

Improving estimates of labour productivity and international comparisons

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Content

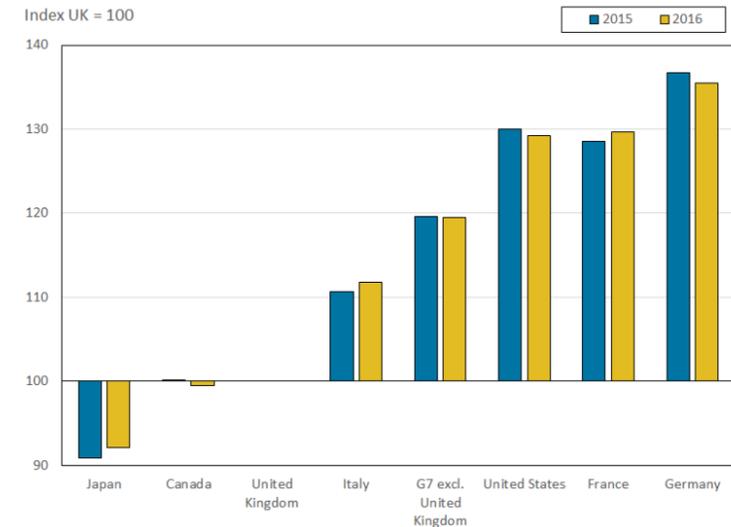
- Background issues with ICP estimates
- OECD working paper – key findings
- Proposals for improving ICP estimates
- Discuss wider issues in estimating labour inputs
- Development plans
- Questions

Background issues with ICP estimates

- ICP estimates showed significant differences in productivity between the UK and other G7 countries.

Figure 1: Gross domestic product per hour worked, G7 countries

2015 to 2016



Source: Organisation for Economic Co-operation and Development, Eurostat and Office for National Statistics calculations

- Was the UK's productivity significantly lower or was there an underlying issue of coherence with the data?

Background issues with ICP estimates

- To compile ICP, ONS used a number of data series from OECD: Persons, Hours, GDP (CP, CVM, PPPs).
- How comparable were these variables across countries?
- Second issue concerned missing source from OECD ALFS (PS) – discontinued in 2014 – used in ONS ICP.
- In Oct 2018 the ONS suspended the publication due to ongoing review of the methodology and sources.

Background issues with ICP estimates

- ONS discussed the scope of (and partly funded) the research which led to the OECD working paper: “***International Productivity Gaps: Are Labour Input Measures Comparable?***”
- Initiated a joint OECD/Eurostat country questionnaire on understanding the labour inputs recorded by countries.
 - Methodology used (Direct/Component)
 - Sources – LFS, Business Statistics, Admin
 - Adjustments applied to the labour inputs to bring them in line with the National Accounts concepts.

Sources: LFS

- Over-estimation of actual working time.
- Underestimation of part-week absences (illness/holidays).
- Under declaration of actual working hours for informal economy.
- Exclude armed forces, communal households and institutions, non-residents working in domestic economy.

All of whose **output is included** at least in theory, in estimates of **GDP**.

Sources: Population census

- Comprehensive source covering the whole population of a country.
- Useful tool to benchmark household surveys, including LFS.
- Low frequency data collection, (every five or ten years).
- Unregistered migrants may not be captured.

Sources: Business statistics/registers

- Provide detailed data on employment and hours worked following a detailed industrial classification of firms (NACE Rev.2/SIC2007).
- Consistent with Nat Accs output & GVA .
- Can excl enterprises below size threshold and certain categories of firms (e.g. unincorporated businesses, self employed persons and informal labour).
- Info on hrs paid/contractual hrs – no info on absences from work & unpaid overtime.
- Not aligned with hrs actually worked concept.

Sources: Administrative data

- Typically collected by govt bodies.
- Usually based on some form of statutory or voluntary registration (social security institutions and tax administrations).
- Provide information on all persons required to pay income tax or social insurance contributions.
- May not align with actual hours worked concept.
- Struggle to capture informal employment.

Key findings – labour inputs and output concepts

When estimating labour productivity it is important to align the labour inputs with the national accounts concepts of output;

1. the unit of measurement used in employment (persons employed or jobs),
2. the distinction between actual hours worked and other concepts of hours worked,
3. capture the national accounts production boundary.

Key findings – adjustments to original data sources

Periodicity – Data can have different periodicity

- Arithmetic averages, interpolations, extend time series (back and forward).

