Statistical Insights: The ADIMA database on Multinational Enterprises

Category: Statistical Insights,Uncategorized
written by oecdecoscope | August 27, 2019
by Graham Pilgrim, OECD Statistics and Data Directorate

Multinational Enterprises (MNEs) have been at the forefront of changes in the global economy over the last few decades, as trade and investment barriers have been removed and transportation and communication costs have declined. In a world of global value chains, understanding MNEs – where they are, how they operate, and where they pay taxes – has never been more important. However, surprisingly few official statistics are currently available on individual MNEs.
To fill this gap the OECD has begun to develop a new database – the Analytical Database on Individual Multinationals and Affiliates (ADIMA) – using a number of open "big data" sources that can provide new insights on individual MNEs and their global profiles.

What is ADIMA?

ADIMA has four components:

Physical Register: Offering a comprehensive view of each MNE and its subsidiaries.

Digital Register: Showing all websites belonging to each MNE.

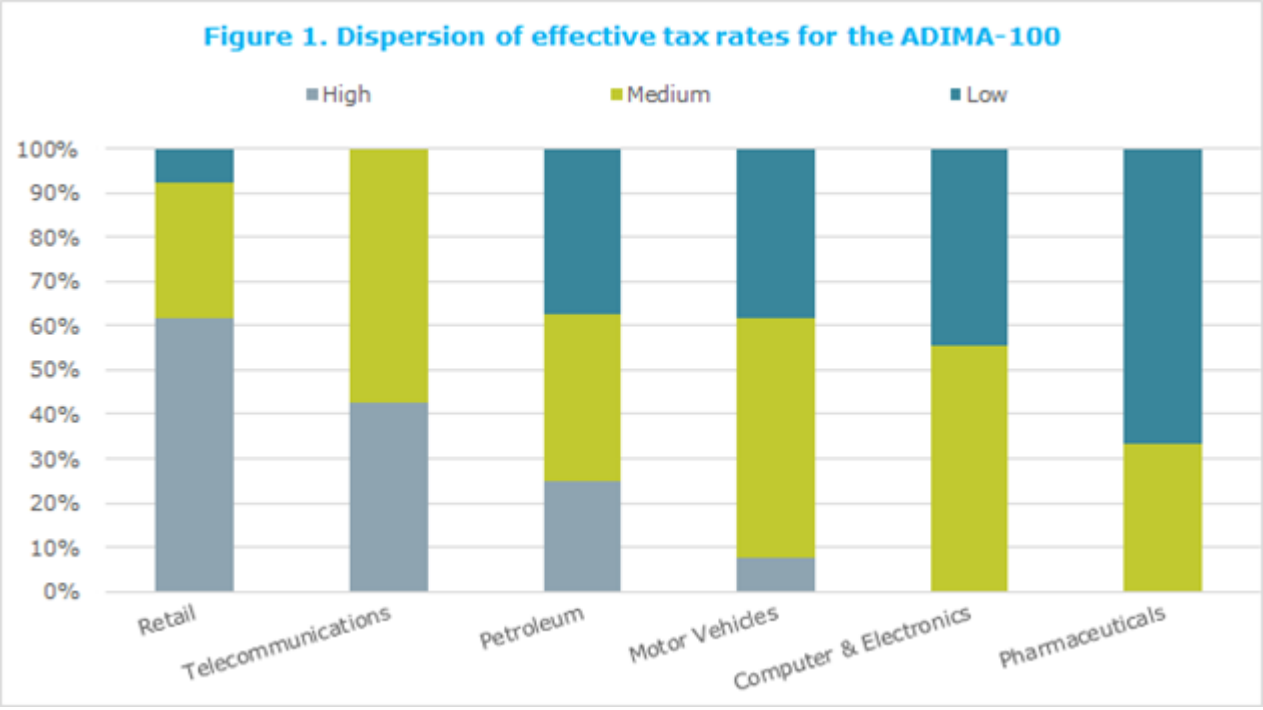
Indicators: Providing harmonised data at the global level for each MNE.

Monitor: Identifying events like large company restructurings that can give early warnings of potential significant impacts on trade, GDP and FDI data.

This information already covers 100 of the world's largest MNEs, and more will be added in future releases.

What does ADIMA tell us on taxes?

At an aggregate level, ADIMA shows that in 2016 the 100 MNEs covered in the the database (ADIMA-100) generated nearly $10 trillion in revenues (almost 20% of global GDP), earned $730 billion in profits and paid $185 billion in taxes. But you can also drill down and get more targeted information. For example, although the average Effective Tax Rate (ETR) of the ADIMA-100 was about 25%, it was significantly lower for MNEs producing computers and electronics, and pharmaceuticals, who have substantial intangible assets that they can locate in lower-tax economies (Figure 1).



Note: Low refers to ETR values less than 23%, Medium refers to ETR values between 23% and 33%, and High refers to ETR values greater than 33%. These values were chosen so that a third of the ADIMA-100 population was present in each classification.

Where are firms physically located?

