

RESEARCH REPORT

Tariff incidence, inventories, and margins in U.S. supply chains

Historical U.S. evidence identifies tariff effects at different production stages. Supply-chain accounts trace inventories, supplier prices, margins, and substitution to distinguish border charges from their ultimate economic burden.

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Abstract

A tariff creates an immediate obligation at the border and a sequence of adjustments beyond it. Importers can negotiate with suppliers, use existing inventories, change products, revise margins, or increase selling prices. Domestic competitors can gain protection while paying more for their own inputs. Exporters can face retaliation. The ultimate burden therefore cannot be determined from the nationality of the company that remits the duty or from the first movement in a consumer-price index.

This report examines historical American evidence alongside a dated 2026 analysis of recent price transmission. It distinguishes customs-inclusive import costs, factory-gate prices, retail prices, and domestic value added. Original numerical accounts then trace a hypothetical imported input through inventory, production, pricing, and supplier substitution. Those accounts establish how the same statutory tariff can produce different observed timing and margin effects without implying that the underlying cost has disappeared.

The evidence supports a differentiated conclusion. Historical studies find substantial transmission to American import costs, together with gains for some protected producers and adverse effects on downstream activities. The size and timing of those effects depend on the product, contract, production network, and available substitutes. A defensible assessment retains those conditions, distinguishes relative-industry estimates from economy-wide effects, and evaluates any strategic objective against its full resource cost.

The boundary between payment and burden

The legal party responsible for a duty and the parties bearing its economic cost are not necessarily identical. A U.S. importer can remit the tax while negotiating a lower foreign supplier price. It can instead pay an unchanged supplier price and absorb the duty in its margin. It may pass some cost to a domestic manufacturer or retailer, who makes another pricing decision. The sequence determines the distribution of the burden; the customs transaction identifies only its initial collection point.

A tariff-inclusive landed cost includes the supplier's price, the applicable duty, and relevant transport or handling costs. A retail price also pays for domestic distribution and other services. The percentage increase in the former need not equal the percentage increase in the latter, even when the full dollar border cost is passed onward. Comparing percentage changes with different denominators can create a false impression that part of the tax was absorbed abroad.

There is a further distinction between a transfer and a resource loss. Tariff revenue transfers purchasing power to the government. A higher price paid to an American producer can transfer income within the economy. Producing with more costly resources, abandoning a valued product, or spending on avoidable reconfiguration can impose additional real costs. A national welfare account requires all these elements and the relevant external or strategic benefits. The tax receipt alone is neither the total burden nor a complete measure of national benefit.

These boundaries are particularly important in a supply chain. A business can sell domestically produced equipment that contains imported components, uses foreign software, and depends on export customers. Labeling it a protected manufacturer does not establish its net exposure. A useful analysis begins with the actual purchases and sales affected, rather than infer the effect from the nationality of the company or the final product.

Historical evidence separates protected output from downstream costs

The U.S. International Trade Commission's [2023 assessment, corrected in May](#), models the 2018-2021 effects of Section 232 measures separately from other developments. It estimates average domestic steel production 1.9% above its no-tariff counterfactual and aluminum production 3.6% higher. It also estimates an average annual reduction of \$3.4 billion in the production value of examined downstream industries. Those results are sectoral, model-based comparisons. The report explicitly excludes some indirect and longer-term effects, including investment.

The finding that protected output can rise while downstream output falls is economically coherent. Protection changes relative prices in favor of producers of the covered material. Businesses using that material face a higher input cost and may lose competitiveness against foreign producers purchasing it elsewhere. The net outcome cannot be obtained by counting the protected plants while excluding the users of their products. Nor can a sectoral production-value difference be treated as a complete estimate of national welfare.

Flaen and Pierce's [December 2019 Federal Reserve working paper](#) uses differential industry exposure to distinguish import protection, input costs, and retaliation. More exposed manufacturing industries experienced relative employment reductions as the latter channels outweighed the positive protection channel. The estimates compare industries and do not identify the full general-equilibrium effect. Their contribution is to demonstrate why simultaneous exposure through several channels changes the answer to a manufacturing-policy question.

