

**Job Dislocation due to Import Competition:  
How Often Does Trade Adjustment Assistance Facilitate Relocation?**

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Abstract

The US government has created special programs to provide support for those unemployed due to import competition. These programs (Trade Adjustment Assistance and Alternative Trade Adjustment Assistance, or TAA and ATAA respectively) supplement the existing Unemployment Insurance program for those unemployed able to demonstrate that their job loss is due primarily to import competition. The US government has also mandated WARN notices in cases of large unemployment events to provide workers and communities with advance warning of impending transitions.

In comparison of the incidence of TAA and ATAA petitions and WARN notices in the textiles industry in North Carolina with a comprehensive database of job loss in that state and sector, I find that these petitions and notices are observed in only a minority of candidate plants, and for a minority of dislocated workers. Further, the WARN notices and TAA petitions are not coincident: many plants with WARN notices in the period 1995-2007 did not have TAA petitions filed for their workers, and vice versa.

Simulation of a micro-founded model of plant-level decision-making in textiles indicates reasons why: unemployment episodes due to import competition typically will not exhibit the characteristics required for WARN notifications and TAA petitions. Redesign of these worker-relocation policies should make them more responsive to the features of unemployment in this and other import-competing sectors: a number of recommendations are provided.

Key words: plant closure, layoffs, import competition, TAA petition, WARN notice, ATAA petition

JEL classifications: F12, F13, F14

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**Trade adjustment assistance has not worked as promised,  
and may even be an impediment to economic efficiency.**

Douglas Irwin, Free Trade Under Fire, p. 110.

Import penetration and its effect on US workers has been a flashpoint of the globalization debate. Two phenomena have become tightly associated with this debate: downsizing and plant closure. As imports have become more important in US markets, and as US firms have closed plants and laid off workers, the causality from import penetration to these phenomena has become accepted wisdom.

The US government has championed trade liberalization through its policies during the period since 1945, both through its obligations under the General Agreement on Tariffs and Trade (GATT) and through its membership in the World Trade Organization (WTO). Through the recognition that freer trade will lead to employment loss in import-competing sectors, it has also since 1962 supported those losing jobs due to import competition through a succession of trade-adjustment-assistance laws.

Government policy in this area has two goals: to mitigate the effects of job dislocation due to international competition and to hasten the relocation of workers to productive employment elsewhere in the economy. It relies upon three policy initiatives: The Worker Adjustment and Retraining Notification (or WARN notice), Unemployment Insurance, and the Trade Adjustment Assistance (TAA) program. If successful, these programs together will lessen the costs of dislocation to the worker and to the economy as a whole.

Economic analysts have typically been dissatisfied with the results of these initiatives. The Irwin (2002) quote leading this section is a typical verdict. Klein et al. (2003) examine the evaluation of worker relocation in detail; they conclude that the major obstacle to policy success is in the targeting of the programs to the correct group of relocating workers. Previous research could not address this because it has been impossible to (1) identify all those individuals whose jobs were lost due to international competition and (2) identify the subset of these who benefited from government-policy support.

This paper makes two contributions to analysis of trade adjustment assistance. First, I complete the matching of jobs lost with access to government assistance at the plant level for workers in the textiles industry in North Carolina. This allows the dual identification noted above. Second, I use a micro-founded structural market model to simulate the dynamic of job creation and destruction for

textiles firms. Through this, I identify the historical characteristics of job loss and relocation in this sector. The first part of the analysis concludes, in response to the title, that WARN notices and TAA assistance are provided to a minority of workers facing job loss due to import competition. The second part compares simulated market outcomes with WARN notice and TAA petition filing requirements. Both programs place restrictions on access to their benefits that are both unnecessary and discouraging to the use of their resources. I provide recommendations for improvements based upon these results.

### **1. Previous literature.**

Economic research has documented that job loss can be costly for the worker. The calculations of Kletzer (2001) provide a typical result: the average worker with job loss due to international competition experienced earnings losses of about 12 percent of annual income. Jacobson, et al. (1993) find that for dislocated workers with substantial job tenure and accumulated firm-specific capital the average annual earnings losses are of the order of 25 percent. Field and Graham (1997) examined the time to re-employment as well as the earnings loss in an empirical study of the textiles sector in the period 1986-1992. Their conclusion on earnings loss was more positive than that of Jacobson, et al. (1993) or Kletzer (2001): the average wage upon re-employment was just a bit below that of the prior textiles job. They documented as well an average 6-month spell of unemployment before the worker started a new job.