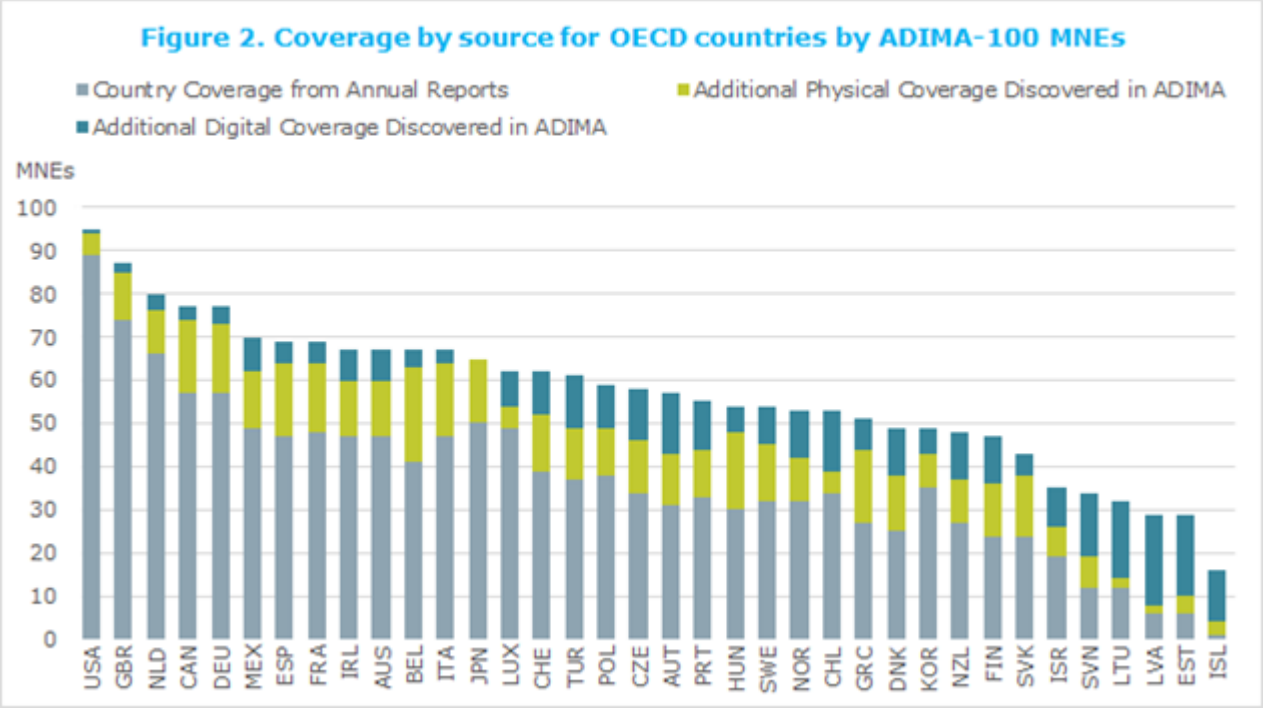
The physical register provided by ADIMA describes how MNEs structure their physical operations across countries. Here ADIMA's innovative tools and variety of data sources go beyond

the information typically available in company reports (Figure 2), enabling deeper analysis and a mechanism to help profile firms and their affiliates in national and international statistical business registers. For example, companies' annual reports show that 74 of the ADIMA-100 have a physical presence in the United Kingdom, with an additional 11 MNEs identified using complementary sources (e.g. Legal Entity Identifier, Website Hyperlink Graphs, Server Security Certificates and WikiData), bringing the number of ADIMA-100 MNEs operating in the United Kingdom up to 85.

What about MNEs' digital presence?

Physical presence may not reflect digital presence, that is, and in particular for firms whose only penetration into markets is through country-specific websites (i.e. no physical presence). This matters, especially for statistics on highly digitalised MNEs, as the provision of digitised services blurs the traditional line between companies with a foreign presence and those that trade across borders which may affect the comparability of international data on trade and national income.

Digital channels are comparable in scale to physical channels: the ADIMA Digital Register captures 20,000 websites while the ADIMA Physical Register captures 26,000 subsidiaries. In smaller countries the digital presence is often more important: for example, only 10 of the ADIMA-100 are physically present in Estonia but a further 19 mainly "digitalised" companies have an electronic presence (Figure 2).



Looking at another interesting example, annual Reports for Alphabet, Google's parent company, show subsidiaries in two OECD countries but ADIMA's physical and digital registers record subsidiaries and/or national websites in all OECD countries. For any given domain name, advertising revenue may be recorded as either a domestic or a cross-border transaction. The choice may depend on whether the country-specific site has been legally registered in that country.

Next Steps

The OECD plans to collaborate with interested official statistical agencies to improve both national statistics on MNEs and ADIMA data. The collaborations should also consolidate the tools developed in ADIMA, extend its coverage of MNEs, improve its methods and incorporate new data sources.

The measure explained

The OECD Analytical Database on Individual Multinationals and Affiliates (ADIMA) is a new data framework offering information on both the physical and digital presence of MNEs by country. It combines information from traditional sources such as companies' Annual Reports with newly emerging sources

such as the Legal Entity Identifier, Website Hyperlink Graphs, WikiData, OpenStreetMap and Server Security Certificates.

Where to find the underlying data?