These studies are complementary rather than interchangeable. One uses sector models and counterfactual trade costs; the other uses variation in industry exposure and observed outcomes. Their populations, periods, and dependent variables differ. Both require assumptions to separate tariffs from other influences. Neither supplies a universal multiplier that can be applied without adjustment to a later schedule, a different product mix, or a change in strategic objectives.

Newer price evidence has a specified scope

An [October 6, 2026 New York Fed analysis](#) examines the 2025-2026 episode. The authors estimate substantial border-price transmission and a slower response among U.S.-made goods. Their consumer calculation covers non-oil goods and holds economy-wide influences fixed when comparing tariff exposure. It excludes services and is not a comprehensive estimate of the effect on the entire consumption basket, real income, or monetary policy.

The distinction between direct and indirect effects is important. A consumer good can become more expensive because it is imported and taxed, because its American producer uses taxed inputs, or because reduced foreign competition changes domestic pricing. The observed retail response combines those channels with distribution. A price increase for a domestically produced good therefore does not demonstrate that its seller paid a duty on that good. Conversely, absence of a directly taxed finished product does not demonstrate zero exposure.

Timing also affects interpretation. Firms can initially sell inventory acquired before a tariff takes effect, defer a price increase until a contract resets, or spread a cost increase across several products. A delayed response does not prove that the duty has no effect. An immediate price increase larger than the direct duty does not, by itself, prove exploitation: exchange rates, other inputs, and demand may have moved simultaneously. Identification requires an appropriate comparison and an explicit account of those influences.

The newer results do not eliminate the need for historical evidence, but they limit mechanical extrapolation from it. Supplier bargaining, exchange-rate conditions, inventories, and policy expectations can differ between episodes. A responsible synthesis looks for common mechanisms while retaining those differences. It should not average unrelated headline pass-through estimates or treat a dated research scenario as a statement of the tariff schedule in force at every later date.

A border-cost account with unchanged supplier prices

Consider a hypothetical manufacturer importing a component for \$100 per unit. Assume transport and handling cost \$10, with no other charges. Initially, landed cost is \$110. A new assumed 20% ad valorem tariff on the \$100 customs value adds \$20, raising landed cost to \$130 if the supplier price and logistics cost remain unchanged. This is an 18.18% increase in landed cost, despite the statutory rate being 20%. The different denominators explain the difference.

Suppose the manufacturer uses one component in a finished product with other variable costs of \$70. Initial variable cost is \$180, and the selling price is \$240. Contribution before fixed costs is \$60. With no price adjustment, the tariff raises variable cost to \$200 and lowers contribution to \$40. The manufacturer bears the initial reduction in contribution, although later changes in output, wages, suppliers, or prices may distribute the cost further. A fixed quantity is assumed only to isolate this first step.

If the manufacturer raises price to \$260, the original \$60 contribution is restored per unit. The selling price increases by 8.33%, rather than 20%, because the tariff is a \$20 addition to a larger product price. Full dollar transmission of the direct duty is compatible with a much smaller percentage retail or wholesale increase. Maintaining a constant percentage margin would require a different price. Researchers must specify which margin definition is held fixed.

Constructed product account	Before tariff	Tariff, price unchanged	Tariff, dollar contribution restored
Foreign component price	\$100	\$100	\$100
Assumed duty	\$0	\$20	\$20
Logistics	\$10	\$10	\$10
Other variable production costs	\$70	\$70	\$70
Total variable cost	\$180	\$200	\$200
Selling price	\$240	\$240	\$260
Contribution before fixed costs	\$60	\$40	\$60

All amounts are hypothetical per-unit values. The exhibit omits fixed costs, corporate taxes, financing, and demand responses. It is a contribution account rather than a profit statement. In particular, restoring contribution per unit does not restore total contribution if sales fall. A business facing more elastic demand may be unable to raise price by \$20 and may instead reduce production, accept lower returns, or change the product.

Inventory changes when the cost becomes visible

Inventory can separate the date a tariff is paid from the date its cost enters an income statement or selling decision. Consider a firm holding 1,000 components at the original \$110 landed cost when the assumed tariff begins. It then buys another 1,000 at \$130. Physical inventory totals 2,000 and acquisition cost totals \$240,000. A weighted-average unit acquisition cost is \$120. This constructed blend is below the new replacement cost even though every new component is more expensive.