Persons/Jobs – Data source may provide information on employment in terms of persons and/or jobs and these should be aligned.

Economic territory – A number of adjustments are necessary to ensure alignment of estimates of workers with the economic territory in which they work.

Need to capture non-resident persons working in domestic (resident) production units.

Key findings – adjustments to original data sources

Economic territory –

Include subsets of the resident population not covered in the original data source(s)

- LFS excl: Military, collective households.
- BS excl: education, health and other non-market services.
- Can excl self-employed and unpaid family workers.

Exclude those in the resident population that work in non-resident units (e.g. foreign embassies, consulates, foreign military bases within the reporting country or work abroad).

Key findings – adjustments to original data sources

Unobserved economy – business statistics and admin data sources typically miss information on employment and HW in the unobserved economy.

HW in the unobserved economy are required to ensure consistency with the production boundary of output measures.

Construction, trade, catering and personal services.

Key findings – different adjustments across countries

- Working students (BE, DE, SI)
- Workers engaged in production undertaken entirely for their own final consumption or own capital formation (HU, IT, PT)
- Working prisoners (DE, SK)
- Workers below/above age thresholds covered by original data sources (DE, HU)
- Workers in other activities not covered in the main source, such as workers on ships and notably for agriculture, hunting, forestry and fishing activities (BG, FR, SI, US)
- Persons employed in temporary employment agencies are included in the industry **of the agency** and not in the industry of the enterprise for which they actually work. (DE, HU)

Key findings – Methods used to compile labour inputs

- 1. Direct method:** annualising average actual weekly hours worked directly collected from the original data source (LFS) all weeks of the calendar year.
- 2. Component method:** starts from data on a normal, usual, paid or contractual hours and then adjust the differences derived from a variety of data sources as components for annual leave, sickness, maternity, strikes, exhaustiveness etc.

Key findings – Compiling labour inputs across countries

	Canada	France	Germany	Italy	Japan	UK	US
Method	DM, WITH ADJ	CM	CM	DM, WITH ADJ	NOT DESCRIBED	DM	DM
HOURS – Empl, Main job	LFS	BS	AS	LFS/AS	BS	LFS	BS
HOURS – Self-empl, Main job	LFS	BS	LFS	LFS	N/A	LFS	BS
PERSONS - Empl Main job	LFS	AS	BS/AS	LFS/BS/AS	PC	LFS	BS
PERSONS – Self-empl Main job	LFS	AS	LFS	LFS/BS/AS	PC	LFS	LFS
% change in average HOURS worked - Empl	unquantified	-18.8	-12.4	no reply	1.0	0.0	0.0
% change in average HOURS worked - Self-Empl	unquantified	53.5	-6.4	no reply	0.0	0.0	0.0
% change in PERSONS empl	10.0	0.3	6.3	9.9	3.3	0.0	2.6
% change in PERSONS self-empl	-41.0	0.1	0.9	0.0	8.6	0.0	0.0

Key findings - Summary

- LFS hours worked are **systematically higher** than the Component Method (CM)
- Comparisons of **actual hours worked** data across countries are **significantly affected** by the method used to estimate labour input.
- Countries producing nat accs estimates based on the CM show **strong exhaustive coverage** of adjustments needed to bridge contractual hours and actual hours

Proposals for improving ICP estimates

The OECD are proposing to revise the country data presented in their productivity database using the following criteria:

1. For countries that already apply the CM to take the Nat Accs values transmitted to Eurostat.
2. For countries that apply the DM and make some NA adjustments to take the Nat Accs values.
3. For countries that apply the DM and make no adjustments, OECD will **derive an estimate “simple component method”** using data from the EULFS.

Proposals for improving ICP estimates

- However this approach incorporates heterogeneous adjustment and coverage issues.
- For countries already applying the CM, their labour inputs will be the Nat Accs value. This value will include adjustments for:
 - **actual hours worked + coverage adjustments.**
- For countries applying the DM, the OECD's derived CM will **ONLY** include adjustments for “**actual hours**”, sourced from the EULFS.

Proposals for improving ICP estimates

Does this matter?