Theoretical analyses of the worker losses from trade liberalization were originally undertaken within a full-employment (often, Heckscher-Ohlin) framework. In those, the Stolper-Samuelson logic dominated: trade liberalization will increase the real income of the abundant factor (in the US, capital or land) and reduce the real income of the scarce factor (in the US, labor). In this spirit, theoretical analyses of Brander and Spencer (1994) and Feenstra and Lewis (1994) explored wage insurance funded by taxes on the abundant factor as a welfare-improving policy.

Davidson and Matusz (2004) extended this line of inquiry by explicitly modeling dislocations leading to unemployment in response to trade liberalization. Their theoretical and simulation analysis introduced adjustment costs to relocation, both in terms of time and in terms of retraining, and thus provided a more nuanced description of the dynamics of relocation and adjustment. Costs of job loss and relocation are then not simply borne by the worker, but there are also welfare losses for the entire economy.

Dissatisfaction with results from TAA programs have led to a number of proposals for reform. LaLonde (2007) returned to the idea of wage insurance. When an individual has job insurance (through unemployment benefits) but no wage insurance, he is more likely to turn down job offers at less than the pre-dislocation wage. This extends the period of unemployment and the associated welfare loss.<sup>1</sup> Nilsen (2007) noted that the application process for TAA benefits is a roadblock to participation; she put forward the notion of industry-level certification to which I return in this paper. She also pointed out that administration of the program is hampered because of inadequate reporting by states of participants in the program, and by a lack of enumeration of the complete group of workers dislocated due to import competition.

I do not address the issue of wage insurance in this paper. Rather, I consider the point raised by Nilsen (2007) – that provision of TAA benefits to workers dislocated due to import competition may be incomplete. Using a novel database of plant closure and job loss in an import-competing industry, I demonstrate that TAA certification is available to only a minority of qualified workers in the textiles industry. Using a simulated equilibrium model of the textiles industry, I examine the historical characteristics of worker dislocation and highlight features of the TAA petition process that are inconsistent with those characteristics.

## **2. Government policies targeted to minimizing the costs of trade adjustment.**

There is a number of state and Federal government policies in the US designed to mitigate the costs of job loss and accelerate the transition to new employment. The first three (WARN notices, Rapid Response interventions, and Unemployment Insurance) apply whatever the cause of unemployment, while the last (TAA) applies only in cases of unemployment due to import competition.

- The Worker Adjustment and Retraining Notification (WARN) Act of 1988 requires that a firm give 60-day notice to employees, local government officials, state government officials and union representatives (if any) of a large unemployment event. This is a requirement for firms with more than 100 employees and with plans to lay off at least 50 employees within 6 months,

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<sup>1</sup> The Alternative Trade Adjustment Assistance program was established in 2003, and offered a form of wage insurance for those over age 50. LaLonde argued that this should be available to all: the reluctance to accept a new job at lower wage was a characteristic perhaps even more evident in younger workers.

unless the number of employees to be laid off is less than 1/3 of the labor force at that plant.<sup>2</sup> If notice is not given, firms are liable to their workers for at most 60 days of pay apiece in severance and to local governments for \$500 per day.

- Each state government has a Rapid Response Dislocated Worker Unit (RRDWU) that receives the WARN notice.<sup>3</sup> Following the Workforce Investment Act of 1998, this RRDWU is tasked with providing one-stop assistance to employees of these firms. The RRDWU counsels the employers and soon-to-be-unemployed on access to resources to facilitate the transition to new employment.
- The Unemployment Insurance Program provides unemployment benefits to eligible workers who are unemployed through no fault of their own (as determined under State law), and meet other eligibility requirements of State law. These are administered by the state agency, and typically are available for 26 weeks after becoming unemployed. During times of widespread unemployment, states have the discretion to offer benefits for a longer period (the Extended Benefits program).
- The Trade Adjustment Assistance (TAA) program is a Federal program to aid workers dislocated due to import competition.<sup>4</sup> While funded at the Federal level, it is administered by state employment agencies. It provides job retraining support and a Trade Relocation Allowance that extends the period for which weekly Unemployment Insurance benefits are available to the dislocated worker. For older workers, TAA also provides partial wage insurance and a Health Care Tax Credit.<sup>5</sup>

There is in principle a tight connection among these policies. The WARN notice provides workers and state government officials with information of coming layoffs and closure. The state's Rapid Response

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<sup>2</sup> Employment and Training Administration, US Department of Labor: "Employers' Guide to Advance Notice of Closings and Layoffs", July 2003. Firms with no more than 100 employees can file a WARN notice, but are not punished for non-notification.