If the business sells 1,000 units using a weighted-average cost, it records \$120,000 of component cost and retains \$120,000 in inventory. A first-in, first-out assumption instead records \$110,000 and retains \$130,000, with identical physical purchases and sales. The resulting reported gross margins differ during the transition. Neither method changes the duty paid, and neither establishes the economically appropriate selling price. The example concerns inventory accounting, not a claim about the method used by a particular company.

Replacement-cost pricing can generate a price increase before all lower-cost inventory is exhausted. A seller may reason that it must finance the next purchase at the new cost to remain in business. Alternatively, competition may force it to keep prices low until competitors exhaust their inventories. Contracts can constrain both responses. An empirical study should therefore distinguish recorded cost of goods sold, current acquisition cost, and replacement cost rather than infer pricing intent from one accounting margin.

Front-loading imports adds a macroeconomic timing issue. A firm may accelerate purchases before an announced duty, increasing imports and inventories in the earlier period. Later imports can fall as stocks are drawn down, even if final demand has not changed. A decline in imports after implementation can consequently reflect both substitution and timing. To distinguish them, researchers need quantities, inventories, sales, and a sufficiently long comparison window.

Stockpiling is not free. It ties up working capital, requires storage, and risks obsolescence or a later policy reversal. A business importing specialized components cannot assume that every purchased item will remain useful if specifications change. The expected saving from avoiding a duty must therefore be compared with carrying cost and risk. A large inventory increase is evidence of a response to anticipated conditions, not automatic evidence of a lasting improvement in supply security.

Supplier concessions and exchange rates

The foreign supplier may reduce its price to retain business. Under the same hypothetical 20% tariff, a supplier-price reduction from \$100 to \$90 yields a duty of \$18 and a landed cost of \$118 after the unchanged \$10 logistics charge. The importer now pays \$8 more than initially, while the supplier receives \$10 less. The tariff receipt is \$18. These are changes in prices and revenue per unit; their welfare implications require quantities, costs, and ownership information.

This example shows why the tax base must be recalculated after a concession. Subtracting a \$10 concession from the original \$20 duty would yield the wrong landed cost because the duty itself falls when customs value falls. It also shows why a price concession is not necessarily equal to a reduction in the foreign firm's profit.

Input costs, productivity, exchange rates, and other sales may change. The counterfactual supplier margin must be observed or modeled separately.

Currency movements can produce a similar observed dollar-price change without the same contractual negotiation. A product invoiced in foreign currency can become cheaper in dollars when that currency depreciates, holding its local-currency price fixed. A dollar-invoiced contract may adjust only later. Hedging changes the buyer's realized financing exposure without necessarily changing the price recorded at the border. The invoicing currency, hedge, and transaction price should therefore be treated as separate objects.

Exchange rates are also economy-wide outcomes. Holding them fixed can identify a product-level transmission channel, but it does not answer how a broad tariff changes the equilibrium currency. A finding of near-complete border transmission conditional on exchange rates should retain that qualification. It cannot establish that exchange rates never matter, just as an offsetting currency movement does not establish that the tariff was costless.

The source of bargaining power should be investigated rather than assumed. A buyer with many qualified suppliers may extract a concession. A supplier providing a specialized input with high switching costs may retain its price. An importer affiliated with the supplier may report transfer prices that require careful interpretation. Product heterogeneity and related-party trade can therefore affect both the actual burden and the ability of a unit-value measure to reveal it.

Why import-price indexes can appear quiet

BLS's [explanation of tariffs and international price indexes](#) states that the prices used in its import and export indexes exclude duties. A flat import-price index can therefore coexist with a higher customs-inclusive acquisition cost. The index remains informative about the measured transaction prices; the error is treating it as though it includes a tax outside its definition.

Customs unit values create another measurement problem. Dividing total import value by quantity can change when buyers switch to a different quality, model, or supplier. A fall in the average may reflect substitution toward cheaper goods rather than a price reduction for an unchanged item. A matched-product index attempts to control some of that variation but has its own coverage and replacement procedures. Neither should be described simply as the complete price paid by all importers.

