

RESEARCH REPORT

Services and digital trade in the American production account

U.S. services reach customers through trade and foreign affiliates. Official evidence and transaction accounts distinguish digital ordering, delivery, platform commissions, intellectual property, and domestic value creation.

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Abstract

American services reach foreign customers through cross-border transactions, travelers, temporary presence, and businesses operating abroad. Digital ordering and delivery intersect with those channels but do not replace them. A product purchased online can remain a physically delivered good. A service provided by an overseas affiliate can use American intellectual property without its full sales value becoming a U.S. export. A cloud payment can cross a border even when the user perceives a local product.

Official U.S. services statistics demonstrate the importance of retaining those boundaries. They separately report international trade between residents and nonresidents and services supplied through affiliates, with different reference years. Digital-economy production statistics provide another view: value added from specified activities, rather than an additional trade flow. Treating the measures as additive can count the same transaction or production contribution more than once.

This report reconciles the concepts through original transaction and production accounts. It examines platform commissions, cloud inputs, intellectual-property rights, multinational residence, quality adjustment, and the difference between digitally deliverable and actually delivered services. The analysis establishes what the published observations support, where measurement requires assumptions, and which policy conclusions need evidence beyond a services surplus or a company's global revenue.

The scale is material, but the objects differ

BEA's [international services release page as updated October 6, 2026](#) reports 2025 services exports of \$1,237.9 billion and imports of \$910.2 billion. The arithmetic difference is \$327.7 billion. It separately reports 2024 services supplied through foreign affiliates of American multinationals of \$2,453.5 billion. The affiliate figure concerns production and supply through businesses abroad, not another cross-border export total, and refers to a different year.

A surplus records the difference between exports and imports within a statistical boundary. It does not measure all income generated by American-controlled companies, the productivity effect of imported services, or the welfare gain from trade. A service import can be an essential input to an American export. An affiliate can supply a foreign customer locally and generate income for an American owner through a separate investment relationship. Those channels should be reconciled rather than compressed into a single competitiveness score.

The scale comparison is nevertheless instructive. Focusing only on cross-border trade misses an important way firms serve customers, while substituting global company revenue for exports assigns foreign production to the wrong economy. Both errors can distort policy. A restriction affecting local establishment abroad may matter greatly to a multinational without appearing as a tariff on a cross-border shipment. A data-transfer restriction can affect services embedded in many industries rather than only businesses labeled technology companies.

The required analytical sequence is to identify the resident supplier and customer, the service or right exchanged, the delivery arrangement, and the production inputs. Only then should transactions be aggregated. The fact that an interface appears digital or carries an American brand is not sufficient to determine residence, industry, trade category, or the origin of value added.

Ordering, delivery, and product classification

The joint [Handbook on Measuring Digital Trade, second edition](#) defines the field around digital ordering and digital delivery, with overlap between them. Its framework distinguishes the nature of the transaction from the product and the actors. That distinction prevents online purchases of physical goods from being reclassified automatically as services and prevents a digitally delivered service from being omitted simply because it was ordered through another channel.

An American manufacturer ordering a machine through an online procurement system buys a good that still has to be delivered physically. A foreign client purchasing remote engineering advice buys a service, even if negotiation took place by telephone. A traveler booking accommodation online purchases a digitally ordered service that is consumed at the destination. Each transaction can be important to digital trade, but its relationship to customs, services accounts, and domestic production differs.

A measure of digitally deliverable services identifies categories that can be supplied remotely. It does not establish that every transaction in those categories was delivered that way. A consultant may work on site, a course may combine remote and in-person instruction, and a customer may travel for a service that could have

been provided online. Treating potential delivery as observed delivery overstates what a category-based proxy can establish.

The distinction matters for trends. A rise in a digitally deliverable category can reflect stronger demand for its services, a change in prices, or a shift to remote provision. Only the last is necessarily a change in delivery mode. A research comparison should preserve those possibilities and, where feasible, use survey information on actual transactions. A convenient proxy can inform analysis if it retains its label and uncertainty.

