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Trade in Services Deflators

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1. Introduction

The selection of appropriate deflators is central to the measurement of volumes since they allow for the effects of price changes to be removed from current price estimates. It has long been acknowledged that selecting appropriate deflators for services is inherently difficult. Services are often customised, subject to changes in quality and lack a clearly defined and consistently measurable unit of output.

This difficulty is compounded when considering international trade in services. Relatively few firms engage in such activities, there are high rates of entry and exit, the services provided are often unique and transactions are relatively infrequent[1]. This presents additional difficulty for price measurement through statistical surveys due to high attrition rates and missing price observations in the sector.

As a result, national statistics offices must frequently rely on proxies and make implicit judgements about which features of an unobserved transaction price matter most.

This paper is structured around the decisions facing a compiler today and shares UK experience. It first reviews international guidance, then considers practical constraints. It explains current UK deflation practice and sets out emerging thinking on how this approach might become more accurate, consistent and sustainable without relying on new price collection. It finishes with a discussion of possible development work that could help compilers with their deflator selections.

2. International guidance

Guidance on the deflation of trade in services is spread across several statistical manuals and handbooks. While the level of detail varies between sources, they are consistent that the most relevant price measure for each transaction should be used where it is available. On the other hand, where these are not available, there is some divergence in recommendations for compilers on using 'second-best' approaches.

The recommendations in the *System of National Accounts* (2025) give priority to export and import price indices where available. It notes that export volumes can otherwise be derived using a selection of PPIs and CPIs, while imports may require exporting country price indices adjusted for exchange rate movements[2].

The recently published *Manual on Statistics of International Trade in Services* (MSITS) 2026 similarly gives priority to services export and import price indices where available. Without them, it identifies product-level domestic SPPIs and CPIs as second-best deflators for exports of services. For imports, foreign price indices, adjusted for exchange rate movements, are the

[1] Ariu, A. 2016. Services versus goods trade: a firm-level comparison. *Rev World Econ 152, pp. 19-41*
[2] SNA 2025, paragraph 18.170

conceptual fallback. However, MSITS also explicitly acknowledges the practical difficulties associated with implementing this approach. As a result, the guidance allows a further alternative whereby domestic SPPIs, adjusted to reflect exchange rate movements, may be used instead[3].

Other international methodological sources broadly reinforce the conclusions reached by the SNA and MSITS. The *Balance of Payments Manual, Seventh Edition* (BPM7), notes that the most effective approach for measuring prices of business-to-business traded services would involve observing the prices actually paid and received by importers and exporters over time. The BPM7 recognises that such prices are hard to obtain and acknowledge the frequent application of second-best solutions. However, it does not provide explicit recommendations on alternative approaches.

Similarly, the Eurostat *Handbook on Price and Volume Measures in National Accounts* emphasises the use of actual transaction prices wherever possible. The handbook notes that export and import prices may differ from domestic prices because of exchange rate movements, differences in pricing strategies and variation in customer markets. It therefore highlights the importance of selecting deflators that reflect the characteristics of the services being traded rather than relying solely on general inflation measures.

Although the wording differs across sources, three common themes emerge.

1. Direct measures of import and export prices are preferred wherever they are available.
2. Where these are unavailable, the closest product-level price indicator should generally be used.
3. Exchange rate movements must be considered when import and export prices are unavailable.

At the same time, the guidance recognises that practical constraints often require compilers to rely on proxy measures. It also acknowledges that some services may require bespoke approaches where more established methods have been developed. For example, travel is commonly deflated using detailed consumer price information that reflects expenditure by visitors, rather than a general services trade price index. These bespoke recommendations should normally take precedence where the relevant data are available.

2.1 A practical interpretation

Building on these common themes, we interpret the guidance as establishing a preference order. A practical hierarchy begins with identifying any service-specific recommendations, then direct measurement of import and export prices for each service, and then the closest sustainable proxy.

Exports

Where guidance recommends a bespoke approach, it should be followed. Otherwise, a service export price index would be preferred. If there are no service export price indices available, the

[3] MSITS 2026, paragraphs 7.13 to 7.18

next practical option is therefore a domestic SPPI, CPI or other relevant price measure aligned to the exported service. This is consistent with the idea that domestic producers' costs and prices provide an anchor for export prices, while recognising that pricing-to-market and currency denomination may cause export prices to diverge from domestic prices.