Retail indexes add quality adjustment, product replacement, outlet selection, and differences in domestic distribution. Comparing a tariff rate for a narrow customs code with the CPI for a broader category can therefore obscure both exposure and transmission. The appropriate exercise maps products and weights across stages, accounts for nontariff content, and identifies the proportion of goods actually subject to the measure. A statutory rate alone does not supply those weights.

The distinction between price level and inflation completes the measurement chain. A one-time increase can leave prices permanently higher while its contribution to twelve-month inflation eventually fades. A falling inflation contribution does not necessarily mean the price increase has reversed. A repeated sequence of tariff

changes can extend that adjustment. Research should identify whether it is discussing the level, the monthly rate, or the twelve-month comparison before interpreting persistence.

Domestic substitution has a resource cost and a capacity constraint

Switching to an American supplier can reduce direct tariff exposure while changing the real resources used. Suppose a qualified domestic component costs \$122 delivered, against the imported component's assumed post-tariff landed cost of \$130. The switch saves the buyer \$8 per unit relative to continuing to import, but costs \$12 more than the initial \$110 imported alternative. That comparison is not a national welfare calculation; it identifies the buyer's private cost at two different baselines.

The domestic supplier may need investment, additional workers, or new tooling. If capacity is already occupied, accepting the order can displace another customer or raise lead times. The buyer's avoided duty does not create those resources automatically. Short-run substitution may therefore be limited even where eventual domestic production is feasible. A procurement decision should distinguish qualified capacity available now from capacity that could be built under a sustained demand commitment.

Qualification costs matter. A component with the same label may require tests, redesign, regulatory approval, or customer acceptance before use. A lower quoted price can be outweighed by downtime or reliability risk. Conversely, a supplier change can improve service and reduce other risks enough to justify a higher component price. The relevant comparison is the cost of producing accepted output over time, not the lowest line on an initial quotation.

Substitution can also occur through a third country. A change in the recorded country of final production does not necessarily eliminate upstream exposure or increase American value added. Imported machinery, materials, and intellectual property can remain central to the new supply chain. Legal origin and economic production content answer different questions. Both are relevant, but neither should be used as a proxy for the other without examining the actual transformation and purchasing relationships.

Retaliation and the producer's full exposure

An American manufacturer can benefit from protection at home while losing export sales abroad. The loss depends on foreign demand, competing suppliers, exchange rates, and the possibility of redirecting sales. A fall in one destination's purchases need not represent an equal reduction in total output if another market absorbs production. Redirection can nevertheless involve discounts, distribution costs, or delayed receipts. Those costs should be observed rather than assumed away.

Intermediate-input exposure can be equally consequential for exporters. A domestic producer purchasing taxed materials may face a cost increase that foreign competitors do not bear. Even without formal retaliation, its export competitiveness can deteriorate. The relevant effective protection of the production process depends on

both the tariff on competing finished goods and the tariff on inputs. A headline measure of protection based solely on the final product misses that interaction.

In a simplified value-added example, a product sells for \$200 and uses \$120 of imported inputs. Domestic value added before the policy is \$80. If the output price rises to \$220 while input cost rises to \$144, value added becomes \$76. Both changes are assumed. A 10% increase in output price can coexist with a decline in domestic value added because imported costs increased more. The effect on operating profit would require domestic wages, other costs, and production volume as well.

The same calculation can run in the other direction if output protection is large and input costs are unchanged. There is therefore no universal ranking of industries by statutory output tariffs alone. An exposure assessment should include purchases, domestic sales, exports, and substitutes, with weights that refer to a defined pre-policy period. Otherwise, the weights themselves can change as a consequence of the measure and obscure the original treatment.

Revenue, quantities, and the counterfactual tax base

A tariff's fiscal yield depends on the value that remains imported after behavior changes. If a hypothetical market initially imports 10,000 units at a customs value of \$100 each, a 20% tariff would raise \$200,000 only if the unit value and quantity remained unchanged. If imports fall to 7,000 units with the same customs value, revenue is \$140,000. The difference is not evidence of tax evasion by itself. It can arise from reduced demand, domestic substitution, third-country sourcing, or inventory timing.

A revenue calculation should therefore distinguish a fixed-base mechanical estimate from a behavioral estimate. The former can describe initial exposure and is straightforward to reproduce. The latter requires assumptions about how purchasers and suppliers respond. Using the pre-policy import base for revenue while simultaneously assuming large reductions in imports elsewhere in the analysis is inconsistent. The tax base and the trade response must belong to the same scenario.

