produced in advanced economies. 2) A decomposition of forces underlying the decline in manufacturing jobs at the national level finds that the direct effect of trade flows is dominated by changes in technology, and “tastes” (e.g., consumer preferences shifting toward demand for services instead of goods). 3) Manufacturing employment is more regionally concentrated than is services employment.

Putting the pieces together: The combined shocks of trade, technology and tastes disproportionately affects some regions within countries, is associated with a widening dispersion of regional

incomes, and overall rising national inequality measures. Three inter-related policy objectives emerge: 1) Levelling the international playing field for trade; 2) Deploying domestic policies to deal with the economywide reallocations associated with changing trade, technology and tastes; 3) Considering how best to address the disproportionate impact on the regions most deeply affected by the concentrated forces of the “three Ts.”

## **I. On the Changing Landscape of Global Trade**

### ***I.i. Geography***

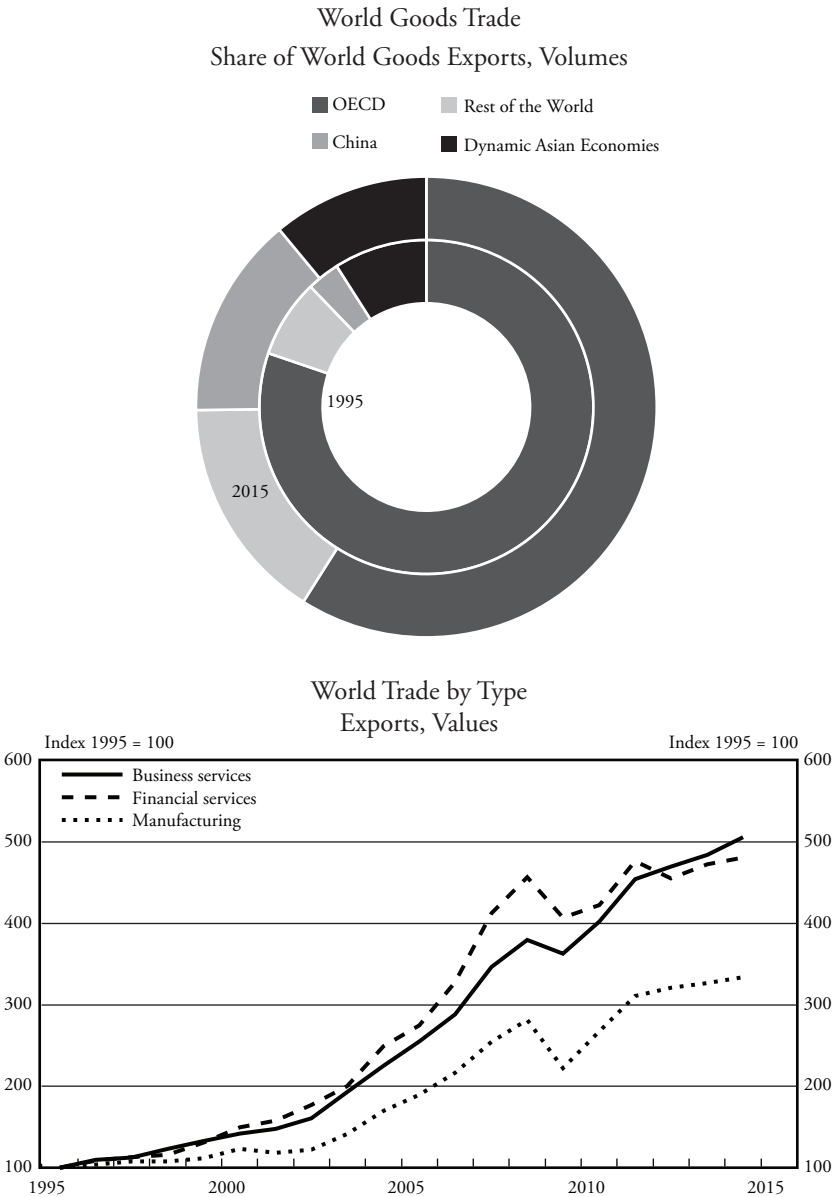
A first observation on the changing landscape of global trade is the shifting geographical patterns of trade and the different growth rates of goods versus services (Chart 1). Goods trade is larger, but growing more slowly than services trade, and has shifted away from OECD economies toward China and Dynamic Asia. These shifts are sometimes used to suggest that globalization has negative consequences for the size of market for OECD producers, with negative implications for trade-impacted jobs. However, the market size for goods trade in 2015 is some five times greater than in 1995, so, at least in aggregate, there is plenty of “room” for OECD producers.