Imports

Where guidance recommends a bespoke approach, it should again take priority. A service import price index would be preferred but next conceptual option is a set of foreign product-level SPPIs or CPIs with exchange rate adjustment. This is difficult to operate across many countries and services and raises questions about coverage, methods and comparability. ONS therefore interprets the permitted domestic SPPI alternative as a credible practical default, if it is aligned to the service and any exchange rate adjustment is separately justified.

3. Practical challenges for compilers

As discussed above, the ideal deflator for trade in services is one which tracks the actual prices charged for specific service transactions and separates pure price increases from changes in quality. In practice, no commonly available deflators satisfy all these dimensions. In the table below we highlight some key problems faced by Balance of Payments compilers.

Limited direct price data	Service import and export price indices are unavailable for most categories, forcing proxy use.
Limited quality data	Information on quality change in international trade in services is very rare
Product mismatch	Headline or broad indices may be driven by products unrelated to the service traded.
Activity mismatch	Activities may diverge between domestically produced and internationally traded products even within lower-level classifications.
Market mismatch	Domestic prices may differ from prices charged to non-residents or paid by residents to overseas suppliers.
Classification	EBOPS service categories do not necessarily map cleanly to CPA, CPC, COICOP or industry-based indices.
Foreign-index comparability	Coverage, pricing basis, quality adjustment, revisions and publication timetables can differ across national indices.
Exchange rate adjustments	Movements in exchange rates can change the value of international service transactions without reflecting changes in the price or volume of the service itself.
Price-setting currency	Currency of invoice is rarely recorded for international trade in services.
Operational sustainability	A conceptually attractive basket may be too complex to source, assess and update reliably.

Broadly these issues can be broken down into two key areas of discussion. The first concerns proxy selection – which deflators should be used when the conceptual ideal is not available. This is especially important when considering import prices. International guidance generally points towards foreign price indices adjusted for exchange rates, yet in practice compilers often face a choice between generic measures of inflation from exporting countries and more product-level domestic measures.

The second concerns exchange rate adjustment. Such adjustments are acknowledged as a key element when estimating volume measures of trade in services, yet there is little detail on how these should be calculated. These adjustments sit at the heart of the current UK framework and are an active area of methodological development.

3.1 Proxy selection

3.11 Import deflators

The table below highlights candidate indices described by international guidance for use as import of services deflators and draws out their strengths and weaknesses:

Candidate index	Main strength	Main weakness
Service import price index	Matches domestic and supplier countries' market and service dynamics	Rarely available for services and may have limited coverage.
Foreign SPPI or export price index	Matches supplier country market and service dynamics	Rarely available; difficult to source consistently; methods, coverage and quality may vary.
Domestic SPPI or output deflator	Matches service/production process dynamics	Does not reflect import costs or price pressures in export markets
Foreign CPI, product-level	Matches supplier country service dynamics	Measures household rather than business transactions; export pricing can differ from domestic consumer pricing; no clear mapping between CPI and EBOPS classifications.
Foreign CPI, all-items	Matches supplier country market dynamics	Measures household rather than business transactions; weak service match; can import unrelated movements in food, energy, housing or administered prices.

In practice, however, compilers do not have this level of choice. In the UK, compilers have to choose between a bundle of all-items CPIs from exporting countries and a domestic SPPI, which is specific to the service but refers to the UK production market.

The strongest case for selecting the foreign CPIs is that imported services are produced abroad and as such the wages, rents, technology, energy costs and competitive conditions in the supplier economy may influence the price paid by UK importers. As such, a broad measure such as all-items CPI may capture many of these dynamics while a UK domestic price index can miss genuine cost movements.

At the same time there are strong reasons to prefer a deflator which captures service-specific movements. Different services have very different production processes, market structures and quality change dynamics. Travel, telecoms services, management consultancy and engineering services may experience very different price movements even when produced in the same country. A broad foreign CPI may preserve information about the supplier economy while providing very little information about the service itself. It will also include irrelevant information on prices unrelated to the services production process (e.g., food, clothing or housing). In these circumstances, a domestic product-level SPPI or other domestic price index may provide a closer approximation to the underlying service price movement.

A further complication is that prices for internationally traded services are not determined solely by production costs. They may also reflect competitive conditions in the market in which services are sold. As a result, neither domestic nor foreign price indices can be assumed to provide a perfect representation of international transaction prices.