Nor should the full reduction in import expenditure be described as an increase in domestic income. Some purchases may disappear; some may shift to foreign suppliers outside the covered group; some may be replaced by more costly domestic production. The resulting value added depends on the destination of expenditure and the inputs used. An import contraction is an outcome to explain, not a sufficient statistic for national economic gain.

Fiscal receipts can finance spending, reduce other taxes, or lower borrowing relative to a baseline. Each use changes the broader incidence, but the receipts should not be counted twice: once as a national benefit without regard to who pays, and again through the expenditure they finance. A complete account treats the collection and use consistently. It also separates the distribution of income from the resource cost of producing and consuming a different bundle of goods.

Contract allocation and operational risk

Commercial contracts determine who initially bears an unexpected change in duties, but they do not settle the long-run economic burden. A fixed delivered-price contract can oblige a supplier or intermediary to absorb a new cost until renegotiation. Another agreement may permit an explicit duty surcharge. A buyer may have committed volume before the effective date, while customs treatment depends on an event later in the delivery sequence. The actual legal documents and entry rules are needed before assigning the cash obligation in a particular transaction.

This is why a quotation comparison should preserve delivery terms, customs responsibility, exchange-rate exposure, and the period for which a price is fixed. Two offers with identical nominal unit prices can place different risks on the buyer. A lower quotation may exclude transport, insurance, compliance services, or a possible duty adjustment. Research using invoice prices without those terms can interpret a transfer of responsibility as an improvement in production efficiency.

Contract duration also changes adjustment timing. A manufacturer with annual customer prices and monthly input purchases can face a substantial temporary margin squeeze. A competitor able to reset selling prices immediately may show little recorded margin decline. Their underlying input exposure can be identical. Comparing profits in the first month after implementation without considering repricing opportunities confounds tariff incidence with contract design.

The transmission can reach smaller suppliers through payment terms as well as price. A large buyer may preserve its own cash position by extending settlement or requiring additional inventory at the supplier's expense. The supplier then finances part of the adjustment, potentially reducing its capacity to invest or meet other orders. That channel will not appear in a consumer-price series. A full business assessment therefore follows receivables, inventory ownership, and payment timing alongside the observed sale price.

Irreversible investment and uncertain duration

A temporary tariff and a durable tariff can induce different investment responses even when the current rates are identical. Building a new facility requires costs that cannot be recovered fully if protection is removed. A firm may therefore satisfy increased demand with overtime or existing capacity rather than commit to a new plant. Higher current margins can coexist with limited capital formation when the expected policy horizon is short or uncertain.

The option to wait has an economic value. If investment is irreversible and future market conditions are uncertain, a project with a positive expected return can still be postponed while the firm learns more. That does not mean uncertainty explains every delayed project. The explanation should be tested against the investment's reversibility, construction period, alternative uses, and sensitivity to the policy. Statements of business concern alone do not identify a causal investment effect.

Subsidies or purchase commitments can change that calculation by stabilizing expected demand, but their costs then belong in the policy package. Attributing the resulting plant solely to the tariff while excluding a

concurrent grant overstates the instrument's independent effect. Similarly, attributing all output gains to protection while ignoring a commodity-price upswing confounds policy and market conditions. A project-level decision record is valuable because it can identify which assumption made the investment viable.

The appropriate monitoring horizon should extend beyond the announcement. Researchers should observe financial commitment, construction, commissioning, output, and the ability to compete under plausible changes in protection. A facility can meet a resilience objective despite higher ordinary costs, but that judgment requires a defined disruption benefit. A facility expected to become commercially competitive should be evaluated against that separate promise. Keeping the objectives distinct prevents current protected production from being treated as proof of every claimed long-run benefit.

Strategic objectives require a separate appraisal

A tariff may be justified in policy debate by resilience, defense capacity, learning, or bargaining objectives rather than short-run consumer surplus alone. Those objectives should be assessed directly. A higher domestic output level does not establish that a supply chain can operate during a specified disruption. Dependence on a common energy connection, imported machinery, or a single critical material can remain. The disruption scenario and the operational capability required should be defined explicitly.