### ***I.ii. Trade Intensity***

A second observation is whether trade intensity has fallen, perhaps permanently, and, if so, whether this matters. There has been a marked downshift in trade intensity whether measured as the ratio of world trade to world gross domestic product (GDP) growth (Chart 2) or as the ratio of export and imports to GDP (Chart 3). Whether the downshift is permanent or temporary, and the reasons, does matter.

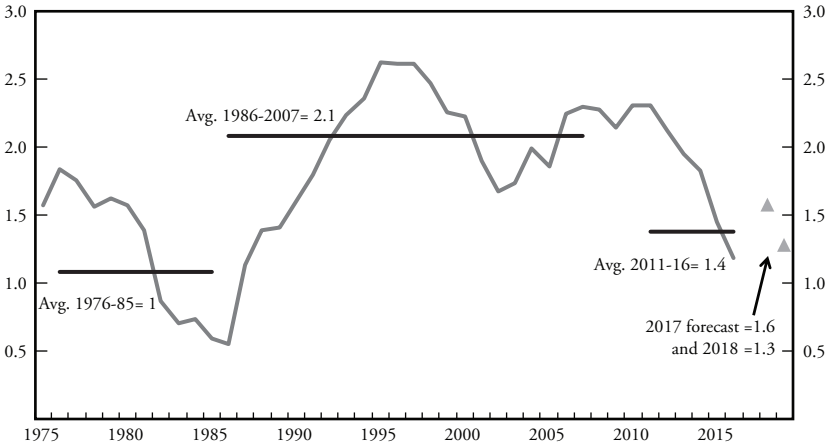
Recent OECD research (Haugh et al. 2016) explores several hypotheses and consequences. The down shift may reflect a lower rate of trade-intensive business investment, particularly by European economies which trade intensively one with another. This suggests that trade intensity could rebound when investment does. It could be due to a rebalancing of the Chinese development model toward services; or an onshoring of intermediate goods production. Both of

**Chart 1**  
**Shift in Specialization, Patterns and Growth from More Open**  
**Advanced and Mfg Toward Less Open EME and Services**



Notes: LHS—Dynamic Asian Economies includes Malaysia, the Philippines, Singapore, Thailand, Vietnam, Chinese Taipei and Hong Kong. RHS—Business services includes R&D, ICT, real estate and other business activities. Financial services includes financial intermediation, insurance, pension funding and other financial activities. Source: OECD-WTO Trade in Value Added (TiVA) database; UN Comtrade database; and OECD calculations.