The key question for compilers is therefore not whether import prices are universally driven by supplier-country conditions or by common service-specific factors. Rather, it is whether the available evidence suggests that preserving supplier-country effects adds sufficient value to justify the additional complexity and potential loss of service specificity. In the absence of direct import price indices, this remains an empirical question and one that should be considered alongside practical concerns around data quality, maintainability and consistency with the wider deflation framework.

3.12 Export deflators

The absence of direct export price indices creates a similar challenge for exports. Domestic service-specific deflators are often the closest available match to the service being traded and may provide a reasonable proxy where export prices are largely driven by domestic production costs. However, exporters do not necessarily operate under the same conditions as firms serving domestic customers. Differences in market structure, competition, demand conditions and exchange rate movements may cause export prices to diverge from prices charged in the domestic market.

3.2 Exchange rates and transaction currency

Another important factor discussed in section 2 is the issue of exchange rate adjustment. This is distinct from the challenges associated with proxy selection but stems from the fact that both domestic SPPIs and price indices from exporting countries will not account for changes in the exchange rate that impact the actual price paid by importers (or received by exporters).

Since international service transactions are often priced, invoiced or settled in a currency other than the compilers' domestic currency, exchange rate movements can change the domestic currency value of that transaction. As a result, two services with identical domestic price movements may experience different price changes in international trade depending on their exposure to foreign currencies.

Analysis of UK Trade in Goods price indices shows that both Import Price Indices and Export Price Indices exhibit price movements that are not present in domestic producer prices and that these additional movements broadly correspond with exchange rate changes. When domestic producer prices are partially adjusted using an exchange rate measure, they more closely track the behaviour of import and export prices.

For this reason, a key question is how that effect should be represented within a proxy deflator. Current UK methods are discussed in the following section.

4. A review of current UK methods

The current UK framework for selecting trade in services deflators reflects the same practical challenges outlined in the previous section. In the absence of export and import prices for services, compilers must decide:

- which available price measure provides the closest approximation to the unobserved transaction price
- whether and how changes in the exchange rate should impact the price level of imports and exports

4.1 Proxy selection

Imports of services

For imports, the current framework uses a combination of weighted, exchange rate modified foreign CPIs ("Import WMCPIs"), domestic output deflators and bespoke methods. Import WMCPIs are designed to approximate the prices faced by UK purchasers of imported services by combining foreign all-items CPI series using service-specific country weights derived from UK trade data.

The current methodology uses headline consumer price indices from 19 countries. Country weights are constructed separately for different service groups to reflect differences in the geographical pattern of UK service imports. Transactions treated as priced in sterling are left unadjusted, while the share treated as priced in foreign currency is adjusted using euro/sterling or US dollar/sterling exchange rates.

Other imported services are deflated using domestic output deflators, most commonly SPPIs, although CPIs, earnings-based measures and other indices are also used. Bespoke approaches are retained for areas such as travel and transport where more tailored solutions are available.

Exports of services

For exports, the framework places greater emphasis on domestic output deflators. Exchange rate modified domestic output deflators ("Export WM deflators") follow the same approach to exchange rate adjustment as Import WMCPIs but use a UK domestic output deflator as the underlying price measure rather than a weighted combination of foreign consumer prices. For each service category, an output deflator is selected as the closest available match to the exported service. These deflators are primarily drawn from service producer price statistics and related output price measures.

The rationale is that UK exporters produce services using UK production processes, labour inputs and cost structures. The selected domestic deflator forms the core price proxy. Exchange rate adjustment is then applied to the share of transactions treated as priced in euros or US dollars, while the sterling share is left unchanged.

Other exports use domestic output deflators without any exchange rate adjustment. This creates differences in treatment between otherwise similar services. As with imports, bespoke approaches are used for travel and transport services.

Direction	Current approach	Main issue
Imports	Combination of Import WMCPIs (47%), unadjusted output deflators (22%) and bespoke transport and travel deflators (30%)	Mix of broad and product-level indices and exchange rate treatment.
Exports	Combination of Export WM deflators (50%), unadjusted output deflators (29%), bespoke transport and travel deflators (16%) and other deflators (4%).	Inconsistent exchange rate treatment across services.