<sup>3</sup> Employment and Training Administration, US Department of Labor: "Rapid Response Services for Employers", <http://www.doleta.gov/layoff/employers.cfm>.

<sup>4</sup> Baicker and Rehavi (2004) provides a good introduction to this program. In 2003, the traditional TAA program was extended through the wage insurance program of the Alternative Trade Adjustment Assistance (ATAA) for workers aged 50 and older, and through the creation of Health Coverage Tax Credit. In what follows, when I write of the TAA I understand it to include these extensions.

<sup>5</sup> The American Recovery and Reinvestment Act of 2009 (Recovery Act) expanded the pool of workers eligible for TAA support to include a broader range of manufacturing and services industries. The Recovery Act also increased the annual cap on TAA training funds from \$220 million to \$575 million.

team then goes into the plant to counsel employers and employees about resources available to facilitate their transition. The resources of Unemployment Insurance are available to all workers unemployed through no reason of their own. In cases for which unemployment is attributed to import competition employers and employees can seek the additional resources of TAA to speed the transition.<sup>6</sup>

To access the additional TAA resources, the US Department of Labor must certify that at a specific plant (1) workers have been totally or partially laid off, and (2) sales or production has declined, and (3) increased imports have contributed importantly to worker layoffs.<sup>7</sup> This certification can be triggered by the petition of three or more workers at the plant, of a plant manager, or of a union or state workforce agency. After a group certification is issued for a specific plant, each worker in the group may then apply for individual services and benefits through his state agency.

### **3. The Textiles Sector as a Dynamic Case Study of Job Loss.**

This study will be facilitated by focus on an industry for which the degree of import competition can be measured precisely. The US broadwoven textiles sector is an excellent choice for three reasons. First, the sector is import-competing. For the entire period of analysis of this paper, the imports of textiles from low-cost foreign suppliers were managed by the Multi-Fiber Agreement and the Agreement on Textiles and Clothing, two international agreements defining a system of bilateral quotas on imported goods. The details of these agreements are reported in Conway (2006). These quotas did not eliminate imports, but rather were designed to keep competitive pressures from imports constant over time. Second, it is a sector in consolidation, as illustrated in Figure 1. Manufacturing has been a declining part of GDP during the post-1945 period, and since 1977 has declined from 22 percent of GDP to 12 percent. During that same time, textiles production has declined as a share of manufacturing: it began at about 4 percent of total manufacturing value added, and ended under 2 percent in 2007. While job loss will not characterize all plants, it will be a dominant feature of the industry. Third, the product is homogeneous enough to allow for precise definition of the price of competing foreign goods, and to allow for consistent estimation of a production technology at the plant level. In the estimation

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<sup>6</sup> There are in fact three TAA programs – one for workers, one for firms, and one for the self-employed. The focus of this paper is the largest program – that for workers. Urban Institute (1998) summarizes and evaluates the program for firms.

<sup>7</sup> “Fact Sheet: Trade Adjustment Assistance”, US Department of Labor, Employment and Training Administration, <http://www.doleta.gov/programs/factsht/taa.htm>.

and simulation results that follow, import competition will have a specific definition in terms of the price of foreign substitutes.

The dynamic simulation of job creation and destruction in this section will use the micro-founded and estimated model of Conway (2009). That analysis derives explicitly the supply and demand conditions for the textile industry from a structural model of monopolistically competitive firms. It then uses structural system methods to estimate the preference and technology parameters of the model using plant-level panel data for 1983-2000 from the Census of Manufactures and Annual Survey of Manufacturers of the US Census.<sup>8</sup> There are three potential sources of job loss in this import-competing industry. The first is technological progress: if productivity grows more rapidly than demand for the final good, unemployment will follow. The second and third are the two blades of the “price scissors”: falling price of competing foreign goods and rising real wages. Plant closure, downsizing and layoffs are three plant-level choices in response to these exogenous factors, and all lead to job loss.

