The Antebellum Tariff on Cotton Textiles Revisited

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Abstract

Recent research has suggested that the antebellum U.S. cotton textile industry would have been wiped out had it not received tariff protection. We reaffirm Taussig's judgment that the U.S. cotton textile industry was largely independent of the tariff by the 1830s. American and British producers specialized in quite different types of textile products that were poor substitutes for one another. The Walker tariff of 1846, for example, reduced the duties on cotton textiles from nearly 70 percent to 25 percent and imports soared as a result, but there was little change in domestic production. Using data from 1826 to 1860, we estimate the responsiveness of domestic production to fluctuations in import prices and conclude that the industry could have survived even if the tariff had been completely eliminated.

1. Introduction

America's industrialization in the early nineteenth century was spearheaded by the New England cotton textile industry. The industry received a strong initial impetus from the Jeffersonian embargo and the war-time disruptions to commerce from 1807 to 1815. After the war, the industry pressed for and received high tariffs to block import competition and domestic output continued to expand.

The extent to which the industry depended upon the tariff, however, has been a source of debate. Taussig (1931, pp. 135-36) opined that "the tariff of 1816 may be considered a judicious application of the principle of protection to young industries" in part because domestic producers were strong enough to have survived without tariffs by late 1820s, or "almost certainly by 1832." By this time, Taussig concluded, "the cotton manufacture was in the main independent of

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[1] Dartmouth College and NBER, and MIT and NBER, respectively.

protection, and not likely to be much affected, favorably or unfavorably, by changes in duties."

Bils (1984) and Harley (1992) recently challenged Taussig's view. They went beyond Taussig's informed if informal discussion by explicitly considering the costs of producing cotton textiles in America and Britain in the 1830s and 1840s, drawing principally on Montgomery (1840). Bils concluded that "as of 1833, removing protection would have eliminated the vast majority of . . . the cotton textile industry." With additional cost evidence, Harley concurs and conjectures that removal of the tariff would have shrunk domestic output to about 10 percent of domestic consumption even as late as the 1850s. One problem with the Bils and Harley approach is that cost comparisons alone can present a misleading view of trade, which after all depends on comparative and not absolute advantage, and provide little information on the characteristics of American and British fabrics, a key consideration in determining the impact of the tariff.[2]

This paper examines what previous researchers have largely ignored – namely, the historical record of how domestic production responded to changes in the relative price of imports. Rather than inferring the impact of the tariff from cost data, we allow time series data on prices, domestic production, and imports from 1826 to 1860 to speak on the issue of the tariff's importance. These data allow us to estimate the sensitivity of domestic output to changes in the relative price of imports, whether due to changes in the prices of goods, the exchange rate, or the tariff rate.

We conclude that the findings of Bils and Harley exaggerate the importance of the tariff after 1830. Rather, American and British cotton textile producers specialized in different

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[2] If we followed the Bils and Harley's approach of focusing on production costs, for example, we would conclude that the United States would not import Mercedes and BMW cars from Germany due to the much higher cost of producing them.

varieties of cotton goods, and domestic producers were insulated from foreign competition by the different characteristics of their products. The relative unimportance of the tariff is demonstrated by the reduction in the cotton textile duties in 1846 from nearly 70 percent to 25 percent. Imports soared by a factor of 3 and increased their share of the U.S. market from about 7 percent to about 15 percent, but there was no decline in domestic output. This simple experiment suggests that U.S. cotton textile producers were not dependent upon the tariff and thus supports Taussig's view that the industry was well established by this time.

2. Background

For most of the early nineteenth century, the U.S. tariff on imported cotton cloth was a combination of an ad valorem rate and a minimum valuation. The tariff of 1816, for example, generally regarded as the first "protective" U.S. tariff, consisted of a 20 percent ad valorem rate on imported textiles along with a 25 cent per yard minimum valuation. This scheme severely burdened textile imports that were priced under 25 cents per yard and thus shifted the composition of imports toward higher grade, higher priced products. The minimum valuation may not have been binding on British products, however, because goods worth less than 25 cents per yard were not typical of British products during this time (Stettler 1970, p. 212). Taussig commented only that the minimum excluded coarser cloths; it also excluded Asian cloth while not affecting imports from Britain.

This was a deliberate strategy by Francis Lowell. As explained by his colleague, Nathan Appleton, the minimum was designed to protected the fledgling industry in New England without antagonizing Southern cotton exporters to England (Temin 1988). Cotton growers in the

South exported raw cotton to Britain, and they were opposed to any tariff that would restrict the sales of their British customers to the United States. They worried both about loss of sales and about further losses due to possible British retaliation. Lowell's tariff design shows that the sectional conflict over the tariff that would loom large at mid-century was already present at the start of New England industrialization (Temin 2000).