The relevant cost comparison includes alternatives. A targeted purchase commitment, stockpile, infrastructure investment, research support, or diversification requirement may address a specified vulnerability differently from a broad tariff. Each has administrative, fiscal, and competitive consequences. Evaluating a tariff against no policy at all can be informative, but it does not identify the least costly way to obtain the stated capability. The counterfactual should include feasible instruments serving the same objective.

Learning benefits also require evidence. Protection can provide time and revenue for investment, but it can reduce competitive pressure or maintain inefficient capacity. A credible assessment follows technology adoption, costs, quality, and eventual competitiveness. It should state the intended horizon and conditions under which protection is reviewed. Indefinite continuation based solely on the existence of protected output makes the learning claim difficult to falsify.

Distribution should remain visible. Benefits may accrue to owners, workers, suppliers, or particular regions, while costs are borne by downstream producers and consumers elsewhere. A national average can conceal concentrated gains and losses. That distribution may be relevant to the policy's purpose, but it does not justify omitting either side. Transparent incidence analysis gives decision makers the information needed to weigh those tradeoffs explicitly.

A research design for margin transmission

A useful firm-level study would link customs entries to purchase invoices, inventory records, and selling prices. It would identify products before the policy change, retain quality and supplier characteristics, and distinguish related-party transactions. Exposure should reflect the effective duty paid after relevant exclusions and other provisions, rather than assume every import in a broad product category faces the headline rate. Actual remittances and contractual responsibility would strengthen the interpretation.

The comparison group should face similar demand and input conditions without the same tariff exposure. That requirement is demanding because tariffs are selected by product, country, and policy objective, rather than assigned randomly. Preexisting trends, concurrent commodity-price changes, and exchange rates can confound the estimate. A well-designed event study can test some prior differences; it does not eliminate all selection simply by including a large number of observations.

Margins should be examined at several stages. A wholesaler's gross margin may rise while a manufacturer's contribution falls. Accounting inventory methods can affect short-term reported profit. Average margins can change when low-margin firms exit. Linking continuing firms and products helps distinguish genuine pricing responses from composition, but excludes entry and exit effects that may matter for the overall economy. The research should report both boundaries rather than present one as complete.

Finally, the horizon should be long enough to observe replenishment, renegotiation, substitution, and investment. A rapid border-price response and a slower retail response can be parts of the same mechanism. A temporary margin reduction can precede a later price increase. Estimated effects should be tied to those dates, with separate treatment of forecasts beyond the sample. That discipline prevents an early observation from being mistaken for the final incidence.

Findings and limits

The American evidence establishes substantial domestic transmission in the episodes examined and identifies distinct gains for protected output alongside downstream and retaliation costs. It does not establish an invariant burden for every future tariff. The original accounts demonstrate how inventories, supplier prices, imported-input shares, and different price denominators can change the observed response without changing the statutory rate.

All numerical supply-chain accounts in this report are hypothetical. The historical USITC estimates concern 2018-2021, the Federal Reserve industry study concerns the earlier episode, and the New York Fed's 2026 discussion has a specified goods-price sample and conditional framework. The report does not provide a current legal tariff schedule or a new economy-wide welfare estimate. Its conclusion concerns the evidence required to trace a policy cost through production and distribution.

A sound appraisal should follow the duty from the actual transaction to usable inventories, accepted output, selling prices, and domestic income. It should then compare any strategic benefit with the complete cost and feasible alternatives. That sequence produces a more useful decision than either attributing the entire tax to a

foreign country or assigning every observed domestic price change to the tariff without an identified comparison.

Related research

- [Tracing production through changes in trade geography](#) examines production content behind changing trade routes.
- [Bank credit and the financing gap of smaller American firms](#) follows the working-capital effects of inventories and delayed receipts.

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.usitc.gov/publications/332/pub5405.pdf>

<https://www.federalreserve.gov/econres/feds/files/2019086pap.pdf>

<https://libertystreeteconomics.newyorkfed.org/2026/10/how-fast-do-tariffs-pass-through-into-consumer-prices/>

<https://www.bls.gov/opub/btn/volume-9/how-tariffs-relate-to-bls-import-and-export-price-indexes.htm>