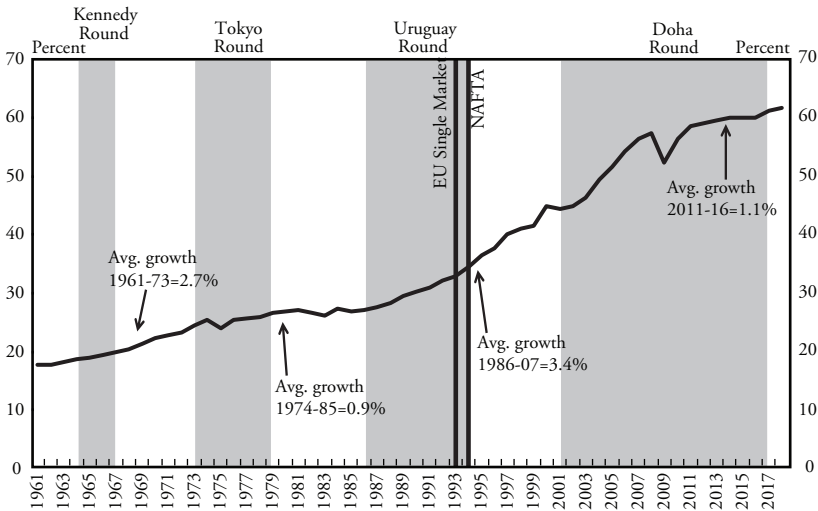
**Chart 2**  
**Ratio of World Trade Growth to GDP Growth**  
**Five-Year Average**



Notes: World trade is goods plus services trade volumes measured at market exchange rates in U.S. dollars. World GDP volumes measured at market exchange rates in U.S. dollars.

Sources: OECD June 2017 Economic Outlook database; and OECD calculations.

**Chart 3**  
**World Trade Intensity**  
**World Exports Plus Imports to GDP**



Note: Both world trade and GDP measured at market exchange rates in constant 2010 U.S. dollars.

Source: OECD Economic Outlook database.

these represent structural factors, but with different sectoral implications. A rebalancing toward services could change the global market for goods. Onshoring of intermediates could change the structure of global value chains and alter development prospects for countries using export-led growth. A third possibility is rising protectionism, and/or stalled multilateral trade negotiations. Indeed, the deepening of trade intensity measured as the sum of export and imports as a share of GDP (Chart 3) was greatest during the Uruguay round, North American Free Trade Agreement and European Single Market negotiations. Since then, preferential agreements have been the norm, which may make less progress on liberalization of services, the faster growing global market.

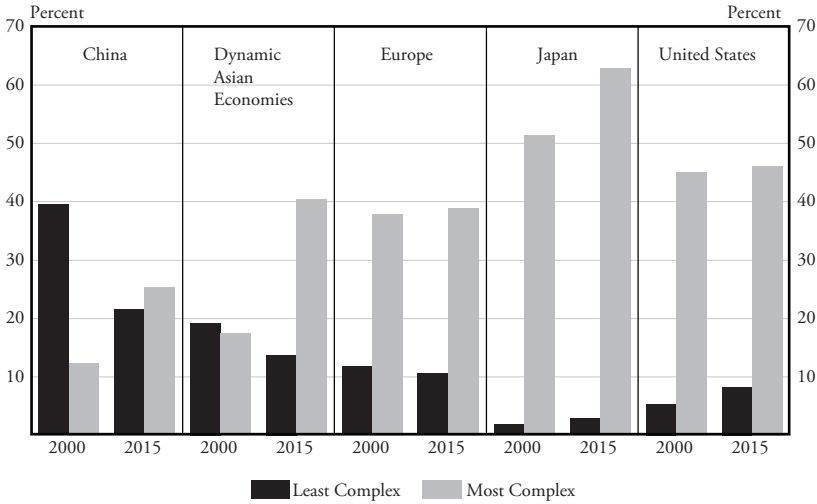
Regardless, one finding from OECD research (Adalet McGowan et al. 2015) is that trade intensity is associated with diffusion of innovation from the productivity frontier to other firms. A return to the historical path of trade intensity of the 1986-2007 period could boost total factor productivity in the OECD by some  $\frac{1}{4}$  percentage point. This is substantial in the context of OECD total factor productivity growth which has averaged only  $\frac{1}{2}$  percent per year over the past 10 years. (Haugh et al. 2016).