A transaction matrix prevents overlap

Consider an entirely hypothetical portfolio of 1,000 units of international trade. Physical goods worth 300 are ordered digitally. Services worth 200 are ordered digitally, of which 150 are also delivered digitally. Another 200 of services are delivered digitally after nondigital ordering. The remaining 300 of trade is neither digitally ordered nor digitally delivered. All values use a common basis and period, and each underlying transaction appears once in the portfolio.

Digitally ordered trade totals 500. Digitally delivered trade totals 350. Their overlap is 150, so the union is 700, not 850. The union can be calculated as 500 plus 350 less 150. The example is not calibrated to American trade. It establishes why separate ordering and delivery series cannot simply be summed and why an overlap estimate is necessary to produce a complete digital-trade total.

Constructed transaction group	Trade value	Digitally ordered	Digitally delivered
Physical goods ordered online	300	Yes	No
Services ordered and delivered digitally	150	Yes	Yes
Services ordered digitally, delivered otherwise	50	Yes	No
Services delivered digitally, ordered otherwise	200	No	Yes
Other trade	300	No	No
Total underlying trade	1,000	500 in total	350 in total

The product boundary remains independent of that classification. The portfolio contains at least 300 units of goods and 400 of services in the explicitly digital groups, while the remaining trade would need its own product split. It would be incorrect to call the 700-unit union digital services. Likewise, an online retailer's entire turnover need not equal international digital trade because some sales can occur between residents of the same economy.

The matrix is useful for data collection. A survey can ask separately about customer residence, product, ordering, delivery, and platform involvement. If those dimensions are collapsed into one yes-or-no question about digital activity, the resulting total cannot be reconciled reliably. Defining the transaction first reduces ambiguity before statistical estimation begins.

Multinational ownership does not determine production residence

A corporation can own businesses in several economies, each with its own production, workers, inputs, and customers. Cross-border trade is organized around residence, while consolidated company accounts are organized around control and eliminate many intragroup transactions. The two systems answer different questions. A global revenue figure cannot be assigned wholly to the economy of the parent simply because the parent files a consolidated statement there.

Suppose an American parent exports a service directly to a foreign customer for 120 units. Its foreign affiliate separately supplies local customers for 200. The affiliate pays the American parent 30 for a defined intellectual-property service and purchases 70 of other local intermediate inputs. Assume those are its only intermediate costs. Affiliate value added is 100. U.S. cross-border service exports in this constructed group are 150: the direct 120 plus the intragroup 30. They are not 350 or 320.

The affiliate's 200 of sales is valuable evidence of commercial presence abroad. Adding it to the 150 can describe a carefully defined combined supply measure only after overlap and consolidation are addressed; it cannot be labeled exports. In particular, the 30 intragroup transaction is already an input to the affiliate's production. A combined indicator should explain what it counts and why, rather than rely on the impression that more channels can simply be stacked together.

Profits introduce another account. If the affiliate's value added includes 40 of profit after the specified costs and the American parent owns four fifths, its assumed share is 32. That investment income is distinct from the 30 service payment and from the affiliate's 200 sales. The treatment of distributed and retained earnings follows investment-account rules; current cash remittance is not the sole criterion for the economic income relationship. The numerical example is hypothetical and omits taxes and several real-world complications.

This separation helps explain why trade balances, multinational activity, and national income can move differently. A firm can expand foreign affiliate production without increasing direct exports proportionately. Imported services can support a domestic operation whose profits accrue to foreign owners. The appropriate policy measure depends on whether the question concerns territorial production, resident income, control, employment, or access to foreign customers.

Cloud services are inputs to production

Cloud computing can replace ownership of some on-premises equipment with a purchased service. The user gains access to computing, storage, or software under a contract whose provider, infrastructure, and billing entity may span several economies. The technical location of a server is relevant to infrastructure and operational risk, but does not alone identify every economic transaction. Contracts, residence, and the rights supplied determine the production and trade account.