In this paper I consider the results of four dynamic simulations using that model. Plant-level choices are simulated over an eleven-year time horizon. The plant’s operating choices are endogenous: output, employment, raw materials, energy use and investment. So also is the choice to continue operations, or to close. Capital is updated annually through an optimal investment function. There are 130 plants in the simulation initially, as there were in the 2000 Annual Survey of Manufactures for broadwoven cotton production (SIC 2211). The number of entering plants each period is fixed at nine, while the number of exiting plants is endogenously determined. Firms whose return to capital in a given year falls below the critical value choose to exit and do not re-enter. Firms cannot exit before completing a year of production.

For this simulation, each plant begins with an identical capital stock equal to the average capital stock of \$37000 for SIC 2211 in the US Census data for 2000. Each plant makes an initial investment randomly distributed around the 2000 average of \$4400. Each plant is also assigned an initial unobserved productivity  $\xi_0$  (measured in logarithms of US dollars) that is randomly distributed around zero. Thereafter, unobserved productivity  $\xi_t$  is a shift variable of the logarithmic production function that evolves according to an AR function.

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<sup>8</sup> The data preparation and plant-level estimation techniques are presented in detail in Conway (2006). At the time of my access to the US Census data, 2000 was the most recent year for which all variables in the plant-level model were available.

$$\xi_t = \xi_{t-1} + \eta_t \quad \eta_t \text{ is a random normal variable} \quad (1)$$

Investment ( $I_t$ ) and capital updating follow the equations estimated in Conway (2006):

$$\ln(I_t) = 3.47 + 0.09 \ln K_{t-1} + 0.44 \ln(I_{t-1}) + 0.66 \xi_{t-1} \quad (2)$$

$$K_t = 0.92 * K_{t-1} + I_{t-1} \quad (3)$$

The plants take the following variables as exogenous: wages, prices of raw materials, prices of energy, prices of competing goods from foreign producers, prices of investment goods. The plant technology is given the flexible parameterization reported in Conway (2009): constant-returns-to-scale in all four inputs and translog in form. Sectoral (common to all plants) technological progress is assumed to occur at a trend rate in addition to the evolution of independent unobserved productivity for each plant.

In equilibrium, the domestically produced share of domestic consumption, the total domestic demand for textiles and the price of the domestic differentiated textile good are endogenous. Each simulation is iterated until the endogenous domestic prices, domestic production as share of domestic market, and the number of plants is consistent with equilibrium in the domestic textiles market. Each iteration of the simulation takes three parts. First, the market-level domestic price and share of demand met by domestic production is derived for given number of plants and plant-level exogenous variables. Second, the plant-level choices are derived for given domestic price, domestic market share, number of plants, plant-level exogenous variables and each plant's  $\xi_t$ . Third, the decision of each plant to continue or not is assessed; if the return to capital in any year is greater than 0.11, the plant decides to continue.<sup>9</sup> The number of firms choosing to continue in each period is compared to the values used in the first step, and a weighted average vector of initial values and new estimates is created. This vector of number of plants in each year is then used in the first step of the second iteration. This iterative process continues until the number of plants in each year converges to a fixed vector.

The base simulation is undertaken for constant real wages, input prices and prices of foreign competing goods (all deflated by the US consumer price index) as observed in 2000. The results of this

<sup>9</sup> The pattern of investment, employment and plant closure is robust to alternative values to the .11 cut-off return to capital, although specific values and choices will vary. Those results are available on request.



simulation for the market-level variables are given in Figure 2. As is evident there, the share of the domestic market served by domestic plants is roughly constant. The number of plants and the price charged by domestic plants rise slightly over the simulation horizon; the average annual output per plant falls slightly over this period due to depreciating capital stock only partly replaced by investment (not pictured). Note that this simulation is inclusive of common technological progress. It also is averaged over all plants with their idiosyncratic unobserved productivity  $\xi_t$ . The stability of the base simulation is evidence of a stable market in the absence of “scissors” effects as defined above.