### ***1.iii. Product Competition***

Does the changing geographical landscape of trade affect the nature of product competition? (Chart 4) Using a disaggregated set of data for trade in goods, OECD research finds that China and Dynamic Asian Economies (DAE) have moved up the spectrum of product complexity to compete with products of advanced economies including Japan, Europe and the United States. (Araujo, Chaulaz, Haugh 2017) China's exports of complex products rose from somewhat more than 10 percent to about 25 percent of their export basket from 2000 to 2015. For DAE, the share of the most complex products in their exports more than doubled to 40 percent between 2000 and 2015.

However, the research also finds heightened competition among the advanced economy exports of the most complex products. Japan's exports of the most complex products rose to nearly 65 percent of their

**Chart 4**  
**Share of Export Goods by Complexity**



Notes: In nominal terms. Least complex is the first quartile of products by complexity (e.g., crayons), most complex is the fourth quartile (e.g., medical equipment), excluding major commodities. Dynamic Asian Economies includes Malaysia, the Philippines, Singapore, Thailand, Vietnam, Chinese Taipei and Hong Kong. Europe is the unweighted average of the Czech Republic, France, Germany, Ireland, Italy, Poland, Portugal and the U.K.

Sources: UN Comtrade database; and OECD calculations.

exports by 2015 whereas the Europe and the United States share stayed around 45 percent and 40 percent, respectively. Analyzing the overlap between the exports of specific products within these broad aggregates finds that the competition among products of the advanced economies is relatively more intense than is the overlap in product competition among the advanced and the DAEs and China.

There are two possible implications of this changing nature of product competition which bear further analysis. First is a standard comparative advantage story of substitution of products from advanced economies to products of similar complexity from Asia, which would tend to be lower priced. The second is a variant of the intraindustry trade story. With heightened competition among firms of similar products and similar wage costs (since the competition is among advanced economies), there may be greater incentives to buy rival firms rather than compete for the market, an incentive which may be exacerbated by the current environment of low interest rates.

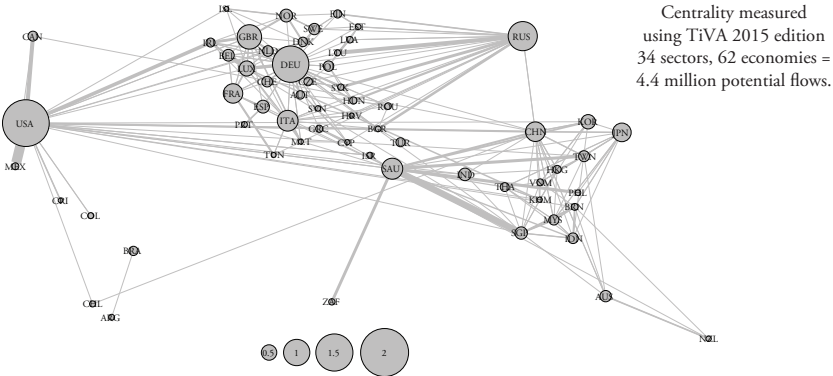
#### ***I.iv. Global Value Chains***

Global value chains (actually, networks of producers and suppliers) have become an increasingly important feature of the global landscape. Given the importance of global value chains' (GVC) participation, examining how GVC hubs and spokes move over time and over geography gives us new insights on the changing landscape of global trade. New OECD research (Criscuolo and Timmis 2017) using the trade-in-value-added (TiVA) and input-output databases display the geography and characteristics of the networks using a hub-and-spoke concept, the Bonacich-Katz eigenvector centrality which measures both direct and indirect connections (Chart 5). In this presentation, the three-production platforms of North America, Europe and Asia are quite clear.

The new measures offer substantial sectoral detail for both goods and services. A look at the information technology sector shows how the GVC relationships have changed from 1995 to 2011. Comparing the size and centrality of the hubs and spokes over time can reveal how reallocations of firms and workers might be taking place. For example, how centrality changes for the manufacturing of IT products versus IT services may be instructive for evaluating firm and worker reallocation challenges and possible policy strategies. Manufacturing centrality has changed location in a substantive way moving from more advanced economies east to the Asian hub, presaging reallocations of firms and workers. Services centrality, however, has become more important over all location over the time period under consideration (1995-2011) reflecting the rising importance of this service both as a final demand and as an input to the production and trade in other services and goods.