After 1816, however, the minimum valuation became increasingly binding as British export prices of textiles fell steadily and as the minimum valuation was gradually raised in subsequent tariff acts. Table 1 summarizes the cotton textile provisions of the tariff acts of this period. The minimum valuation, for example, was raised from 25 cents to 30 cents in the tariff of 1824, and the ad valorem tariff was increased from 20 percent to 25 percent. In 1828 the minimum valuation was raised again to 35 cents. By the 1840s, the average British export price to the United States was around 13 cents per yard, yet the minimum valuation on printed cloth was 30 cents per yard. This minimum required that the 13 cent per yard import would be assessed at 30 cents and applying the 30 percent duty to that price implies a charge of 9 cents per yard, amounting to an ad valorem equivalent of over 60 percent.[3] The most important change after this period was the Walker tariff of 1846, which completely eliminated the minimum valuation and cut the ad valorem tariff to 25 percent.

To determine the effective ad valorem rate on imports, the prices of the imported goods

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[3] As Table 1 indicates, the Tariff of 1842 had a minimum valuation of 30 cents per yard of printed cloth and 20 cents per yard of white cloth. According to U.S. import statistics, the value of printed, stained, or colored cotton manufactures from Britain vastly exceeded that of white or uncolored cotton manufactures. See, for example, U.S. House of Representatives, "Commerce and Navigation," House Executive Document No. 42, 13th Congress, 2nd Session (Washington, D.C.: GPO, 1849), p. 150.

must be ascertained. While U.S. statistics during this period report only the total value of cotton imports (with some category breakdown, by country), Britain published statistics on the value and volume of its cotton textile exports to various markets, including the United States. These data allow the unit value of British textile exports to be calculated, a useful summary statistic of the average export price to the United States and to other markets.[4] Both price series show a steady decline during the 1815 to 1860 period, but prices are somewhat higher on goods destined for the U.S. market, consistent with the effect of the minimum valuation in shifting the composition of imports toward finer, higher valued goods. Figure 1 presents our estimate of the ad valorem equivalent import tariff on textiles, which is calculated by applying the tariff rates in Table 1 to the export price series. As the minimum valuations rose and British export prices fell, the effective tariff rose to nearly 70 percent by the early 1840s.

The Walker tariff of 1846 appeared to pull the rug out from under domestic textile producers by eliminating the minimum valuation and applying a simple 25 percent ad valorem tariff. As Figure 1 strikingly demonstrates, the effective tariff plummeted from 69 percent to just 25 percent. Imports from Britain nearly tripled, soaring from 37 million yards in 1846 to 105

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[4] The source for the data are House of Commons, "Accounts of Cotton Wool Imported, and of Cotton Manufacture, and Cotton Twist, Yarn or Thread Exported in Each Year 1815 to 1847," Sessional Papers 1847-1848, Vol. LVIII, p. 325. House of Commons, "Returns of Quantities and Declare Value Imported from the Exported to the United States," Sessional Papers 1856, Vol. LV, p. 385. These data were originally utilized by Stettler (1970, pp. 137, 168, 216-217), but we found two apparent errors in his series on the average prices of British textile exports to the United States. First, he seems to have taken the British export quantity from the column marked "cottons" and the value not from the adjacent column for cottons but from the final column for the declared value of all export categories (including cotton thread, twist, and yarn). While the other export categories are much less important than "cottons," it does raise the calculated average price and thus reduce the calculated average tariff. Second, even using the columns that Stettler selected, the unit value is not what he reports it to be due to an apparent arithmetic error for the years prior to 1855.

million yards in 1847, and then falling back to 71 million yards in 1848 (Stettler 1970, p. 168).

Yet what happened to domestic production? According to the Davis and Stettler (1966, p. 221)

series on New England textile output, presented in Figure 2, production stalled briefly in 1847

but then resumed its growth. Despite the sharp tariff reduction, there was no absolute decline in

output. Figure 3 shows that the import market share jumped from roughly 5 percent in 1846 to

about 15 percent in 1847 and then climbed to around 20 percent by the mid-1850s. But this

growth in imports occurred without a decline in domestic production. As Taussig (1931, p. 140)

noted, "when the act of 1846 was passed, the protectionists predicted disaster; but disaster came

not, either for the country at large or for the cotton industry" as production steadily increased.[5]

The uniformity of the growth in New England textile output in Figure 2 is striking. The

tariff may have affected the level of American textile production to a slight extent, but it does not

seem to have affected its growth. Zevin (1971, p. 128) concluded that "the tariff made no

significant contribution to the secular growth of American demand for New England mill

products over the period from 1815 to 1833."