- Physical Register
- Digital Register
- Indicators
- Monitor

Further reading

- Measuring Multinational Enterprises
- Measuring MNEs using big data: Introducing ADIMA (PowerPoint)
- Methodology overview
- Measuring MNEs using Big Data: The OECD Analytical Database on Individual Multinationals and their Affiliates (ADIMA)

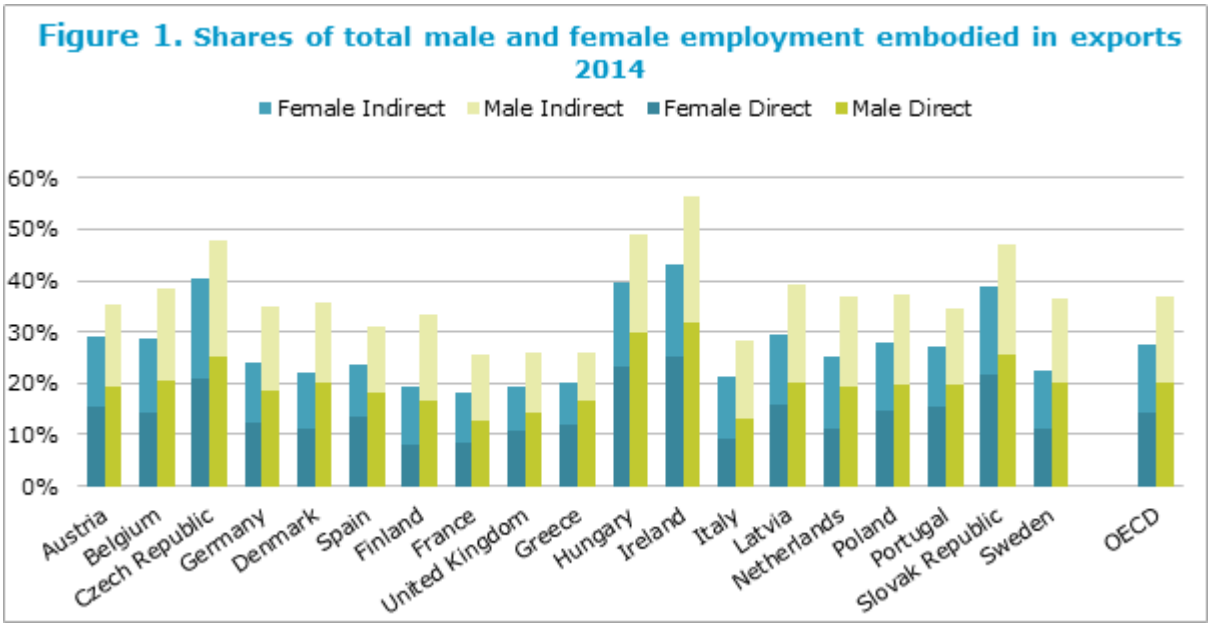
Statistical Insight: men's employment more dependent on trade than women's

Category: Statistical Insights,trade
written by oecdecoscope | August 27, 2019
by Fabienne Fortanier, OECD Statistics and Data Directorate

Concerns are growing that globalisation may have created a few big winners at the expense of many losers. This has stimulated efforts to
analyse how *trade can be made to Work for All,* for example by focusing on the skills and occupations of affected

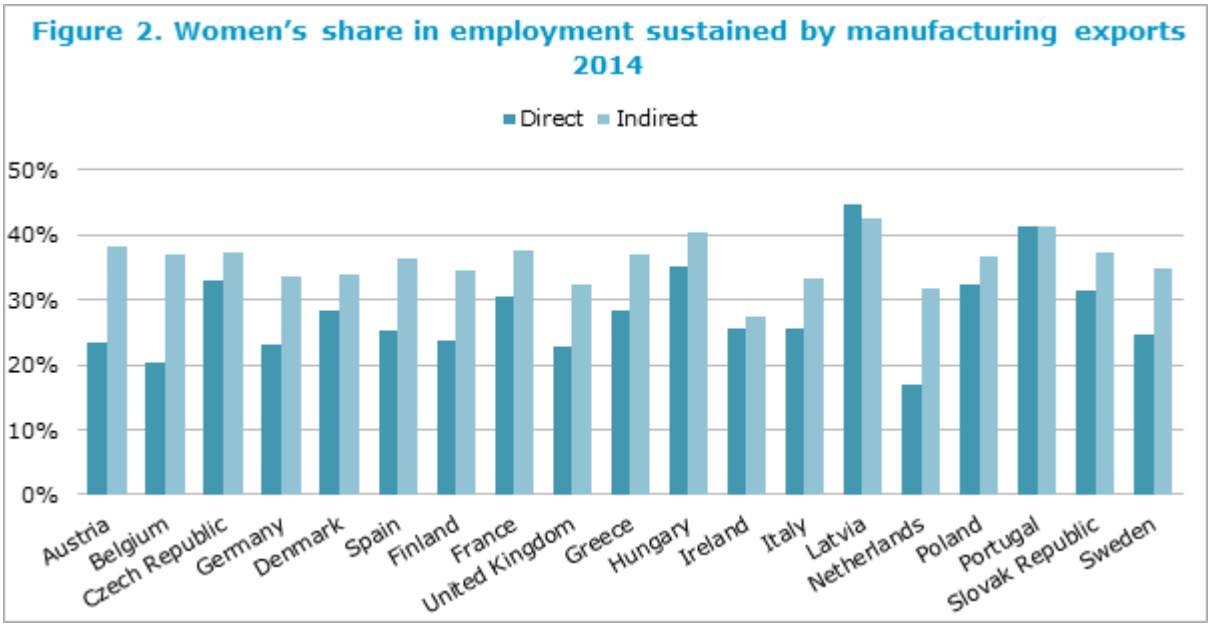
workers. However, there has been less attention to the gender dimension of
globalisation and global value chains, and in particular to whether they are
having differing effects on men's and women's work.

