Mark Bils, **Tariff Protection and Production in the Early U.S. Cotton Textile Industry**, *Journal of Economic History*, Volume 44, Issue 4 (Dec., 1984), 1033-1045.

The 19th Century cotton textile industry in the United States is often given a large role in the overall industrialization of antebellum America. The traditional story is that early engineers and machinists brought British designs to the United States and utilized cheap water power, mature support industries, and cost reducing learning by doing to achieve competitiveness. The benefits of the cotton textile industry spilled over into other industries by training skilled machinists who could then transfer their knowledge to those industries, such as steel or railroad production. (Hekman, 1980)

Learning by doing was considered a critical element to the story, as British manufacturers were far more sophisticated and textile production technology was initially better suited to take advantage of relatively abundant British skilled labor. Over time, the expanding US industry was able to develop better machines to save on relatively scarce skilled US labor. (Williamson, 1971) The automated power looms that accomplished this were unable at first to produce higher grades of textiles, and this forced the US industry to specialize in plain, high cotton content coarse fabrics. This change to power loom production exploited the US comparative advantages of cheap power, relative abundance of unskilled labor, and lower cotton prices since the domestic producers faced lower transport costs and no tariff duties. Through such innovation, the United States attained global competitiveness against the British textile industry.

In 1816, 1824, and 1828, the United States passed large tariff rate increases on cotton textiles. The initial 1816 tariff set a minimum valuation of 25 cents per yard and thus afforded higher protection to American manufacturers of low quality cloth. According to Temin (1988), "even with the power loom, the Massachusetts mill could

not compete with Indian producers" in low quality textiles. Following the traditional line of reasoning, the infant US producers developed behind the trade barrier, learned, and gained competitiveness.

Although most scholars agree that there were some learning by doing effects at work (David, 1970), not all agree on when the US infant industry outgrew its need for protection. One of the earlier critics of the prolonged tariff protection was F.W. Taussig, who wrote in 1892 that "almost certainly by 1832, the industry had reached a firm position, in which it was able to meet foreign competition on equal terms." Mark Bils employed a counterfactual analysis of US and British market prices for various grades of cloth to show that US manufacturers still required tariff assistance in 1833.

The antebellum US cotton industry is a good case history for study in economic development because the United States was at the time a relatively small, undeveloped economy with limited exports dependent on a staple crop. Analysis of its tariff policy's effects on industrialization have many parallels to nonindustrialized countries attempting to develop in the 21st Century.

Suppose the textile tariff was judged to have been unnecessary and was removed. David (1970) offered two potential measures of accumulated learning by doing: age of the firm and volume of output. According to Bils' analysis, the US textile industry would have collapsed to a fraction of its historical output, and many textile mills would likely have shut down in the face of cheap British imports. Regardless of which measure of learning by doing we employ, the US cotton textile industry would have lost much of the effects. If we believe David's finding that learning by doing made up a significant portion of productivity gains within the industry, and the textile industry was approaching

competitive status in an infant industry manner, then the tariff would seem justified.

An interesting check on Bils' findings was a follow-up done by C. Knick Harley (1992) using data on British and US prices for textiles from 1849 to 1860 and estimates on shipping rates during the period. Harley points out a weakness of Bils' paper is its use of a constant slope linear cost curve to project production costs of British and US manufacturers for grades of cloth they did not manufacture. Another criticism by Harley is that Bils failed to take into account the wage increases that would have accompanied a shift to higher quality cloth (and hence higher skilled labor) by hypothetical US mills. Harley's price series also finds the US cotton textile industry required protection, but in his opinion, on more secure evidence.

The curious part of Harley's check is that he uses data from a later period than Bils and yet he still finds that the US cotton textile industry lacked the competitiveness to stand without assistance. A surprising conclusion that could be drawn from this is that the 44 years of protection given to the US cotton textile industry did not seem to help that industry reach self sufficiency as in the infant industry justification for trade barriers. Rather than a supporting case history for the cause of the infant industry argument, the antebellum US cotton textile industry appears to be an effective counterexample that may be employed against such arguments. Further research to determine when (if ever) the industry reached global competitive status might reveal if infant industry arguments are even applicable to the cotton textile industry.

David observed early in his paper that protective benefits extended to one industry by necessity came at the expense of other industries. Whether through investment crowding out, relative price skewing, labor market, or otherwise, tariff protection of the textile industry must have imposed some burdens on all other industries. David's other

innovation was that the learning by doing could be separated into learning that represents additions to the stock of knowledge and learning that represents duplication of effort. In essence, a reinventing of the wheel. His results showed rapid accumulation of the additional learning, a leveling off, and then a majority of the learning becoming repetition. David's suggestion was that establishing a few pilot plants to gain accumulative knowledge without wasteful duplicative effort would have been more effective since it would sacrifice no benefit, yet save on waste in learning as well as standard societal losses from tariffs.

Combined with Bils and Harley's findings, David's results suggest that although learning by doing results in significant benefits, the best methods of obtaining those benefits may not be the ones employed. Even if second best methods are the only expedient means politically they may be applied also to second best industries. A counterfactual study of where resources diverted into the textile industry might have gone and the learning effects that might have occurred there would probably be an interesting exercise. In light of Bils and Harley's assessment that the cotton textile industry was not globally competitive, there may have been a better use for resources that may have had similar positive externalities. For example, instead of locomotives being built in textile machinery factories, textile machines may have been built in locomotive factories.