3. Estimating the Impact of Tariff Changes

To explore further the importance of the tariff to the domestic cotton industry, we employ

a simple reduced-form model, based on Grossman (1986), to determine the effects of changes in

the relative price of imports on domestic output. In this model, the price of domestic goods is

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[5] Of the 1846 tariff, Stanwood (1903, II, pp. 90-91) wrote: "It is admitted that the new tariff caused little injury to cotton manufactures . . . large quantities of plain cloth were imported in 1847, but the quality was so distinctly inferior to that of the domestic goods that the venture resulted in a loss. In fact, except for fine goods, laces, embroidery, and the like, the American manufacturer had the market in full control."

endogenous, as is the quantity produced, and this enables us to estimate the effect of the tariff on domestic production without assuming that the domestic price was unaffected by the tariff. This framework enables us to examine the data in a more systematic way.

On the supply side, we assume that cotton textiles are produced with raw cotton (C), labor (L), and capital (K). The production function takes the following Cobb-Douglas form:

$$(1) \qquad\qquad Q = Ae^{6t}C^{a1}L^{a2}K^{a3},$$

where Q is the quantity of textile production, 6 is the rate of Hicks neutral technological progress, and t represents time.[6]

Cotton is assumed to be a traded input and available to the industry at the exogenous price p_C and labor is also assumed to be supplied at the exogenous price w. The quantity of cotton used and labor employed is found by setting the marginal value product of each equal to its price:

$$(2) \qquad\qquad C = (a_1 pQ/p_C),$$

$$(3) \qquad\qquad L = (a_2 pQ/w),$$

where p is the price of textile output, p_C is the price of cotton, and w is the wage. Capital is a non-traded factor whose supply grows at the exogenous trend rate (including depreciation) of l percent per year: $K = \bar{K}e^{lt}$

On the demand side, domestic textiles substitute imperfectly with foreign-produced textiles, which is perfectly elastic in supply and can be imported at exogenous price p*. Domestic textiles also substitute imperfectly with the aggregate basket of domestic goods so that

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[6] While the Cobb-Douglas specification imposes certain restrictions on the coefficients, the estimated reduced form is more general and does not imply any restrictions on the coefficients.

demand is characterized as:

$$(4) \qquad\qquad Q = Be^{\digamma t}[Ep^*(1+\tau)/p]^{b1}[p_A/p]^{b2}Y^{b3},$$

where $\digamma$ is the rate of secular demand shift, E is the exchange rate, p* is the (foreign) import

price of textiles, τ is the ad valorem tariff rate on imported textiles, p_A is the price of the

aggregate basket of domestic goods, and Y is real national income.

The domestic price and production of textiles are both endogenous variables, and

domestic production is the variable that we are most interested in explaining. Therefore, solving

out for the reduced form equation and taking logs (and suppressing time subscripts) we have:

$$(5) \qquad \log Q = \alpha_0 + \alpha_1 \log (Ep^*(1+\tau)/p_C w) + \alpha_2 \log (p_A/p_C w) + \alpha_3 \log Y + \alpha_4 t + \zeta.$$

Thus, domestic textile production is an increasing function of the tariff-inclusive import price,

the price of aggregate goods, and national income, and a decreasing function of the price of

cotton and the wages paid in the textile industry. We would expect $\alpha_1 > 0$, $\alpha_2 > 0$, $\alpha_3 > 0$, while

α_0 and α_4 could be of either sign. In this equation, the degree of import competition fully

captured by the domestic price of imported textiles, $Ep^*(1+\tau)$. The quantity of textile imports

does not appear because import volume is endogenous to developments in the United States and

elsewhere. The domestic price of textiles also does not appear because it too is an endogenous

variable that is represented by the exogenous price of cotton and wage rate in the industry.