New analysis shows that men's employment is more dependent on international trade than women's. On average across the countries studied, 37% of men's jobs, but only 27% of women's jobs, depend on exports – either because the firms they work for export directly, or because they indirectly supply other firms that subsequently export. This compares to only 27% of women's employment (Figure 1).



Source: OECD Statistics and Data Directorate estimates, based on full-time equivalent employment.

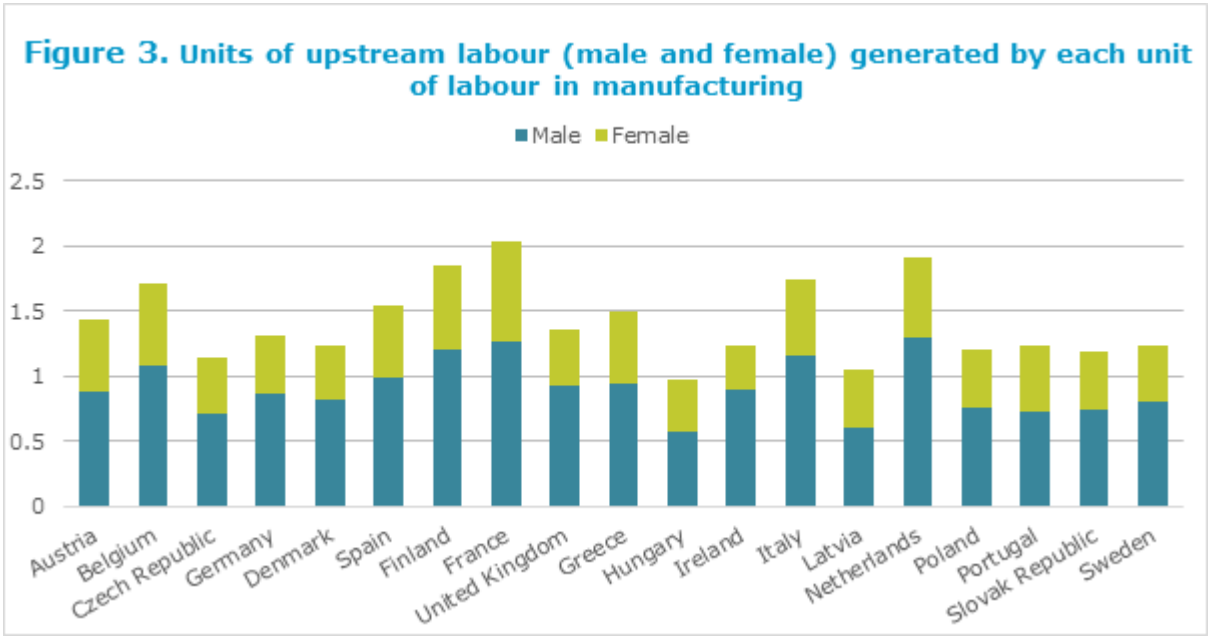
Focusing on manufacturing exports only (which account for around 70% of international trade), Figure 2 illustrates that in nearly all countries, the share of women in employment that is *indirectly* sustained by manufacturing exports is higher than the share in employment that is *directly* sustained. For example, in Germany, women's share of manufacturing jobs that is directly sustained was just over 20% in 2014 but close to 35% of indirect jobs (Figure 2).