4.2 Exchange rate adjustments

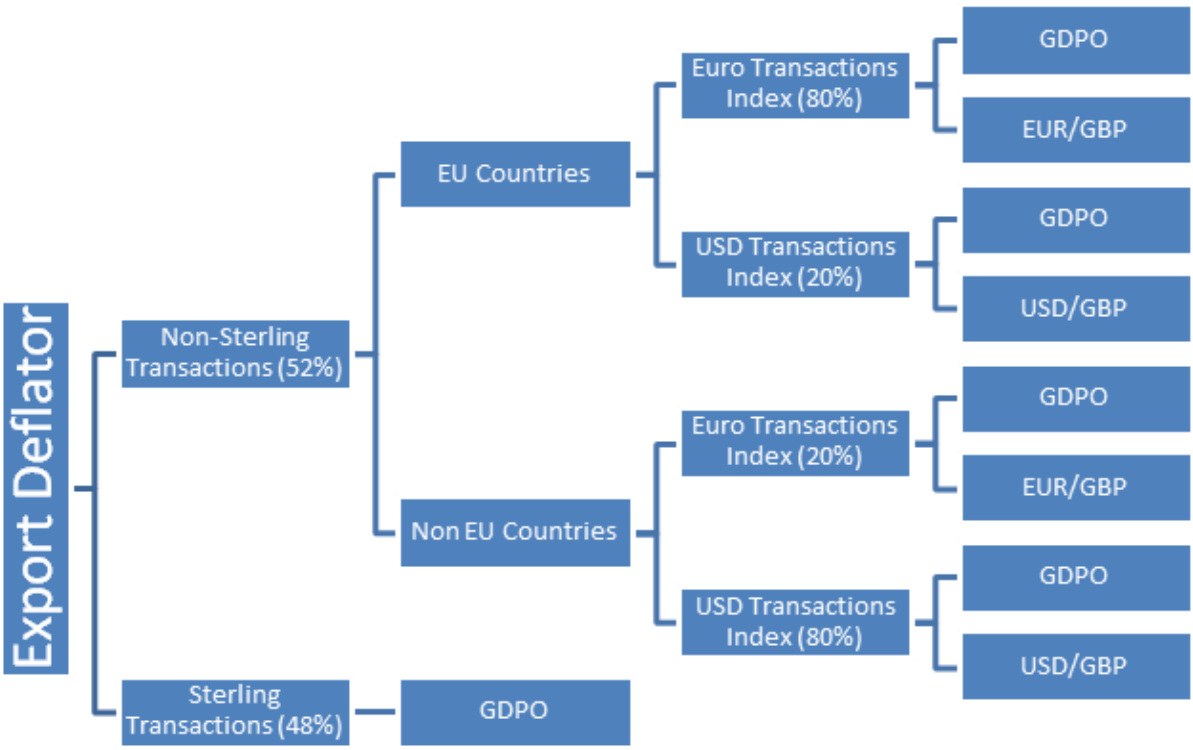
The current UK framework applies exchange rate adjustment through the Import WMCPI and Export WM deflator methodologies described above. As noted in section 3.2, since international trade is often transacted in foreign currencies, changes in the value of sterling relative to those currencies will change the transaction price.

To reflect this, adjustments are made to deflators to account for exchange rate movements. Adjustments rely on the following assumptions:

- UK trade in services is predominantly conducted in a combination of sterling, euros and US dollars.
- Transactions assumed to be denominated in sterling are not adjusted for exchange rates.
- Transactions assumed to be denominated in euros or US dollars are adjusted using a weighted basket of the EUR/GBP and USD/GBP exchange rates.

Currency of invoice data is not available for UK Trade in Services. As such, the current methodology uses information from UK Trade in Goods as a practical proxy. While it is recognised that currency usage patterns may differ between goods and services transactions, this source provides the best available evidence for differentiating between transactions likely to be exposed to exchange rate movements and those that are not.

The weighting applied to euro and US dollar exchange rates is then calculated separately for each service category, reflecting differences in the geographical pattern of trade associated with that service. The figure below provides a graphical representation of this aggregation process for Export WM deflators.



5. Developing the UK approach

ONS is currently researching how the existing framework might be made more consistent, transparent and sustainable. Work so far has included reviewing the recommendations in recent international guidance, documenting the current mapping of deflators to transaction codes, comparing the conceptual strengths and weaknesses of domestic and foreign proxies, and examining the role of exchange rate adjustments within the current methodologies.

Please note

The proposals in this section are being developed and tested. They are not final ONS methodology and may change in line with future development work.