This equation is estimated using annual data from 1826 to 1860. The quantity of

domestic textile production (in yards) comes from Davis and Stettler (1966, p. 221). This series

is the aggregate output of textiles in New England, but New England accounted for over 70

percent of total U.S. output around this time (Temin 2000, p. 122). New England also contained

virtually all of the large-scale cotton production in the country that has been the focus of

historical attention. The U.S. import price of British textiles is taken as the export unit value, as described above. The tariff rate is based on our calculation in Figure 1. We ignore transportation costs, which as Harley (1992, p. 566) noted would add less than half a cent per yard to the landed cost of British cloth; any changes in transportation costs are picked up by the time trend or are relegated to the error term. The dollar-pound sterling exchange rate is that of the 60-day bills of exchange provided by Lawrence Officer (for publication in the millennial edition of *Historical Statistics of the United States*). U.S. labor costs in textile production is the average annual earnings per full-time worker from Layer (1955, pp. 46-47), which is highly correlated with the less complete wage series in Zevin (1971). The domestic textile price is that of Russian brown sheeting, in New York, series E-128 in U.S. Bureau of the Census (1975). The aggregate price index is the consumer price index from David and Solar (1977) and real U.S. GNP is from Bailey (1988).

Table 2 presents the estimation results. The first column focuses on the OLS results. The coefficient α_1 is estimated to be 1.52, which indicates that a ten percent reduction in the relative price of imports would be expected to reduce domestic output by about 15 percent. This is a very high elasticity. Consider the effects of the Walker tariff of 1846, which reduced the import tariff from 69 percent to 25 percent due largely to the elimination of the minimum valuations. This would be equivalent to a 26 percent decline in the price of imported textiles, calculated as (1.25-1.69)/1.69=-0.264. Such a change in relative prices would imply a 40 percent decline in domestic output, nowhere near what was actually observed during this period. In addition, the coefficient α_2 carried the wrong sign and perversely implies that a decrease in the relative price of other consumer goods would increase domestic textile output. The coefficient on the log of

income plausibly implies that demand is income elastic.

However, the Lagrange multiplier test statistic for first-order serial correlation is significant. Serial correlation implies that OLS is not efficient, that the coefficients may be biased, and the test statistics are invalid. Column (2) presents the general least squares (GLS) estimates that correct for serial correlation by allowing $\check{z}_t = 8\check{z}_{t-1} + e_t$. These estimates are not unbiased but are consistent and asymptotically more efficient than OLS. When this is done, the coefficient on the relative price of imports falls to 0.19, although it is estimated imprecisely. Column (3) presents the results for a first difference specification, which eliminate most of the serial correlation while preserving the OLS standard errors and test statistics. In this case, the coefficient on the relative price of imports is 0.27, similar to the GLS estimate, but also statistically insignificant. If we take an elasticity around 0.25 as being our central estimate, then the Walker tariff with its 26 percent reduction in the relative price of imports would be expected to reduce domestic output by about 7 percent.

This modest effect is more consistent with the observed growth in domestic output of 1 percent in 1847. What accounts for the difference between the estimated and the actual change in output? In column (2), the key determinant of domestic output is simply the time trend, which indicates that output would increase 4 percent a year, on average, holding other factors fixed. Similarly, in column (3), the coefficient on time (here a constant in the first difference specification) indicates an 10 percent annual increase in domestic output. Regardless of the relative price of imports, or even changes in national income, there were strong factors pushing American output higher every year. Therefore, the effect of the tariff-induced change in the relative price would be almost completely offset by the trend increase in domestic production.

What would be the impact of a complete tariff elimination? In this case the relative price of imports would fall 41 percent. Given an elasticity of about 0.25, this would translate into a 10 percent decline in domestic output. This, in some sense, is the worst case scenario from the standpoint of domestic producers. While imports would surge as a result, and the import market share would increase dramatically, the level of domestic output would not fall substantially. This result is also quite different from Harley, who conjectured that free trade would not reduce domestic output by 10 percent, but that it would reduce the U.S. share of the market to about 10 percent of consumption.

Do we actually observe such large changes in relative prices? Yes, in the 1840s the relative price of imports fell by nearly 50 percent. Thus, such large changes are part of the time series data with which the estimated response is calculated.

An alternative approach to solving out the endogenous variables and estimating a reduced form is to account for the endogenous variables by two-stage least squares estimation. This approach would take $Ep^*(1+>)$ as exogenous but treat the domestic price of textiles (p) as endogenous and use as instruments such variables as the price of cotton and the domestic wage rate in the textile industry. Table 3 presents some econometric results from this specification. The first is a simple 2SLS regression which yields an elasticity of domestic output with respect to the relative price of imports of about 0.6. This implies that the Walker tariff of 1846 would reduce domestic output by 16 percent. Yet once again this specification is afflicted with serial correlation. Column (2) and column (3) present the instrumented GLS and first difference specifications that yield an elasticity (again, imprecisely estimated and so statistically insignificant) of about 0.05. This elasticity implies that the Walker tariff would reduce domestic

output by just 1 percent, which may seem unreasonably small but is perhaps accurate in light of the actual historical experience.