This new approach to measuring GVC relationships also helps to evaluate the relative importance of being a hub versus a spoke for firm productivity. The research, using the Orbis firm level data (mostly firms in advanced economies) suggests that becoming part of a key hub versus remaining a spoke is not correlated with productivity of the average firm within a sector. On the other hand, the directionality of the GVC relationship does matter. Consistent with other research, linking forward to more productive foreign buyers is

**Figure 1**  
**Hubs and Production Networks**  
**Aggregate Central and Peripheral Economies, 2011**



Notes: Economies are placed according to their location. Node size denotes total centrality (forward and backward) aggregated at an economy-level and includes all sectors within global production networks. Edges reflect direct input flows. For clarity only the largest input flows are reflected, those exceeding 2 percent of total inputs used in the importing or exporting economy.

Source: Criscuolo, C. and J. Timmis (2017), "The Changing Structure of GVCs: Are Hubs Central for Productivity?" (forthcoming), OECD Directorate for Science, Technology and Innovation.

positively related to firm productivity. Backward linkages, e.g., buying inputs from more productive foreign firms, does not seem to translate into domestic productivity gains. Below the average firm, smaller firms apparently have faster productivity growth when connecting to faster growing foreign buyers (via forward linkages) or foreign suppliers (via backward linkages), with those effects weakening for larger firms.

## **II. On the Implications of the Changing Global Landscape for Jobs and Inequality**

### ***II.i. Global Landscape, Jobs and Skills***

The globalization backlash has generated renewed research into the relationship between trade, jobs and inequality. Proper diagnosis of the backlash is a prerequisite for policy response. New OECD research (OECD 2017 and Demmou et al. 2017) uses two different methods to examine the relative role for changes in trade, technology and tastes for the evolution of manufacturing jobs. (Tastes is alliterative and means the changes in consumer preferences away



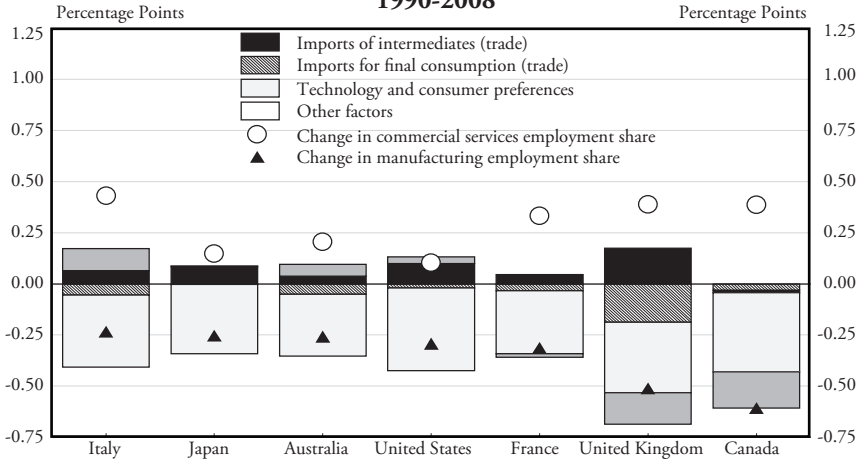
from goods toward services consistent with the rising incomes in advanced economies.) Both methods (one shown in Chart 6) reveal that changes in technology and tastes dominate the direct role for trade flows to impact manufacturing jobs. It is also noteworthy that trade in intermediate goods appears to be associated with manufacturing job creation, whereas trade in final consumer goods is associated with manufacturing job loss. Further, as has been well documented by other research, the types of jobs that have been affected most by the changing overall landscape (tastes, technology and trade) are middle skill jobs. Adding all this up, whereas the backlash has been ascribed to globalization per se, the diagnoses of manufacturing and middle-skill-job loss finds an apparently greater role for technology and tastes. Policy needs to be appropriately matched to the diagnosis; so responding to the globalization backlash is not just a job for trade policy.