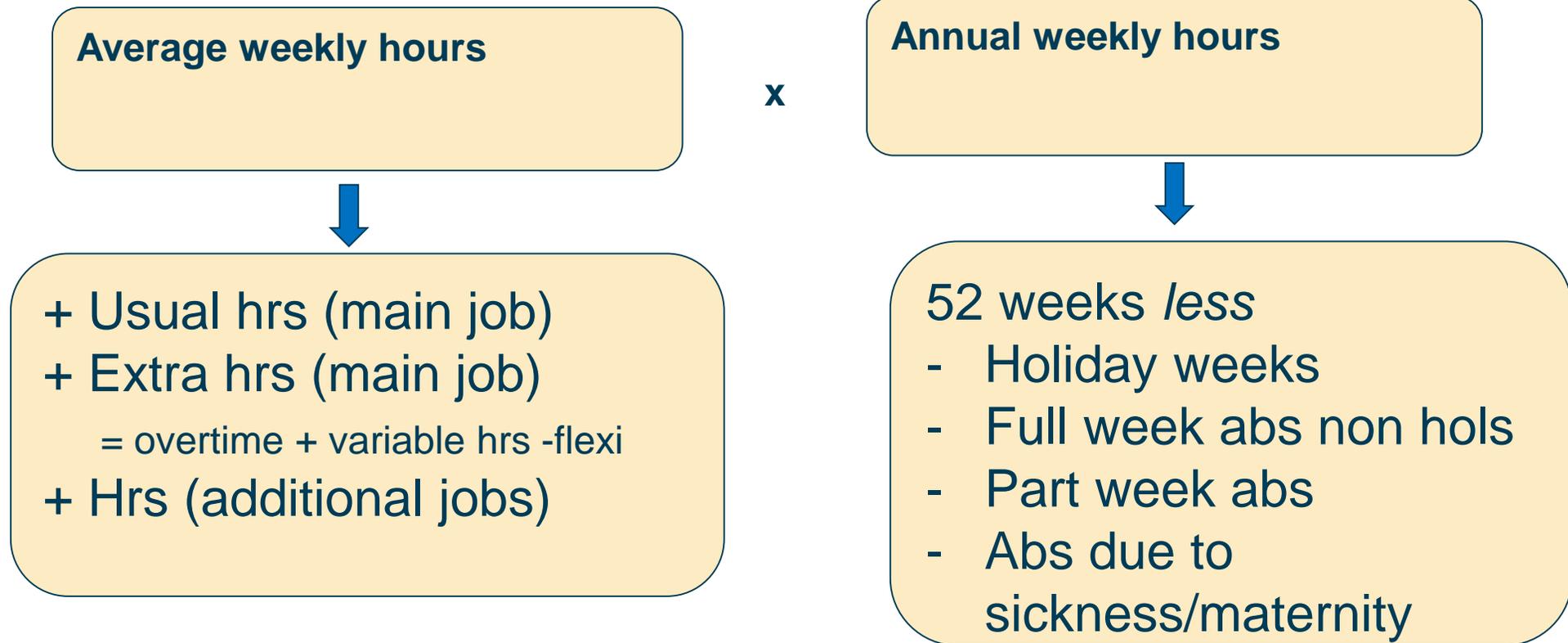
- Even for the countries that already apply the CM, by simply using a **different base source** (i.e. admin data instead of EU LFS) we note some **differences**.
- Germany already apply the CM with admin data as their main source. When we tested the EU LFS simple CM the difference resulted in each person working approx. **1.4 to 3.3** hours more per week.

Proposals for improving ICP estimates

- To produce ICP estimates we need a **coherent source** and a **systematic application of adjustments** across the countries, in order to make them comparable.
- For a more coherent coverage ONS propose to investigate the **EULFS** as a base source across countries and apply the same adjustments discussed in the OECD's paper to estimate “**actual hours worked**”.