Source: OECD Statistics and Data Directorate estimates

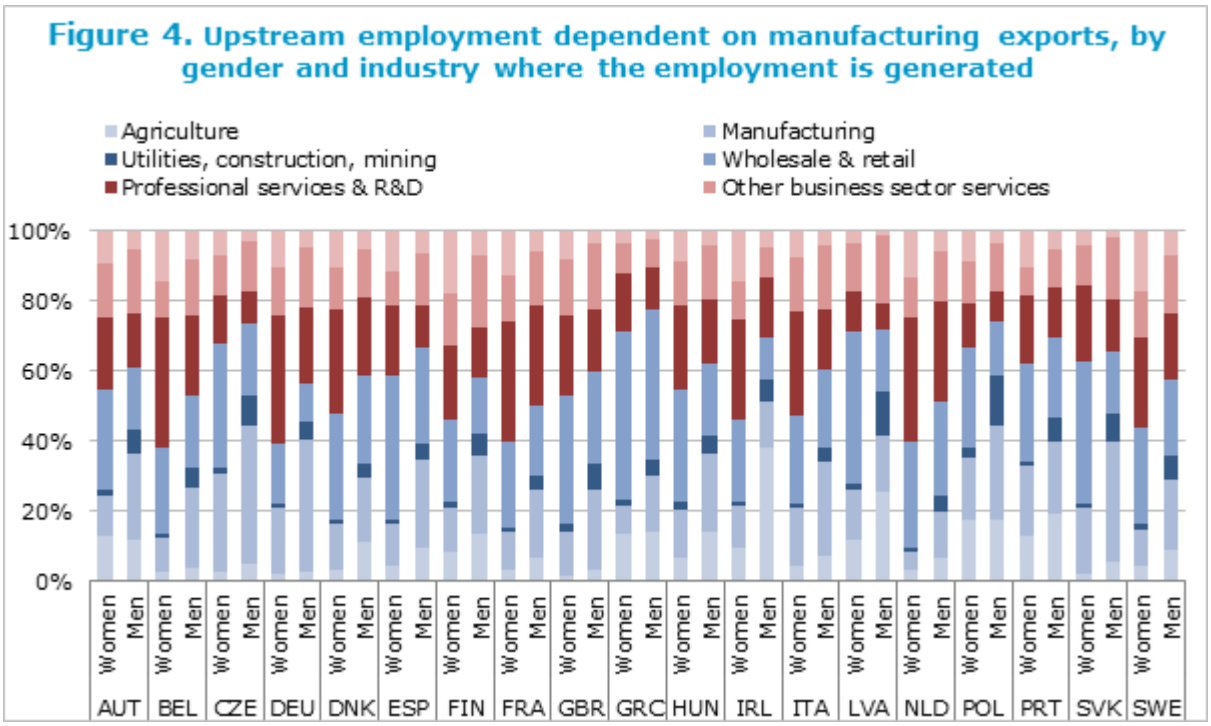
Women's jobs are thus both less dependent on trade overall, and less directly involved with manufacturing exports. These trends arise partly from differences in female labour participation across industries and partly from the relative contributions of these industries to total trade. Overall, women tend to work in business services and in other, mainly non-market, services, rather than in manufacturing, where on average they only account for a quarter of the workforce.

However, while men account for the lion's share of the work involved in manufacturing exports, that work generates a substantial number of upstream jobs held by women. As Figure 3 shows, for each unit of labour input in direct manufacturing exports, an additional 0.5 unit of female labour input is generated in the companies that supply exporters, as well as an additional 0.9 unit of male labour inputs. Put differently, each job in manufacturing exports generates on average 1.4 additional jobs upstream, a third of which are jobs held by women.



Source: OECD Statistics and Data Directorate estimates

The *nature* of the upstream participation also differs significantly between men and women. While the bulk of upstream jobs are in the services sector, this is particularly true for women's jobs. Taking again Germany as an example, Figure 4 shows that less than 20% of women's upstream jobs are in industrial and goods sectors (Agriculture, Utilities, Construction, Manufacturing and Mining), compared to 45% for men.



Source: OECD Statistics and Data Directorate estimates.

The detailed data compiled for this analysis on the export-dependency of men's and women's jobs provide an indication of the extent to which reducing gender wage gaps will depend on encouraging more women to seek employment in higher-paying sectors of the value chain.

How the indicators were constructed

The estimates of female employment in global value chains were produced by combining the TiVA ICIO (2008-2014) with data on labour input by industry, measured in hours worked as reported in the National Accounts, broken down by gender. The gender breakdown was derived from Labour Force Surveys, which is the only sufficiently detailed source to support this analysis, using a combination of total employees (male/female) broken down by industry, corrected for average weekly working hours to adjust for the fact that in many countries, women work fewer hours on average. For details on the calculations, as well as on the estimations made in case of missing data, see the accompanying background note.

Further reading

- Gender in Global Value Chains: the impact of trade on male and female employment
- Background note on women in GVCs
- Gender in Global Value Chains: how does trade affect male and female employment?, OECD Statistics Newsletter (2018), Issue 68, July 2018

Will the inflation genie escape the bottle? New evidence on globalisation, competition and inflation

Category: international trade,Uncategorized
written by oecdecoscope | August 27, 2019
By Dan Andrews, Peter Gal and William Witheridge, Economics Department

Markets and commentators are speculating that there may be a sustained pick-up in inflation in the United States, after years of subdued price pressures. Along with continued solid US jobs growth and low unemployment, there are tentative signs of higher wage growth and the fiscal stimulus will also boost short-term growth. Global growth is also getting stronger (OECD, 2018a).