BEA's [September 2026 international concepts and methods, paragraphs 12.98-12.110](#) distinguishes computer services, software rights, and charges for reproduction or distribution. Its computer-services discussion includes computing and data storage, with specific treatment of software transactions. The implication is practical: describing every technology payment as a royalty or every software transaction as the same service category can misclassify the actual right or product exchanged.

A business assessment should begin with the contract. Is the customer buying a recurring hosted service, an end-user license, reproduction rights, customized development, hardware, or a bundle? Can the elements be identified separately at meaningful prices? Which resident entity supplies them? An invoice heading such as technology solutions does not settle those questions. Nor does the payment currency establish the residence of the producer.

The shift to cloud provision can change investment and intermediate consumption differently across firms. A provider acquires and operates capital while users buy services. Some users reduce their own equipment purchases but become more productive. An evaluation that looks only at users' capital expenditure can miss that reorganization. Conversely, rising cloud spending does not prove productive improvement: unused capacity, duplication, switching costs, and implementation difficulties can absorb resources without increasing accepted output.

An export-production account with a foreign digital input

Consider a hypothetical U.S.-resident producer exporting business services for 120 units. It purchases 30 of cloud services from a foreign-resident supplier and 20 of intermediate services from another U.S.-resident business. Its own gross value added is 70: output of 120 less intermediate inputs of 50. Assume the domestic supplier uses no imported or other intermediate inputs in this simplified chain, so its value added is 20. Combined U.S. value added is 90.

The trade account records exports of 120 and imports of 30, giving net exports of 90 for this isolated chain. That equals domestic value added under the stated assumptions. The import does not reduce GDP a second time after intermediate costs have already been deducted in the production account. The two views reconcile the same process; they are not independent effects to add together.

Constructed service production chain	Output or sale	Intermediate inputs	Domestic value added
U.S. service exporter	120	30 foreign cloud + 20 domestic services	70
Domestic input supplier	20	0 by assumption	20
Combined domestic chain	-	Foreign input of 30	90
Expenditure-side counterpart	Exports 120	Imports 30	Net exports 90

Now suppose the imported cloud service permits the exporter to deliver a higher-quality output worth 150, with other inputs unchanged. Its own value added becomes 100 and combined domestic value added 120. The \$30 import is compatible with a higher domestic contribution. Whether the improvement was caused by cloud adoption requires evidence beyond this account, but the example rejects the assumption that every imported service is necessarily a substitute for an equal amount of domestic output.

An alternative is less favorable. If the service costs 30 but output remains at its original level and no other resource is saved, it reduces the producer's value added relative to a counterfactual without that cost. A useful appraisal must estimate the operational benefit and the feasible alternative. The national accounting identity is consistent with either outcome. It cannot determine the causal return on the purchase without a production comparison.

Platform receipts and the underlying transaction

A platform can intermediate a transaction without owning the product. It can also act as a merchant buying and reselling products on its own account. The two arrangements can appear similar to a customer using the same interface, but their revenues and production accounts differ. Gross merchandise value, customer payments, platform commissions, and platform value added should therefore retain separate labels.

In a constructed cross-border example, an American resident seller supplies a service worth 100 to a foreign customer and pays a foreign-resident intermediary a commission of ten. Assume the platform acts only as an intermediary, the seller supplies the underlying service, and the commission is deducted from the customer's payment. The seller receives net cash of 90, but the economic account contains a 100-unit service export and a ten-unit intermediation import. Net settlement does not turn gross exports into 90.

The platform's ten-unit receipt is not necessarily ten of value added. It may purchase hosting, payment processing, marketing, or other intermediate services. Its contribution is output less those inputs within its production boundary. Recording the full underlying 100 as platform revenue as well would attribute the seller's service to an intermediary that did not produce it. The result would overstate both the platform's scale and its contribution unless the different business model were actually documented.

The transaction can also be international only in its intermediation component. If both buyer and seller are U.S. residents but the platform is foreign resident, the underlying sale is domestic while the fee is a service import. A payment processed abroad does not automatically make the entire purchase an import. The residence and role of each party, rather than the website domain or card network, identify the economic relationship.