5.1 Proxy selection

For services without a bespoke recommended method, ONS is investigating whether domestic output deflators, aligned to the relevant service, could provide a suitable practical default in place of Import WMCPIs based on foreign all-items CPIs. This reflects a desire to develop a more consistent and transparent framework where price measures are better aligned to price movements within each service.

A practical advantage of this approach is that the underlying rationale for deflator selection can be applied more consistently across service categories. Rather than adopting different approaches depending on the availability of foreign data, compilers would begin from a common default and depart from it only where there is evidence that an alternative measure provides a more representative approximation of transaction prices.

Any such framework would require a clear exceptions process. ONS recognises that there may be circumstances where foreign price measures, direct benchmarks or bespoke methodologies provide a more appropriate representation of price change for a particular service.

5.2 Exchange rate adjustments

The prospective framework retains the current approach and expands it so that it is used across all services, removing the current inconsistency whereby similar services are deflated using the same domestic output deflator but one includes an adjustment and another does not.

A known limitation of this approach is reliance on currency information from trade in goods data. Work is ongoing on developing currency shares for services trade and comparing this approach with the use of the sterling effective exchange rate index.

5.3 Other considerations

The review also considered replacing foreign all-items CPIs with foreign all-items or product-level SPPIs. A 2025 proposal would have substituted foreign all-items SPPIs for their CPIs and

adjusted each foreign SPPI by the relevant bilateral exchange rate. Conceptually, product-level foreign SPPIs could preserve supplier country prices more directly than a UK domestic deflator.

This option was not preferred as the general practical direction. A maintainable system would require suitable indices across all relevant service-and-country combinations, consistent access, sufficiently comparable concepts, reliable metadata and regular weight updates. An all-items foreign SPPI would also leave a product specificity problem similar to that of an all-items CPI. ONS nevertheless regards foreign product-level SPPIs as an important option where their quality and representativeness can be demonstrated, and as a valuable benchmark for testing the domestic proxy approach.

6. Evidence gaps and future development

The framework described in section 5 is intended to provide a practical and consistent default for deflating UK Trade in Services in the absence of direct measures of import and export prices. However, it does not resolve the measurement challenges described in section 3. As a result, several important evidence gaps remain.

A key uncertainty concerns whether domestic product-level deflators provide a better approximation to a given service's import price than generic foreign price measures, such as all-items CPI and SPPI. Where supplier country cost pressures dominate, foreign price measures may be expected to perform better. Where exporters largely price to conditions in the destination market, domestic product-level deflators may be expected to provide a closer approximation. Determining which effect is more important is ultimately an empirical question.

Future work should therefore focus on validating the performance of alternative proxies. One approach would be to compare domestic output deflators and foreign product-level price indices against any available service import or export price indices. Where direct measures are unavailable, comparisons could also be made across countries, services and time periods to assess the sensitivity of volume estimates to alternative proxy choices.

Exchange rate adjustments represent a further area where evidence is limited. Additional research is needed on currency of invoice in international trade in services, exchange rate pass-through and the extent to which these relationships vary across services. Improved evidence in this area would help determine whether current exchange rate adjustments remain appropriate and how they should evolve in future.

International collaboration will be central to addressing these evidence gaps. Many national statistical institutes compile product-level SPPI, export price indices and other specialist measures that are not widely documented outside their own statistical systems.

To support this work, ONS would particularly welcome evidence and advice from other countries on:

- methods used to deflate service imports and exports where direct trade price indices are unavailable;
- the availability and quality of their product-level SPPI;

- evidence on exchange rate pass-through and currency of invoice for services;
- benchmarking exercises comparing domestic and foreign proxy approaches; and
- examples where direct measures of traded service prices have been used to assess the performance of alternative deflators.

7. Conclusion

Recent international guidance has provided greater clarity on the principles that should guide the deflation of trade in services, while recognising that direct measures of import and export prices remain unavailable for most countries. The UK response has been to review its existing framework and consider a more consistent approach based on domestic product-level deflators, while continuing to refine the approach taken to exchange rate adjustment. This work remains ongoing and should be viewed as a practical response to current data constraints rather than a final methodological destination.

Future development will focus on strengthening the evidence base underpinning proxy selection, particularly in relation to import price determinants, the availability of foreign SPPIs and exchange rate pass-through. International collaboration will be critical to this work. Greater sharing of service price measures, benchmarking exercises and empirical evidence between national statistical institutes could improve understanding of when domestic and foreign proxies perform best and help identify opportunities for further improvements in the measurement of internationally traded services volumes.