### ***II.ii. The Regional Dimension***

A question might be raised at this point—why focus on manufacturing jobs? Manufacturing employment is more concentrated in regions than is services production, although the degree of concentration differs across countries (Chart 7). The regional concentration of manufacturing employment means that sector-specific shocks to manufacturing, whether originating from changes in trade, tastes, or technology, may have a substantial regional impact even if their overall macroeconomic effect on the national economy is modest.

There are several important questions and implications of this regional concentration, although these hypotheses need more analysis. First, why is manufacturing employment concentrated by region? It might be the manifestation of a domestic value chain or cluster. Just as with the global value chain, this clustering might yield a region with productivity and income above the national average, so long as the cluster is competitive. Higher wages offered by firms within the cluster would tend to crowd-out lower productivity services tending to concentrate manufacturing more. Recent OECD analysis finds that greater diversity of activities tends to shelter urban areas from adverse employment consequences from international competition and the pressure of technological change. In contrast, rural areas

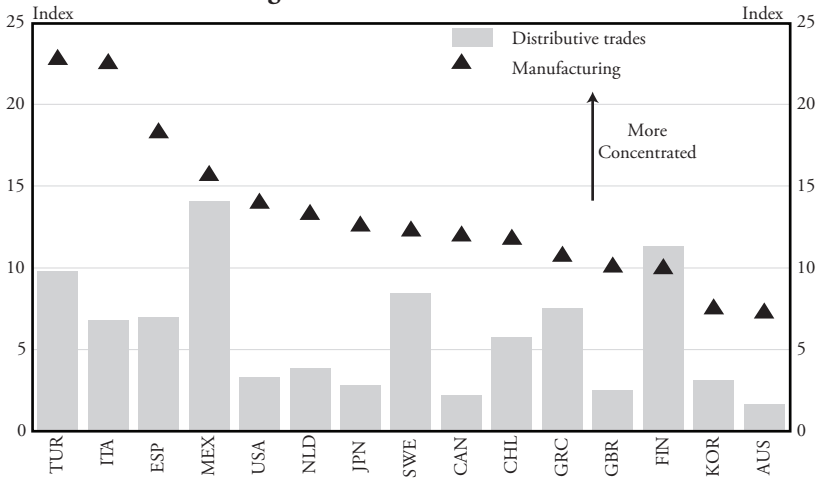
**Chart 6**  
**Factors Explaining the Decline in Manufacturing Jobs**  
**Change in Share of Total Employment, Annual Average**  
**1990-2008**



Notes: Decomposition based on regression estimation. Each factor is based on the change over the period. Technology and consumer preferences include ICT and machinery investment, changes in the manufacturing consumption share and time specific effects.

Sources: OECD Economic Outlook database; STAN database; and OECD calculations.