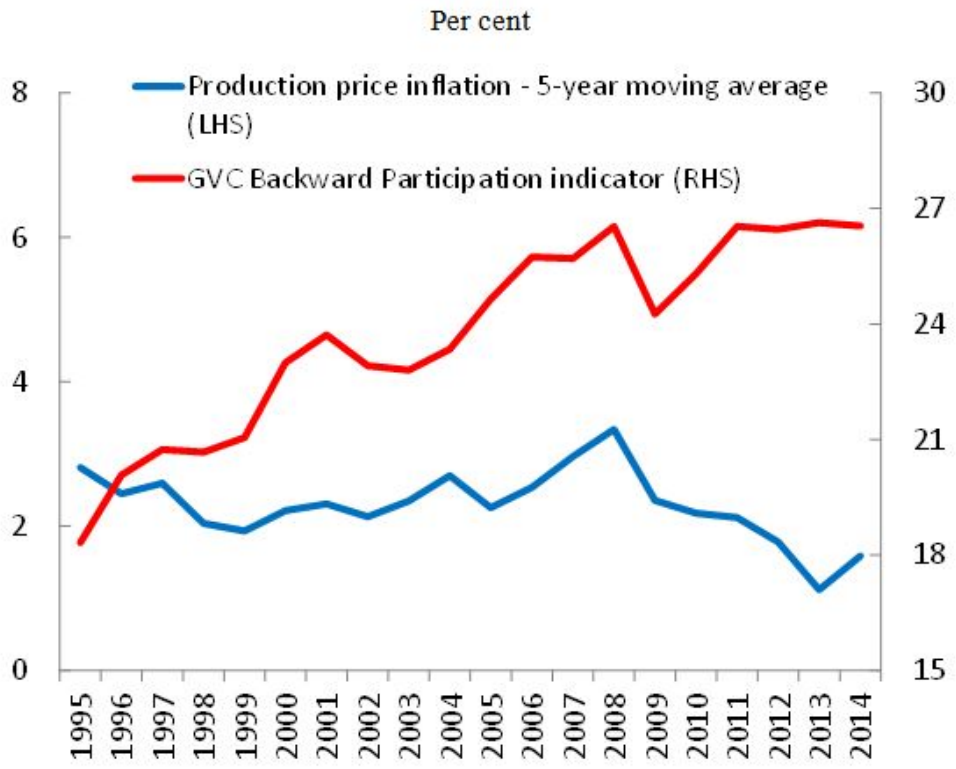
As well as these recent developments, longer-term worldwide trends which have kept inflation generally low since the mid-1990s may also be reversing. In particular, globalisation appears to have stalled since the crisis, aggregate demand in strengthening and output gaps have closed or are generally close to zero in most major countries. Moreover, there is mounting evidence of rising market power in services sectors. Together, these trends risk letting the inflation genie out of the bottle.

Declining inflation in many countries over the past few decades at the same time as rising global competition has led to a debate on the importance of globalisation for domestic inflation. Auer, Borio and Filardo (2017) at the BIS have

argued that rising GVC integration has accentuated the importance of global factors – particularly global economic slack – for domestic inflation. However, recent research at the ECB (Tagliabracci, Osbat and Koester, forthcoming) and at the US Federal Reserve (Yellen, 2017) has disputed this conjecture.

Figure 1 shows that global value chain (GVC) integration expanded significantly from 1995 until the crisis, while inflation remained relatively subdued. In the post-crisis period, GVCs flattened off and remained around the pre-crisis peak, while producer price inflation has fallen dramatically and remains very low on average across industries for our sample of countries.*

Figure 1. Global value chains and inflation



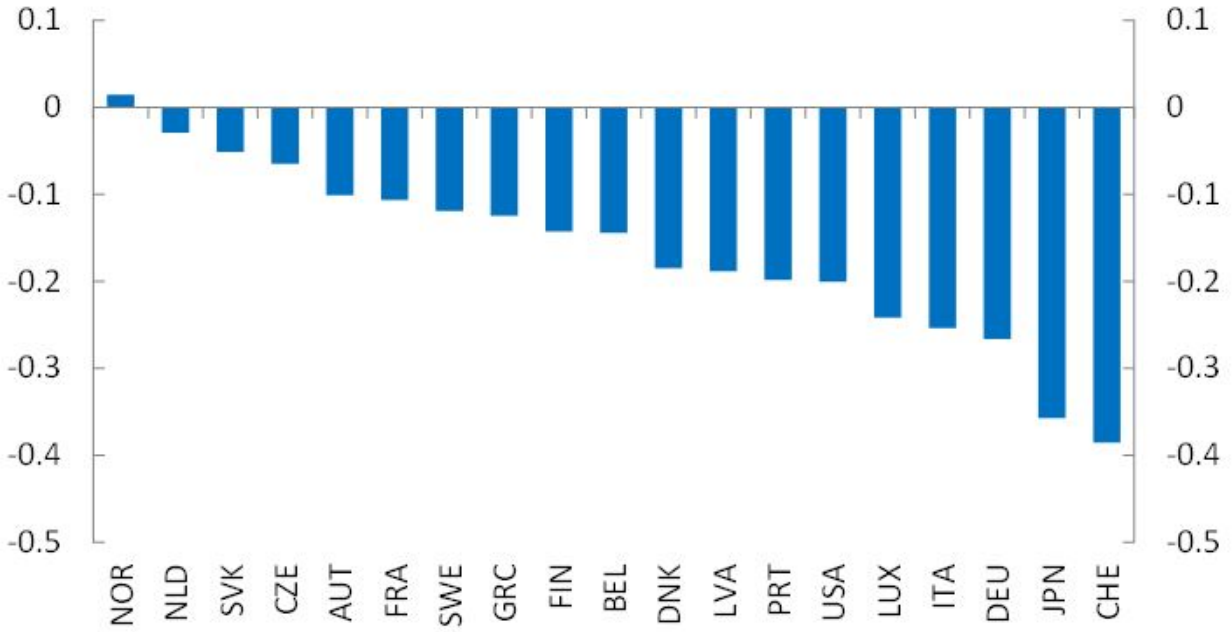
Note: Unweighted averages across all country-industry cells where data are available. Backward participation in GVCs is the foreign value added share of a sector's gross exports.
Source: Andrews, Gal and Witheridge (2018) based on OECD STructural ANalysis (STAN) database; OECD Trade in Value-Added (TiVA) database; OECD TiVA Nowcast; and authors' calculations.