To investigate the impact of wage increases and an increase in the impact of foreign competition, I consider three additional scenarios. In the first scenario, the real wage is assumed to grow at .5 percent per year, while all other exogenous variables are held constant. In the second scenario, the real price of imported textiles falls by 18 percent.<sup>10</sup> In the third scenario, both real wage increase and real import price reduction of these magnitudes occur together. (In all scenarios, trend technological progress is assumed to continue as it did historically.) As is evident above, the  $\xi_t$  for each firm is independent of the differences across scenarios. As will be evident below, however, the return to capital and thus the decisions to invest and to shut down will depend crucially on these differences.

Figure 3 illustrates the differences in real output per continuing plant under the four scenarios. There is a downward trend in plant-level output even in the base scenario. This downward trend is accentuated slightly in the rising-wage scenario.<sup>11</sup> The per-plant negative impact is larger for the fall in import prices: this is a reduction of roughly 25 percent that once incurred remains roughly constant relative to the base scenario. The combination of rising wages and falling import prices is the worst outcome in terms of output reduction. Relative to the base scenario, the loss in output per plant is 28 percent in the second year but the loss of output increases to 58 percent by 2014.

When employment is considered in Figure 4, there is a stark difference in impact of wages and import price reductions. The base scenario and the scenario with reduced import price lead to roughly constant employment per continuing plant throughout the time horizon. The scenarios with real wage

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<sup>10</sup> Conway (2009) reports the derivation of this price reduction. Due to the protection afforded by the Multi Fiber Agreement and the Agreement on Textiles and Clothing, US plants were insulated from large-scale price competition. The end of that agreement represented a one-time shock represented by the price reduction used here.

<sup>11</sup> The effect is slight because of the endogenous rise in domestic prices occurring simultaneously. This will be evident below.

increases lead to reductions in employment over the simulation horizon that represent losses of over 30 percent of employment by 2014.

The endogenous determination of domestic prices and market share are a major advantage of the general-equilibrium approach. Figure 5 illustrates the change in the share of the domestic market served by the domestic plants under the four scenarios. The base scenario is identical to that reported in Figure 2. The scenario with rising wages leads to a steady reduction in the domestic market share over time, from 73 percent down to 53 percent. The striking change in market share comes, not surprisingly, with the fall in the price of competing imports. The market share falls to below 50 percent in the year of trade liberalization when import prices fall. In the absence of other effects, domestic market share stabilizes; when combined with wage increases the share of the domestic market served by domestic plants drops to 20 percent over the 11-year horizon.

This impact on domestic market share coincides with determination of the number of plants in equilibrium in each year. Figure 6 illustrates the number of plant exits per year under the four scenarios. Plants exit in every scenario due to their relatively low unobserved productivity, but nine plants enter each year. The base scenario result corresponds to the small percent increase in plants reported in Figure 2. Wage increases alone bring about a large negative effect on the number of plants: after 2008, the number of exits exceeds the number of plants entering in each year. The cumulative number of plants falls to 100 by 2014. The reduction in import prices leads to an initially greater number of exits, while this propensity to exit is reduced over time with the rise in domestic price.

The plant-level simulation results reveal large differences between those plants that continue in operation and those that exit. The results reported in Table 1 are drawn from the base simulation.<sup>12</sup> Each variable is associated with two columns: one reports the mean for plants that continue operation (stay), while the second reports the mean for plants that close. The divergence in average return on capital is to be expected, as this is the metric used by the plants in their decision to close. The two columns reporting average unobserved productivity highlight the major distinction between those plants that exit and those that continue – the continuing plants are those with more positive values of unobserved productivity. A negative productivity shock clearly contributes to the decision to exit. Note also the downsizing occurring in production over time, even among those in continuing operation. This is the average reduction in real output reported in Figure 3 for the base scenario. There is much less

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<sup>12</sup> The results of other simulations differ only in their average values (as reported in the preceding figures).

evidence of this among those exiting plants – they are already producing at a greatly reduced level. On average, exiting plants are smaller, both in real output and employment, than the continuing plants of the same year.