**Chart 7**  
**Geographic Concentration Index by Sector**  
**Average From 2000 to 2015 or Latest**

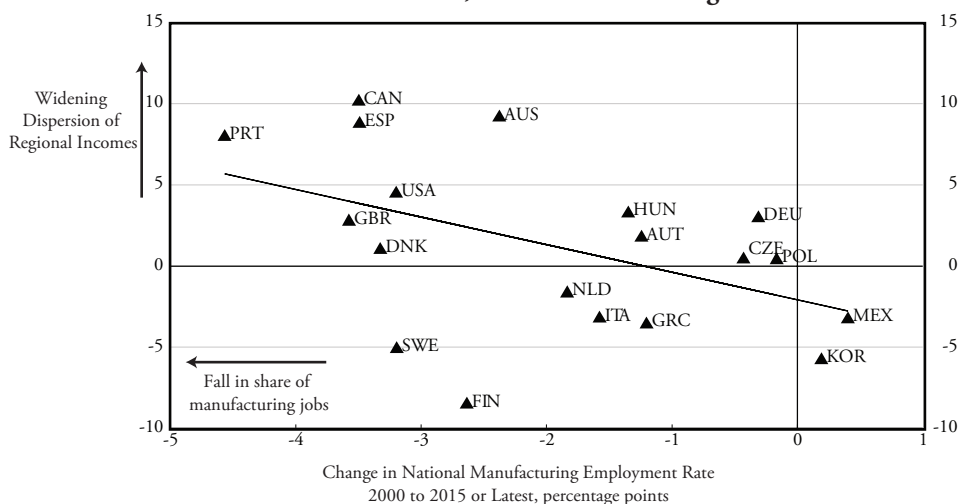


Notes: "Distributive trades" includes distributive trade, repairs, transportation and storage, accommodation and food service activities. Index measures the extent to which employment is concentrated in particular regions, varying between 0 (no concentration, where all regions of a country have the same manufacturing employment rate) and 100 (maximum concentration, where all manufacturing employment is concentrated in the smallest region). The index incorporates the size of the region and is based on OECD (2003) "Geographic Concentration and Territorial Disparity in OECD Countries."

Source: OECD Regional database; and OECD calculations.

Chart 8

### Change in Average Income Inequality Across Regions 2000 to 2015 or later, 90:50 Ratio Percentage Points



Sources: OECD Regional database; and OECD calculations.

appear less diversified and tend to specialise in primary goods and low-quality manufacturing, which have been hardest hit by trade shocks (OECD 2016).

What happens if the hub of the cluster experiences competitive pressure, for reasons of tastes, technology, or trade? The overall cluster could fail, shedding labor into the region. The creation of jobs in expanding activities to compensate for losses in other activities is key to adjust to structural change. However, regions that experience a greater decline in the manufacturing employment rate than the national average also tend to suffer a greater fall in total employment than the national average. Recent OECD research (Rusticelli et al. 2017) shows that, in more than half the countries analysed, changes in manufacturing employment are more strongly correlated with total regional employment than are changes in employment in other sectors of a similar size. In other words, when a shock hits manufacturing firms in some regions, other jobs do not seem to fill the gap. When the region as a whole experiences a shock it may go from being above average to being below average national income; in any case, regional disparities of income associated with

manufacturing jobs loss is associated with higher overall national inequality measures. (Chart 8).

### **III. Integrated Policy Packages**

To summarize the starting point for policy: The research has documented a changing landscape of global trade through the dimensions of geography, goods versus services and product complexity. However research shows that the changing landscape for trade is accompanied by a even greater changing landscape of technological forces and consumer preference which collectively affect the whole of an economy. Further examination finds that because manufacturing jobs are concentrated by region, the trade, technology and tastes have an accentuated impact on regional employment, with manufacturing employment taking the brunt of adjustment.

Hence we get to the need for three dimensionalities in policy: international, domestic and regional.

The first dimension for policy is international. Global competition needs to follow common rules so that comparative advantage guides the location for production and trade, whether goods or services. The lack of progress on multilateral negotiations implies that one feature of the changing global landscape for trade is different rules of the game for different players. (Additional discussion of the level playing field can be found in OECD 2017b)

The second dimension of policy is domestic. Even with a level playing field in cross-border trade and investment, deeper integration according to comparative advantage will yield reallocation of production and employment. Moreover, changing technology and tastes will also affect the volume and location of production and employment between goods and services. So domestic policies are key to create a vibrant economy that facilitates business growth and job creation, so that workers that can take advantage of the opportunities.

The third dimension of policy is place-based or regional. If all regions and shocks were homogeneous there would be no reason for place-based policies since the domestic and international policy dimensions would suffice. However, regions are heterogeneous, and

shocks are heterogeneous and disproportionately affect certain regions and workers. Moreover, there are frictions: Neither workers nor firms are completely mobile. What kind of policies are best designed to ameliorate the impact of disproportionate shocks in an environment of frictions is the topic for another panel.

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