Due to the imprecision of the estimated elasticity, we again cannot rule out a case in which changes in the relative price of imports would have no effect on domestic production. In results we do not report, however, we find that changes in the relative price of imports do have a large and statistically significant effect on the volume of imports. (The estimated elasticity is around 2.5.) This implies that the tariff was quite successful at reducing import volume, but that a significant increase in import volume would not detract much from the demand for domestic output. This is because the product mix of domestic and foreign producers was quite different, thus implying that there were limited opportunities to substitute the products for one other in consumption.

4. Interpreting the Results

The results of the previous section support the conclusion that a tariff reduction would reduce the relative price of imports, and that this reduction, while stimulating greater imports, would have only a modest effect on domestic production. That import competition had a minor effect on domestic production is supported by our observation of what happened in 1846 when the cotton duties were cut drastically, imports surged, and domestic output remained high.

There is no contradiction in the finding that U.S. imports of cotton textiles are sensitive to the relative price of imports whereas domestic production is not. This merely suggests that domestically produced textiles and imported textiles were different products that were far from perfect substitutes for one another. Britain specialized in finer cotton goods while America

specialized in heavier, standard cloths. As Zevin (1971, pp. 126-127) noted, "imports from Britain and the products of New England mills tended to fall into quite distinct product classifications. . . The imports were largely ginghams, woven in intricate patterns to which the power looms had yet been adopted. New England power looms were supplying plain weaves — sheeting, shirting, and, somewhat later, twills — usually made of lower count yarns than the British cloths." In fact the mean count of yarn spun in England was over 50 in the early 1830s, while the mean count in New York was under 20. There was almost no overlap in the counts spun in the two countries (Temin 1988). As a result, any growth in imports did not necessarily come at the expense of domestic production.

Our conclusion is also in accord with the previous historical literature, which was also skeptical of the tariff's importance to the industry. Ware (1931, p. 106) concluded that coarse goods "never really needed protection, and since 1833 even high tariff advocates had admitted that they could stand alone, for ordinary 'domestics' could be made sufficiently cheaply in the United States to complete successfully with the producer of other countries in foreign markets." One contemporary observed in 1850 that "the business of cotton manufactures was by that time so firmly established as to be little affected by changes in legislation in regard to duties on the coarser fabrics required for domestic consumption, to which American machinery had been adapted" (quoted in Copeland 1912, p. 15).

This conclusion has been the consensus for many decades until the recent work of Bils and Harley. As discussed in the introduction, using cost data to determine the competitive position of the domestic industry can be problematic. Indeed, after examining the Montgomery cost data that Bils and Harley rely on, Batchelder (1863, p. 91) conceded that costs appeared to

be lower in Britain than in American for everything but motor power, yet still concluded that "it is questionable whether heavy goods, such as drilling and sheeting, which make up a very large proportion of the consumption of this country, can be produced cheaper than in the United States."

5. The Tariff of 1816

We have shown that the tariff was not critical to the American cotton industry in the 1830s and 1840s. But Appleton claimed that the Tariff of 1816 was a crucial factor in the industry's earlier development. What can we say about this earlier period? We cannot use econometric techniques for the earlier period both because the data are very scanty and because the vagaries of war and peace introduced a lot of noise into any time series.

Some available data are shown in Table 4. We obtained the value of domestic textile production by taking domestic production in yards from Zevin (1971) and multiplying it by the domestic price of textiles (the same as used in our estimation in Section 3). British imports were recorded in various parliamentary reports. Imports from other countries are harder to find. They were taxed ad valorem, as shown in Table 1, and the government lumped all imports subject to a given tariff rate together. In other words, there is no way to distinguish cotton textile imports from India from other imports from India taxed at the same rate. Our imports from India and China were not very diverse, however, and it is likely that the primary imports from these areas subject to the tariff applicable to cotton textiles were in fact cotton textiles, as Stettler (1970, p. 214) assumed. The data in Table 4 record the total imports from India and China subject to the tariff at the rate paid by cotton textile imports. If inaccurate, they are overestimates of the cotton

imports.

It is apparent that the imports were very substantial compared to domestic production at the beginning of the century. Most of the cotton textiles consumed in the United States before the Embargo of 1808 were imported. Domestic production outside the Waltham-style firms in Massachusetts is omitted from Table 4, but it cannot have been large enough to alter this conclusion. This condition, in any case, was short-lived.