Motivated by this pattern, our new analysis of prices and globalisation (Andrews, Gal and Witheridge, 2018) goes beyond existing research by using recently released cross-country

OECD data on prices and GVCs by industry, rather than at the country level, which allow us to control for time-varying country-specific and global shocks. We find that stronger Backward GVC Participation – that is, domestic producers relying more on foreign value added content – is associated with lower producer price inflation at the industry level. For example, we estimate that the rise in GVCs from the mid-1990s up to the crisis reduced annual producer price inflation by 0.15 percentage points on average, but this effect is more than double in some OECD countries (Figure 2).

Figure 2. Impact of GVC expansion on inflation over 1996-2008

Estimated contribution of GVCs to average annual producer price inflation, percentage points



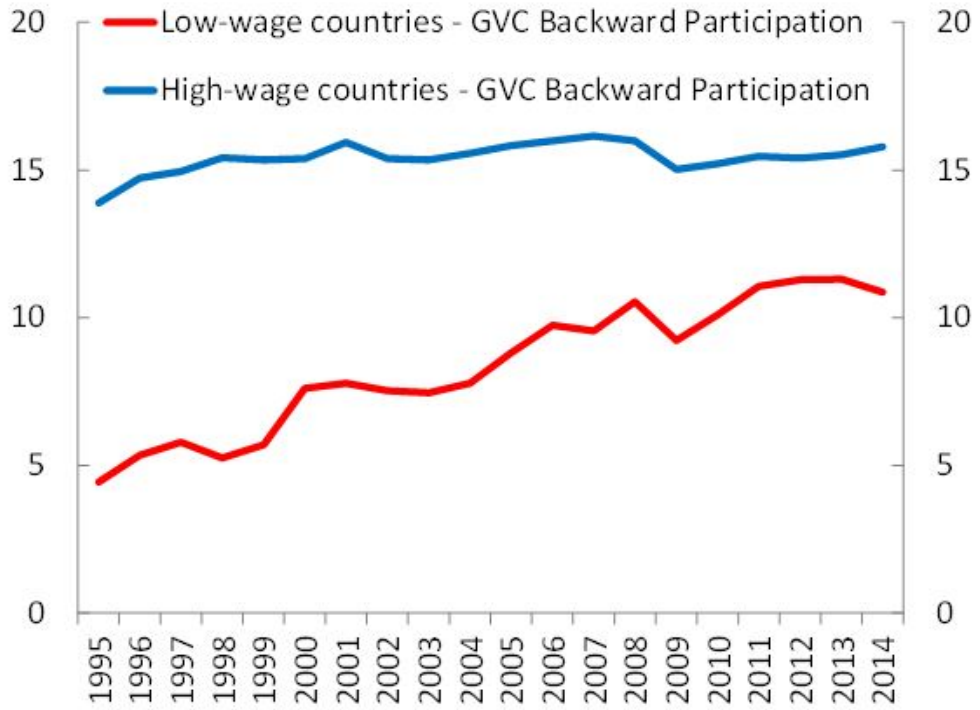
Note: The figure shows the annual change in producer price inflation based on the change in the production deflator that is explained by rising GVCs using the coefficient estimate in column 1 of Table 1. The estimates are the unweighted averages over industries in each country from 1996 to 2008. MEX, POL and SVN not shown as data on GVCs are not available for 1996.
Source: Andrews, Gal and Witheridge (2018) based on calculations using estimation results and the OECD Trade in Value-Added (TiVA) database.

Confirming the existence of a cost-reduction and wage moderation channel, we also show that higher backward GVC participation is associated with lower wages and rising productivity in the importing countries and industries, especially when low-wage countries are integrated in their supply chains. This channel is likely to have contributed to

lower inflation in recent years as the structure of the source (i.e. supplying) countries in GVCs has moved increasingly towards low-wage countries (Figure 3), despite a stall in the overall level of GVC integration (Figure 1). Therefore, inflation in advanced economies could remain low if the composition of GVCs continues to shift towards low-wage countries.

Figure 3. Countries with lower wages have been contributing more and more to GVCs

A. Backward GVC participation by source country groups, Per cent



Note: "High-wage countries" are those that are part of the EU-15 (EU members prior to 2004) plus Australia, Canada, Japan, New Zealand, Norway, Switzerland and the United States; "Low-wage countries" are all other countries in the TiVA database. Unweighted average across all country-industry cells where data are available. Backward participation in GVCs is the foreign value added share of a sector's gross exports.
Source: Andrews, Gal and Witheridge (2018) based on OECD Trade in Value-Added (TiVA) database; OECD TiVA Nowcast; and authors' calculations.