Proposals for improving ICP estimates

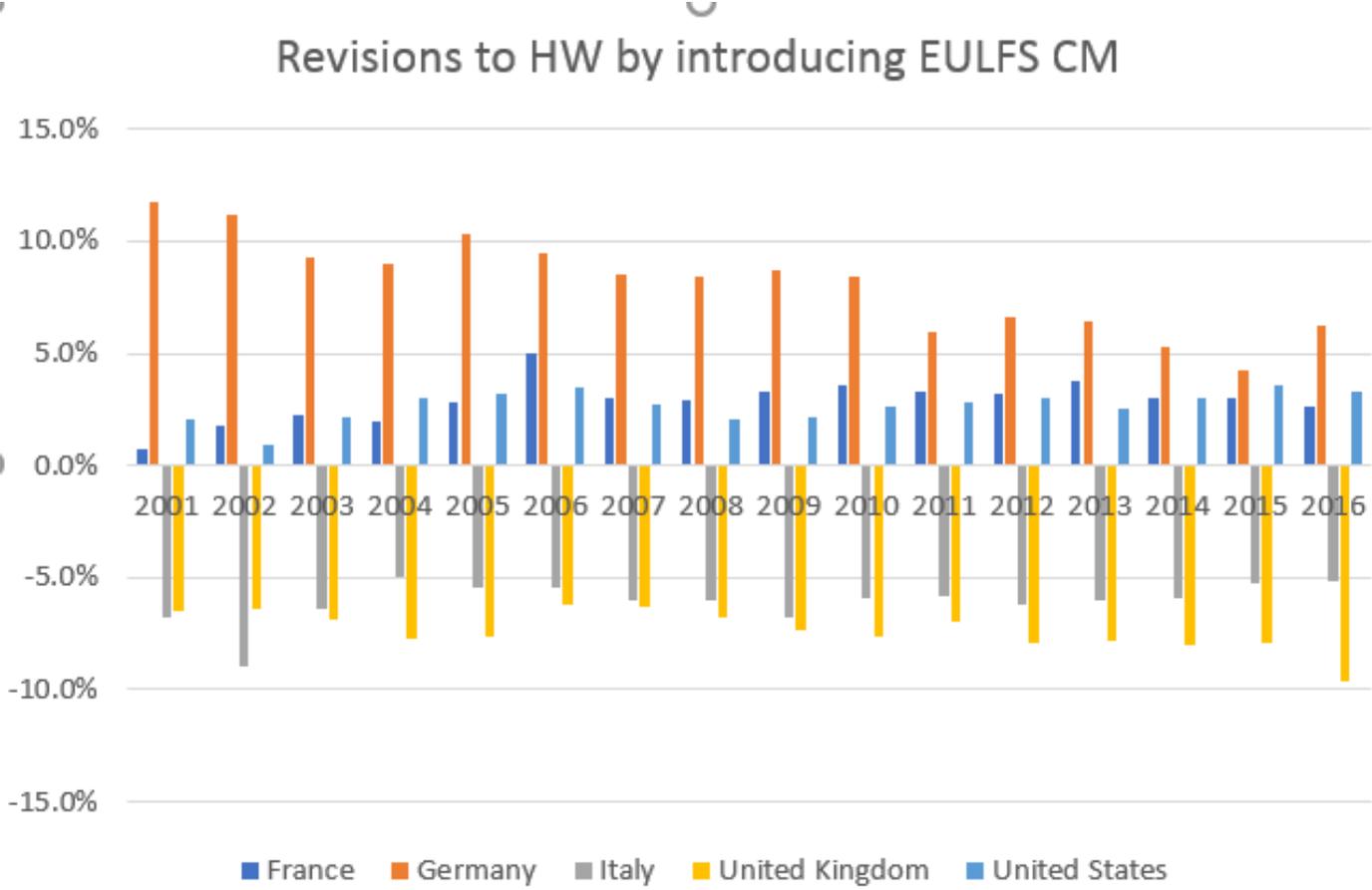
The aim is to derive actual annual hours worked consistently from EULFS variables, in light of recent OECD findings