Taken as a whole, these simulation results reveal that:

- Plant closure is a feature of every scenario. With unobserved productivity evolving from year to year, plants that were formerly profitable concerns can become unprofitable. These closings are balanced in the base scenario by new plants entering each year.
- Falling import price and rising real wage both cause plant closure, but with different time patterns. The one-time reduction in import price has an immediate effect in raising the number of exiting plants, but over time the pattern returns to that of the base scenario. The constant rate of growth of the real wage causes an increasing number of exits over time. The cumulative effect of real wage growth in the import-competing industry is larger through the real-wage increase in these simulations.
- Downsizing occurs in all scenarios. Over the 11-year horizon, there is a 40-percent fall in the output per continuing plant in the base scenario. While technological progress occurs, it is overbalanced by depreciation of the capital stock. (There is positive investment on average, but it is less than the reduction in capital stock through depreciation annually.) Real wage increases cause a small but increasing downsizing in each period relative to the base: by the end of the 11-year horizon real output is down an additional 16 percent. The simulated 18-percent reduction in import price leads to an immediate downsizing of 32 percent relative to base, but that reduction then remains proportional to base throughout the rest of the simulation horizon.
- Layoffs (i.e., unemployment from continuing plants) are more evident in the rising real wage scenario. The rising real wage causes an ever-reduced demand for labor at continuing plants. The percent laid off begins at 8 percent in year 2, rising to 40 percent of workers by the end of the simulation horizon. When import prices are reduced there is an initial 8-percent fall in employment at continuing plants, but that differential is gradually eliminated over the 11-year period. By the end, employment at continuing plants is identical to that under the base simulation.
- The impact of an external price shock (as, for example, from trade liberalization or a technical breakthrough overseas) is not limited to the year in which it occurred. Job loss and plant closure

can be observed for many years thereafter. Measuring impact of import competition only concurrently will miss these delayed effects.

These simulation results provide us with two key conclusions about the needs of workers in response to import competition. First, it makes little sense to distinguish price reductions on imported goods from real wage increases in an internationally integrated market. The foreign-competitor price is one blade of the job-loss “scissors”. Even if the foreign price is unchanging, import competition is in part responsible for job losses due to real wage increases. In the presence of international competitors, an increase in real wage will lead to loss of market share and to layoffs, downsizing and closure – just as if the price of the imported good had fallen. There are dynamic differences in the simulation scenarios of the two, but those are due to the intertemporal timing of the shocks – once-off for the import price reduction vs. continuing incremental increases in real wages – rather than the source of the shock. Those becoming unemployed in response to either shock can point to the international-competition effect as a cause of their job loss. Second, the exogenous effects of international competition are rarely observed through plant closure. More often, the job loss is associated with an incremental reduction in employment at continuing firms. Only in the rare event of a large price change – as, for example, in the modeling of price reductions at the end of the quota system – will large percentages of workers be laid off from plants in continuous operation. As Figure 4 illustrates, the year-to-year reduction in employment in any of the scenarios presented here is never greater than 15 percent of beginning-of-year employment.

Based upon these simulations, we can point to two weaknesses in the design of the WARN and TAA programs. First, the simulations are designed to meet the spirit of the job-loss-due-to-import-competition requirement -- there are very few cases of job loss in this industry, whether due to falling import price or rising real wage, that will not meet the three criteria for access to TAA resources.<sup>13</sup> However, if the effects are only observed over time, or if wage increases are considered independently of “import competition”, then the administrative certification for TAA benefits could be withheld. To the extent that the need for certification is an impediment to seeking out TAA resources, it should be removed. If certification is a desired feature of the program, it should be done at the industry level rather than at the individual-plant (or firm) level. Second, the “rapid response” assistance at the state level is triggered by a WARN notice, and the WARN notice is triggered by a “large employment event”.

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<sup>13</sup> Cases that do not meet the criteria will be those for which unobserved productivity growth led to increased production simultaneously with reduced labor.

The simulations suggest that “large employment events” will be relatively rare in response to international competition; the more likely alternative will be gradual layoffs that only cumulatively (i.e., over many years) rise to the magnitude of a “large employment event”. In this case as well the appropriate intervention will be triggered at the industry level: the pressure of the “scissors” on domestic firms can be ascertained at the industry level, and rapid response services can be advertised and made available to all job dislocation within the industry.

#### **4. Textiles Production and Job Loss in North Carolina.**

The simulation results of the previous section suggest two reasons for trade-assistance programs to be underused and mistargeted. First, the typical downsizing in the simulations was incremental; it did not rise to the magnitude of a “large employment event” in any period. The focus of the WARN notice on large employment events will thus lead to a loss of the advance warning associated with the WARN notice and to a delay in making transition resources available to workers. Second, the requirement that unemployment be demonstrated to be importantly from import competition for access to TAA resources puts an unnecessary roadblock in the way of exploitation of these resources for dislocated employees of the textiles industry.