Domestic production began to rise rapidly starting soon after the Embargo of 1808 was instituted in December of that year and continuing under the protection afforded by wartime conditions. Imports from India and China fell in 1809 and following years, although they revived briefly in 1810-11. For the years before hostilities between Britain and the U. S., imports from Britain continued unabated. We presume they fell during the war. In the protected environment of international hostilities, the modern cotton textile industry of New England grew by an order of magnitude from 1809 to 1815.

With peace, however, came disaster, as domestic production fell by two-thirds in 1816. Although prices were falling somewhat, the dramatic fall was in production. The New England cotton mills produced only about one-quarter as many yards of fabric in 1816 as in 1815. Production collapsed back to the level of 1811. It is not hard to see Francis Lowell and the Boston Associates facing disaster and ruin.

This shocking fall in production probably came from the revival of imports that followed peace in 1815. The value of British cotton fabric exported to the United States in 1815 was over $20 million, almost half the value of domestic production in that year. We have not been able to find records of British cotton imports in the years just before 1815, but the imports fell by half

from 1815 to 1816 and stayed far below the 1815 level. It is reasonable to presume that cotton imports immediately after the advent of peace in 1815 were very high indeed. The imports shown in Table 4 from India and China were not large enough to have caused the dramatic contraction in domestic production, but they clearly show the effect of peace by rising dramatically in 1816.

The sharp decline in domestic production also suggests that domestic producers were far more responsive to imports than they were two or three decades later. This, of course, must be a highly tentative conclusion because the only annual production data we have are of factory production in the United States. It also is true that prices did not collapse in 1815 or 1816 even though they were falling steadily from their peak on an annual basis in 1814. Even with all these qualifications, there is no other obvious candidate on which to blame the collapse of domestic production in 1816.

Given this presumption, it is no wonder that Lowell appealed to Congress for protection, as recounted by Appleton. He got it, and cotton imports from Asia fell, although they did not vanish as shown in Table 4. Instead, they fell back from their peak and did not share in the growth of demand as the United States grew. Imports from Britain fell as well, as noted above, and never again rose to their value in 1815. Even in 1847, when the tariff was reduced sharply, imports were only about half as large in value as they had been in 1815, although they did exceed the 1815 yardage for only the third time since 1815 (Great Britain 1847-48, p. 325). As shown in Table 4, domestic production revived quickly and resumed its rapid expansion.

We draw two highly tentative conclusions from these fragmentary data. First, the American cotton industry was protected by the Tariff of 1816. The tariff extended the protection

afforded by embargo and war to enable the industry to grow. It is possible that the industrial growth achieved during the years of conflict with Britain could have been erased by free trade after the end of hostilities. Since Lowell moved with great dispatch to forestall this eventuality, however, this counter-factual does not have a firm base. There was only one year when the industry was faced with foreign competition without a high tariff after its initial growth.[7]

Second, British imports were decreased by the tariff of 1816, despite Lowell's cunning design of the minimum. The British appear to have specialized in higher quality exports to the United States at least partly in response to the American tariff structure. The difference in quality of domestically produced and imported cotton in the 1830s and 18403 noted above may have been partly the result of the tariff. If so, the robust nature of the domestic industry in the face of imports in the 1830s and 1840s may have been partly the result of the Tariff of 1816 in shaping the nature of Anglo-American trade in cotton textiles.

6. Conclusions

This paper has produced two strands of evidence in support of the finding that American textile manufacturers were well established by the 1830s. First, there is the actual response of the industry to the sharp tariff reduction of 1846. Imports surged as a result, but domestic production appeared to be virtually unaffected. Second, using time series data, the estimated effect of changes in the relative price of imports on domestic production appears to be small. Both pieces of evidence are consistent with one another and suggest, as historical contemporaries

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[7] Indeed, Ware (1931, p. 72) argued that "There is also no question that domestic sheetings were actually in need of no protection, for before the passage of the [1816] tariff the Waltham company was enlarging its business in order to meet a rapidly growing demand."

observed, that British and American products were quite different from one another. We conclude that high tariffs were not an essential component of the survival and success of the later antebellum domestic cotton textile industry, although we suggest that the early cotton industry may have been protected by the Tariff of 1816.