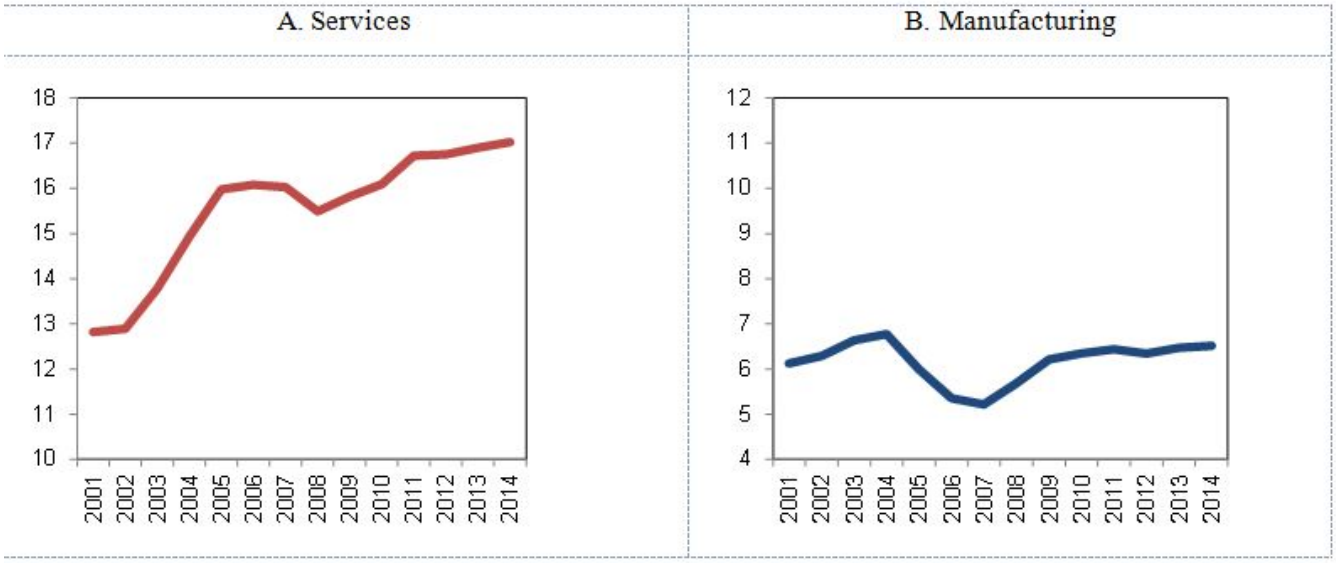
Moreover, we find that a high *level* of GVC integration can also dampen producer price inflation by accentuating the impact of global economic slack on domestic inflation. This provides new industry-level evidence to support the finding of Auer et al (2017) who use aggregate data covering the pre-crisis period. We show this by using a similar approach combining bilateral industry-level GVC and national output gap data to measure changes in global slack over time.

This implies that weak global demand has a larger disinflationary impact when GVC participation is higher. For example, given our sample of countries facing an average global output gap of -1.5 per cent in 2014, we estimate that annual producer price inflation was on average 0.25 percentage points lower in 2014 than for 1996 GVC levels. This figure is more than 0.5 percentage points, however, for countries that experienced a particularly large rise in GVC participation. But with slowing expansion of GVCs since the crisis, coupled with stronger aggregate demand and output gaps closing in most countries, this could lead to greater inflationary pressures in the medium term.

The third longer-term trend posing an upside risk to inflation is declining competition and market contestability. We exploit harmonised cross-country firm-level data to show an increasing trend in mark-ups, which suggests rising market power in services sectors (Figure 4). This upward trend in mark-ups is consistent with other estimates for the United States (De Loecker and Eeckhout, 2017) and other OECD countries (Calligaris et al, 2018). In turn, in these market services sectors we find a significant positive correlation between producer price inflation and mark-ups within industries since the early 2000s. This leads us to conjecture that if market power continues to rise it may pose a further risk to letting the inflation genie out of the bottle.

Figure 4. Mark-ups are on the rise in services

Estimated firm-level mark-ups averaged across broad sectors and countries, percentage points



Note: The figure shows the 3-year moving average of size-weighted mark-ups aggregate to the 2-digit sector for each country and year, and then averaged across them by two sector-groups, manufacturing and non-financial business services.
Source: Andrews, Gal and Witheridge (2018) based on calculations using the Orbis database of Bureau van Dijk.

This analysis suggests that the expansion of GVCs facilitated by trade liberalisation and advances in technology has put downward pressure on producer prices, with potential implications for monetary policy. Looking forward, a continuation of the stalling globalisation observed since the crisis poses an upside risk to future inflation. This provides a further reason to resist the rising threat of trade protectionism in the global economy.

In addition, if more intense competition in product and labour markets contributed to global disinflation in over recent decades (Rogoff, 2003), then it follows that waning structural reform ambition (OECD, 2018b) – against the backdrop of strengthening global growth – could lead to inflationary pressures. Given the growing importance of ICT-based activities in the economy, as well as evidence of increasing market power in those industries, policy efforts to adapt anti-trust and pro-competitive market regulations to the digital age will not only bring benefits to long-run productivity growth but will also be desirable from a monetary

policy perspective.

References:

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Calligaris, S., C. Criscuolo and L. Marcolini (2018), "Digital and market transformations", OECD Science, technology and industry working papers, *forthcoming*.

De Loecker, J. and J. Eeckhout (2017), "The Rise of Market Power and the Macroeconomic Implications", *NBER Working Papers* No. 23687.

*** The sample of countries are: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Italy, Japan, Luxembourg, Latvia, Mexico, Netherlands, Norway, Poland, Portugal, Slovenia, Slovak Republic, Sweden, Switzerland and the United States.**