Digital-economy value added is another lens

BEA's [December 2023 account for 2017-2022](#) organizes specified infrastructure, e-commerce, priced digital services, and federal nondefense digital activities. It reports 2022 real digital value-added growth of 6.3%, compared with 1.9% for the economy in that vintage. Those are production measures from a historical account, not exports or a current estimate of all activity influenced by digital technology. The [product page](#) identifies December 2023 as the last update of that satellite account.

The distinction between sector and use is fundamental. A traditional manufacturer can use software intensively without all its output being classified as digital-economy production in that account. A digital supplier can sell mostly to domestic customers. An online sale can include a distribution margin rather than assign the whole underlying good to digital value added. The statistical question is the production associated with the defined activities, not whether technology influenced any stage.

The account should not be added to GDP as though it were previously missing output. It reorganizes a subset of production already measured within the accounts. Adding digital trade or global platform revenue on top would create further overlap. Satellite frameworks can reveal relationships hidden in standard industry groupings while preserving the national-account totals. Their usefulness depends on that reconciliation rather than the size of an apparently new headline number.

Nor does a historical growth premium establish that every digital investment has a high return. The result combines activities, prices, and industry changes. Some users may gain productivity from imported services while the provider's domestic value added grows elsewhere. A business or policy appraisal needs the relevant transaction and production mechanism. The aggregate account supplies context and measurement discipline, not a causal investment rule.

Intellectual property separates rights, production, and income

A payment connected with software, a patent, a design, or media can convey different rights. Using a product, reproducing it, distributing it, and acquiring ownership are distinct transactions. The classification affects both trade statistics and the interpretation of productive capability. A company can pay for access to knowledge without owning the underlying asset. An affiliate can produce locally using knowledge developed in another economy. Neither arrangement is described adequately by labeling all payments royalties.

Ownership of intangible assets can also change without the immediate relocation of all research staff or customers. That can affect recorded income and transactions among resident entities. An analyst should

distinguish the legal and economic rights, the location of development, the entity bearing risk, and the entity receiving returns. A movement in a services or income series may reflect contractual restructuring as well as a change in the quantity of services supplied.

Related-party transactions require particular care because prices are not always observable as independent market bargains. Statistical compilers use survey information and specified valuation methods, while firms operate under accounting and tax requirements. Research should not infer illegality from an unusual pattern, nor assume that a transfer price reveals the full contribution of each production location. The evidentiary standard for a legal allegation is different from the accounting reconciliation undertaken here.

For policy, the relevant question may concern domestic research capability, access to technology, taxable income, or the resilience of a service. Those objectives overlap but can diverge. Domestic ownership does not by itself guarantee domestic capability, and a foreign service input does not by itself imply its loss. Evaluation should follow the particular rights, tasks, and dependencies associated with the objective instead of treating intellectual property as an undifferentiated financial flow.

Price, quality, and the meaning of a digital quantity

A digital service can become cheaper per unit of computation while total spending rises because usage expands. It can also improve speed, reliability, security, or functionality at the same subscription price. Measuring real output requires a price comparison that accounts for relevant quality, rather than assuming an unchanged nominal fee means an unchanged quantity. The appropriate unit depends on the service and the user benefit being measured.

Computing capacity illustrates the problem. Processor time, storage, data transfer, response time, and availability are not perfect substitutes. A low price for one technical unit may be accompanied by a costly requirement for another. A bundled contract can make the effective price difficult to observe. Researchers should identify the service characteristics and billing structure rather than compare subscription totals across providers as if each buys the same output.

Free-to-user services raise a separate boundary. Advertising or other market transactions can finance a service that users do not purchase directly. Consumer benefit can exceed the measured expenditure without establishing that the excess belongs in GDP or services exports under the existing production framework. Welfare and market production are different concepts. Time spent, data flows, and advertising revenue are informative measures, but their units and interpretation should not be collapsed into one monetary estimate without a defined method.

A claim that digital activity is entirely missing from trade statistics is therefore too broad. Many transactions are already recorded in goods, computer services, advertising, finance, intellectual-property charges, and other categories. The challenge is often identifying the digital ordering or delivery dimension, improving coverage, or measuring quality. A research program should specify which gap it is addressing rather than treat every new technology as evidence that the entire accounting framework has failed.