Figure 1: Average Ad Valorem U.S. Tariff on U.K. Textile Imports, 1816-1860
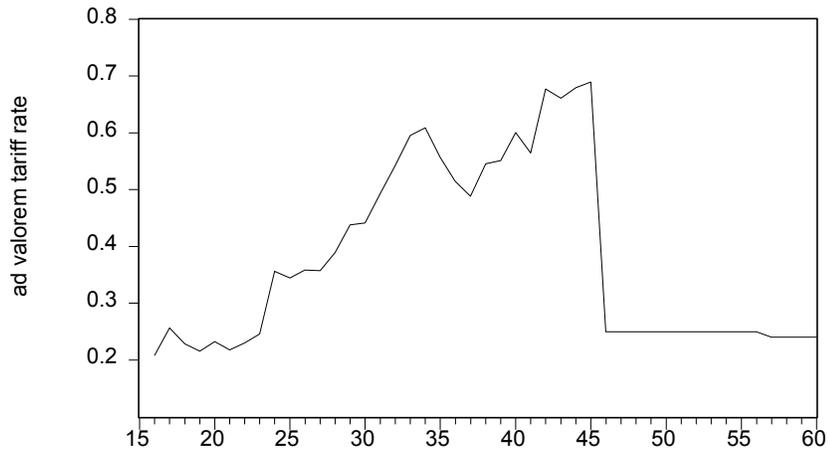
Figure 2: Cotton Textiles: New England Production and U.K. Imports, 1825-1860
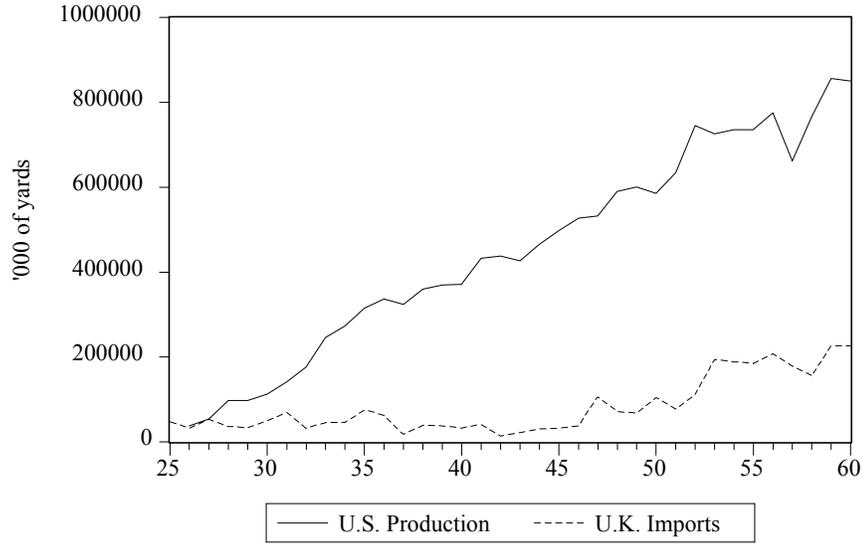

Figure 3: Imports of Cotton Textiles from United Kingdom as Share of U.S. Market, 1825-1860
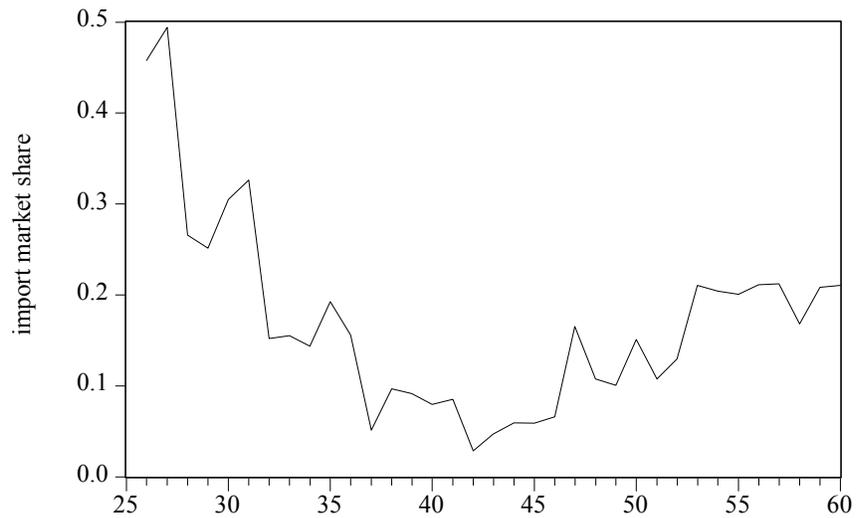
Table 1: U.S. Tariff on Imported Cotton Textiles