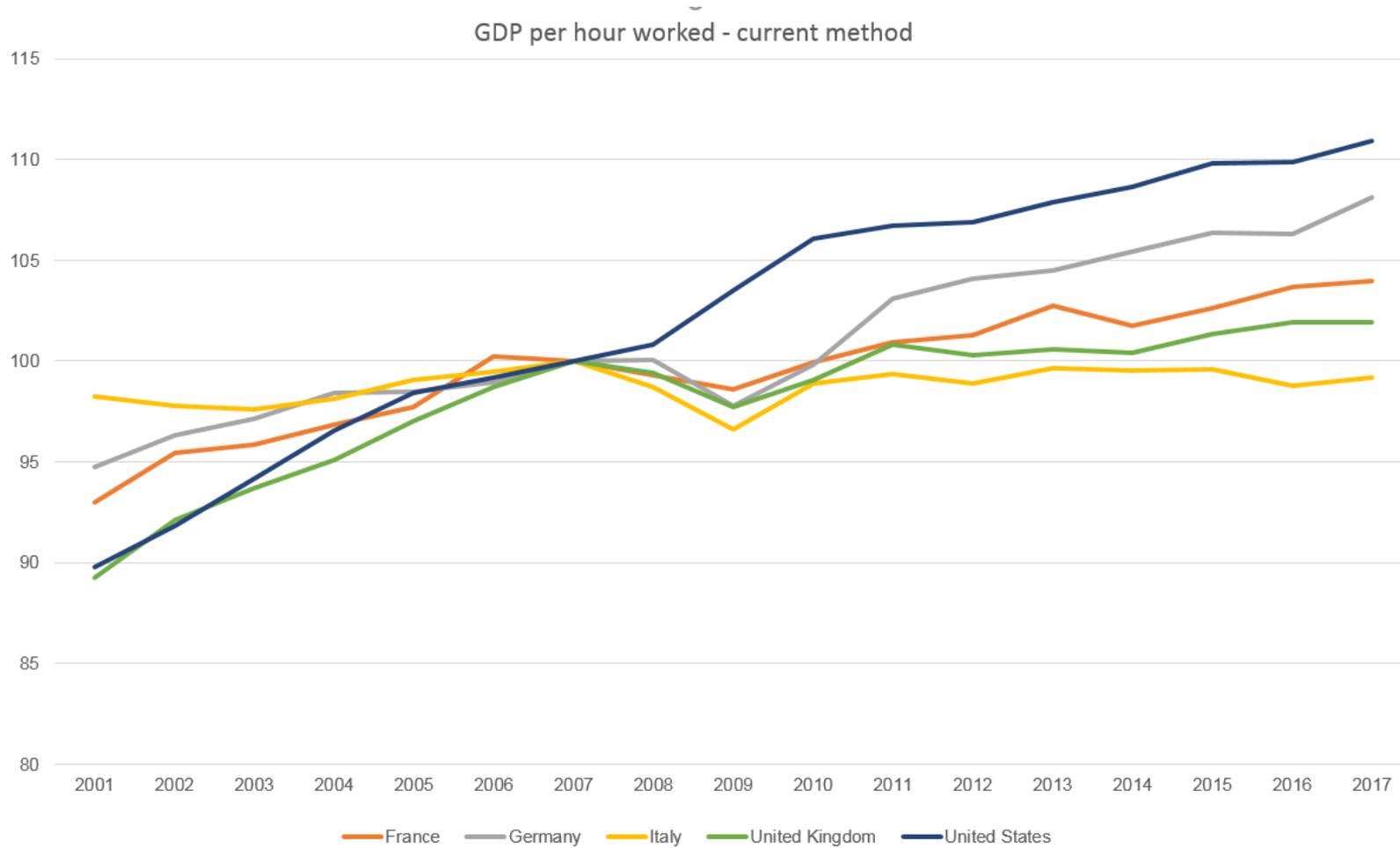
Proposals for improving ICP estimates

- For the UK by deriving a CM from the EULFS, can reduce average weekly hours by approx. **2-3 hrs/pp.**
- This approach is the most comparable methodology across the G7 countries.
- Can extend countries to include IE, NL etc.
- We recognise these labour input series will differ from those published nationally by countries, but we can provide **clear metadata** to users.