Physical digital infrastructure introduces another boundary. A data center can raise domestic construction and equipment investment before its computing services are sold. Later service exports may depend on that asset, but the investment and exports occur at different dates and represent different transactions. Counting the complete construction cost again as an export contribution when the service begins would duplicate the production account. The bridge requires dated capital services, intermediate inputs, and actual customer receipts rather than a combined headline of announced investment and future sales.

Data sources need a reconciliation strategy

Enterprise surveys can identify products, affiliation, partner countries, and service receipts or payments. They can miss smaller or newly international businesses if the sampling frame or reporting thresholds do not capture them promptly. Administrative records can improve coverage but may follow tax or payment definitions that differ from statistical residence and product categories. Combining sources requires a documented bridge, not simply summing their totals.

Card and platform data can be timely, but the location of payment processing need not identify the supplier or customer residence. Refunds, bundled charges, net settlement, and intermediary fees can create further differences. A card payment for foreign accommodation, for example, combines a service consumed abroad with a booking arrangement that may involve another economy. The transaction needs to be reconstructed before it becomes a reliable bilateral trade observation.

Company disclosures can reveal geographic revenue and business lines, but their consolidated perimeter differs from national accounts. They may classify customer location by billing address and combine goods, services, and licenses. Public reports rarely supply the full intragroup and residence detail required for a statistical allocation. They can corroborate a specific fact or motivate a hypothesis without replacing a complete international-services survey.

A robust compilation strategy compares overlapping evidence within compatible definitions, investigates residuals, and documents imputations. Missing detail should remain an identified uncertainty rather than be allocated mechanically to the parent's home economy. Revisions should preserve the distinction between a newly measured transaction and a newly occurring one. Better coverage can raise a series without an equivalent contemporaneous increase in economic activity.

A services surplus is not a domestic-income decomposition

The observed 2025 difference between exports and imports is about 26.5% of the reported export total. That arithmetic ratio says nothing by itself about the domestic value-added share of exports. Imports include services used for domestic final demand and for production, while exports can contain domestic and imported inputs. The net balance combines transactions across many businesses and households. It cannot be interpreted as a uniform margin earned by exporters.

A further hypothetical illustrates the distinction. Suppose an economy exports 200 units of services and imports 150. Its services surplus is 50. Of the imports, assume 40 are inputs into those exports, 60 support goods production sold domestically, and 50 are household final purchases. If the services exports use no other foreign inputs, their domestic content is 160, not 50. The surplus is smaller because imports also serve other uses. No inconsistency exists between a modest net balance and substantial domestic production associated with exporting.

Reverse the composition and the interpretation changes again. If imported service inputs used in exports rise while exporters expand output even more, both gross imports and domestic income can increase. If imports instead replace an unchanged domestic service with no productive benefit elsewhere, the adjustment is different. A balance-of-payments total cannot identify which process occurred without a use account. Input-output tables, enterprise links, and product detail can supply that bridge within their coverage and vintage.

The income distribution then requires another reconciliation. Domestic value added can include compensation, production taxes less subsidies, depreciation, and operating surplus. Higher export receipts do not guarantee a proportional increase in wages, and a higher wage bill can reflect more hours rather than higher hourly compensation. A policy discussion centered on household opportunity should examine those components instead of assuming that the services balance is a direct measure of worker prosperity.

Partial measurement should produce explicit bounds

Suppose a compiler observes 500 units of digitally ordered exports and 350 of digitally delivered exports but cannot directly observe the overlap. Without further information, adding them produces a maximum union of 850, while complete nesting of the smaller category produces a minimum union of 500. If total exports are only 700, the maximum must also respect that total, giving a feasible union between 500 and 700. These are logical bounds, not a statistical confidence interval.

Additional product information can narrow the range. If 300 of the digitally ordered exports are physical goods that cannot be digitally delivered under the stated convention, the overlap must come from the remaining 200 of ordered services. The union is then at least 650 and at most 700 under the same total constraint. This constructed calculation uses different information from the fully specified portfolio above. It shows how an honest interval can be more informative than an unsupported point estimate.