Date of Tariff Act	Description	Minimum Valuation	Ad Valorem Rate
April 27, 1816	Cotton Cloth (until 7/19)	25¢ per yard	25%
	Cotton Cloth (after 7/19)	25¢ per yard	20%
May 22, 1824	Cotton Cloth	30¢ per yard	25%
May 19, 1828	Cotton Cloth	35¢ per yard	25%
July 14, 1832	Cotton cloth, printed	35¢ per yard	25%
	Cotton cloth, white	30¢ per yard	25%
March 2, 1833	Cotton cloth (after 1/34)	9/10 of excess of 1832 rate over 20%	
	Cotton cloth (after 1/36)	8/10 of excess of 1832 rate over 20%	
	Cotton cloth (after 1/38)	7/10 of excess of 1832 rate over 20%	
	Cotton cloth (after 1/40)	6/10 of excess of 1832 rate over 20%	
	Cotton cloth (after 1/42)	3/10 of excess of 1832 rate over 20%	
March 30, 1842	Cotton cloth, printed	30¢ per yard	30%
	Cotton cloth, white	20¢ per yard	30%
July 30, 1846	Cotton cloth	None	25%
March 3, 1857	Cotton Cloth	None	24%

Source: Stettler (1970), p. 189.

Table 2: Reduced-Form Estimates of Domestic Textile Production

Dependent Variable: Log of Domestic Production

Variable	(1) OLS	(2) GLS	(3) First Difference
Constant	-2.70 (7.33)	11.83* (2.03)	--
Log $(Ep*(1+>)/p_Cw)$	1.52* (0.36)	0.19 (0.16)	0.27 (0.30)
Log (p_A/p_Cw)	-2.20* (0.49)	-0.27 (0.24)	-0.33 (0.43)
Log (Y)	2.53* (1.04)	0.13 (0.31)	-0.02 (0.49)
Time	0.01 (0.05)	0.04* (0.01)	0.10* (0.03)
8	--	0.77* (0.06)	--
N	35	35	35
Adj. R^2	0.90	0.98	0.06
Standard Error	0.21	0.32	0.18
LM D^2	8.26*	0.94	2.62

Note: * indicates significance at the 5 percent confidence level. Standard errors have been corrected for heteroskedasticity.

Table 3: Reduced-Form Estimates of Demand for Domestic Textiles

Dependent Variable: Log of Domestic Production

Variable	(1) 2SLS	(2) 2SLS	(3) First Difference
Constant	-1.43 (7.70)	12.64* (1.63)	--
Log (Ep*(1+>)/p	0.59* (0.25)	0.03 (0.07)	0.08 (0.14)
Log (Y)	1.81 (1.13)	-0.04 (0.23)	-0.20 (0.30)
Time	0.01 (0.05)	0.04* (0.01)	0.10* (0.03)
8	--	0.78* (0.06)	--
N	35	35	35
Adj. R^2	0.86	0.98	0.02
Standard Error	0.30	0.10	0.14
LM D^2	17.7*	2.03	2.18

Note: * indicates significance at the 5 percent confidence level. Standard errors have been corrected for heteroskedasticity. Instruments include log of income, log of price of raw cotton, log of wages in textile industry, the tariff inclusive price of imports, and a time trend.

Table 4: U.S. Textile Production and Selected Imports, 1805 to 1819

(thousands of dollars)

Year	New England Production	Imports from Britain	Imports from India	Imports from China
1805	978	11,788	1,965	1,716
1806	1,354	20,129	3,524	2,091
1807	1,737	19,076	3,982	1,698
1808	4,072	21,202	4,165	2,510
1809	6,418	27,964	639	452
1810	13,983	28,286	3,277	3,207
1811	15,251	n.a.	3,819	2,723
1812	20,087	n.a.	0	227
1813	31,514	n.a.	1,150	478
1814	44,452	n.a.	0	9
1815	47,160	21,215	4	207
1816	16,354	12,540	2,291	1,985
1817	69,738	8,469	820	1,058
1818	122,599	5,060	1,480	1,032
1819	164,026	33,558	2,812	1,016

Sources: New England production (in yards) from Zevin (1971), p. 123 multiplied by the domestic price of Russian brown sheeting from U.S. Bureau of the Census (1975), Series E-128. Imports from Britain: from Stettler (1970), pp. 108, 122, revalued in dollars (and correcting his typo for 1819). Other Imports from U.S. Congress (1832-34), Vols. I, II.

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