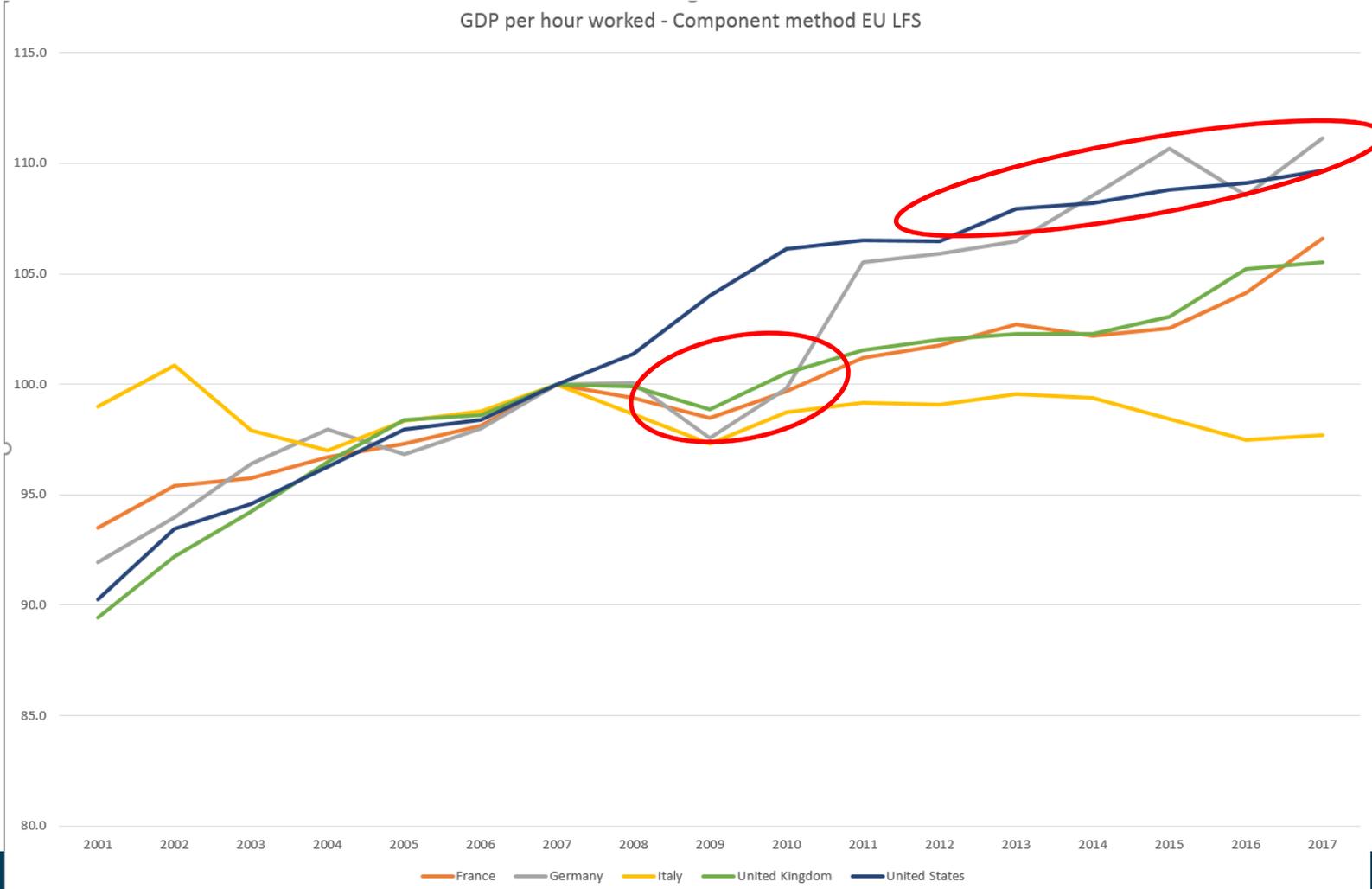
Revisions to HW by country EU LFS CM



GDP per hour worked 2007=100 index



GDP per hour worked 2007=100 index



Proposals for improving ICP estimates

If ONS cannot secure long term access of the EULFS data we may need to consider **how meaningful ICP estimates will be**, given the heterogeneous application of the adjustments and data sources across the countries.

Wider issues for labour inputs

OECD recommend to apply the Component Method.

However this is mainly based on Admin Sources (availability).

In the interim we could utilise the information from the EULFS survey to adjust HW.

Need to identify reliable and sustainable sources for 3 main adjustment groups;

- - Economic territory
- - Unobserved economy
- - Other adjustments

Dependencies with Nat Accs, LMS, admin sources.

Wider issues for labour inputs

- The UK use the DM to estimate labour inputs.
- OECD recognise the DM is not necessarily inferior to the CM, though without the use of additional adjustments, it could potentially overestimate the actual hours worked.
- OECD recognize that countries compile their methodology depending on the sources available nationally. Although they recommend moving towards the CM, they recognize not all countries may be able to capitalize on administrative sources.

Wider issues for labour inputs

We estimate UK productivity using the DM because it has historically been the best method given the data available in the UK.

On a national level it would not be possible to apply the CM in the short term.

However, as work on administrative data is evolving, it may be possible to consider applying the component method in the long run.

Development plans – Scoping study

1. Investigate the suggestion that UK hours could be overstated:
 - Whether LFS respondents understate their leave or sickness absence.
 - If the way we account for non-respondents is biasing the figures upwards.
2. Review wider dependencies with labour market statistics as administrative sources become available over time, that will enable us to improve estimates of “actual hours” worked.
3. Explore the use of possible sustainable sources to capture:
 - conceptual and exhaustiveness adjustments on the economic territory,
 - the unobserved economy and any other adjustments that are consistent with the production boundary.

Q & A session