A model can estimate the missing overlap using survey ratios or comparable economies, but that introduces assumptions about ordering and delivery behavior. Those assumptions can vary across industries and over time. Applying a common proportion to professional services, streaming, education, and travel may create a precise total while ignoring their distinct delivery arrangements. A sensitivity range should therefore vary the assumptions that matter for the composition actually observed.

Policy conclusions should be tested against that range. If a proposed claim holds only at one unsupported allocation, the uncertainty is consequential and requires further evidence. If it holds throughout the feasible range, the conclusion can be stated more firmly within that boundary. This approach uses incomplete

measurement constructively: it identifies which missing detail could change a decision and avoids presenting the absence of information as zero activity or as a license to attribute all activity to the digital category.

Policy transmission extends beyond the technology sector

Restrictions or costs affecting data, professional recognition, payment, contracts, or local establishment can affect many service suppliers and their customers. A manufacturer purchasing remote design or maintenance can be exposed even if its principal output is a good. A hospital, bank, or logistics provider can depend on cross-border digital services while operating in a regulated domestic market. The relevant production network extends beyond a narrow list of technology firms.

Policy effects depend on the margin constrained. A requirement to establish locally can change affiliate production rather than eliminate service supply. A restriction on data access can change quality or cost without immediately changing nominal receipts. A qualification rule can prevent a professional from supplying a service remotely despite available technology. These mechanisms should be studied separately, with attention to the public objectives and feasible alternatives associated with each rule.

A services surplus cannot by itself determine the appropriate policy. It can coexist with bottlenecks, regional losses, or concentration. A service import can improve domestic productivity, while a profitable export can rely on scarce inputs with limited spillovers. The appraisal should identify consumers, producers, workers, and the risks addressed. Market access and legitimate regulatory objectives require a specific comparison rather than a presumption that every restriction or every liberalization has the same effect.

Resilience similarly requires an operational account. A cloud service can be geographically distributed yet depend on a common control system, identity provider, or network route. Local infrastructure can rely on foreign software or maintenance. Gross trade values do not measure the ability to continue a critical service during disruption. Dependency mapping, substitutability, recovery time, and contract rights are necessary complements to economic flow statistics.

Findings and limits

American services trade, multinational affiliate supply, and digital-economy value added describe different dimensions of production and exchange. The official observations establish substantial activity through each channel, but their values and reference years cannot be combined without reconciliation. Digital ordering and delivery add a transaction dimension; they do not remove the need to identify products, residence, rights, and intermediate inputs.

Every numerical transaction portfolio and production chain in this report is hypothetical. The observed services totals refer to the releases identified, and the digital-economy production figures retain their historical vintage. The report does not estimate a new total for American digital trade, assign all foreign affiliate revenue to U.S.

production, or infer an unmeasured welfare gain from data traffic. Those claims would require additional definitions and evidence.

The useful standard is to follow who supplies what to whom, under which rights, and with which inputs. That account can connect international services to domestic value creation without treating a digital interface, a corporate headquarters, or a trade surplus as a substitute for economic analysis. It also identifies where better measurement can change a policy conclusion and where a different question requires a different statistical lens.

Related research

- [From computing investment to productive adoption](#) examines operational gains from digital investment.
- [Tracing production through changes in trade geography](#) distinguishes gross transactions and upstream value added.

Source addresses

The links below retain the source addresses cited in the analysis. References should be read within their stated periods and scope.

<https://www.bea.gov/data/intl-trade-investment/international-services-expanded>

https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/07/handbook-on-measuring-digital-trade-second-edition_099afd2f/ac99e6d3-en.pdf

<https://www.bea.gov/sites/default/files/2026-09/BEA-International-Economic-Accounts-Concepts-and-Methods.pdf>

<https://apps.bea.gov/scb/issues/2023/12-december/1223-digital-economy.htm>

<https://www.bea.gov/data/special-topics/digital-economy>