Simulations are useful, but they address only obliquely a fundamental issue – are there dislocated workers who should have access to these programs but do not? It is in general impossible to establish the universe of dislocated workers in a way that allows matching with their plant’s filing of a WARN notice or certification for TAA benefits. Without such matching, discussions of targeting (or mistargeting) of programs remains a theoretical exercise. In this section I create just this match of dislocated workers with plant-level utilization of WARN notice and TAA petition for textiles workers and plants in North Carolina.

North Carolina is the home to many of the establishments of the US textiles industry. Table 2 illustrates the share of North Carolina establishments in the US total for 1997 and for 2002. The current data use the NAICS classification. North Carolina ranks first among states in all but one category listed, and second in that one.<sup>14</sup> Table 2 also illustrates the reduction in number of domestic establishments between 1997 and 2002 evident in all six textiles categories listed.<sup>15</sup>

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<sup>14</sup> In NAICS category 313311 (Broadwoven fabric finishing), North Carolina is second behind South Carolina.

<sup>15</sup> Unfortunately, the NAICS categories only separate textiles products by raw material at the seven-digit level; public sources such as the 1997 and 2002 Economic Census Manufacturing/Industry reports provide less-than-

North Carolina is not only a leader in plants and employment in continuing operation, but is also the home for a plurality of textiles plants that have closed or downsized. In the period from 1974 to 2008, North Carolina plants were the subject of 25 percent of all TAA petitions filed nationally.<sup>16</sup>

Three separate sources of data on plant closure and unemployment in North Carolina are summarized in Tables 3 and 4. The Bureau of Labor Statistics reports annually on the number of workers employed in the textiles industry. The reduction in that figure from year to year is an indicator of net job loss. The third column of Table 3 reports those reductions for the years 1995-2007. There has been a steady loss of jobs in this sector in North Carolina, with a cumulative reduction of over 219000 during that period.<sup>17</sup> As mentioned above, the WARN notice is an early warning indicator of large unemployment events. Table 3 presents the frequency of WARN notices by year for 328 separate textiles production sites in North Carolina.<sup>18</sup> The number of plants issuing notices peaks in 2001, as does the estimated number of affected workers cited in those notices. When compared with total net reduction in textiles employment in North Carolina for the same years, though, the WARN notices cover less (and in many years much less) than 55 percent of those left unemployed through layoffs and closures.<sup>19</sup> Those covered by WARN notices will receive on-site Rapid Response assistance, while those without will have to take responsibility for contacting the state agency. Over two-thirds of the WARN notices and lost employment in these notifications is associated with plant closure; notices of permanent layoffs represent nearly all the remainder.<sup>20</sup>

Table 4 reports the number of TAA petitions and the expected number of workers affected, both in total and as a percent of total reduction in employment in textiles. In this same period, 707 TAA

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complete coverage at that seven-digit level. By contrast, as is evident below, SIC categories discriminate by raw material at the four-digit level: for example, SIC 2211 is cotton broadwoven textiles while SIC 2221 is broadwoven textiles of man-made fibers.

<sup>16</sup> Calculated as of the end of 2008 from data available from Employment and Training Administration, US Department of Labor.

<sup>17</sup> By the end of the period, only 100000 jobs remained in the textiles industry in North Carolina. The figures in this column will be approximations of those made unemployed in the textiles industry. Some unemployed here will find work in other industries, while others laid off elsewhere will take jobs in textiles.

<sup>18</sup> In a later section I present the methodology used to match WARN notices to textiles plants.

<sup>19</sup> Note that this is an upper bound on coverage of WARN notices. The WARN notice gives a gross unemployment flow. Some of those unemployed enumerated in the notice may find jobs elsewhere in textiles in North Carolina during the calendar year, and thus will not appear in the net employment reduction statistics of the third column of Table 10.

<sup>20</sup> There were ten WARN notices filed indicating "temporary layoff" as the rationale. These represented 2735 of the 76614 estimated jobs lost.

petitions were filed in North Carolina covering 520 production sites in the textiles sector.<sup>21</sup> Of these petitions, 515 were filed by the firms themselves, while 184 were filed by workers or union representatives and 8 were filed by state agencies. When the total numbers of affected workers are compared with the total unemployed in textiles in the same years as reported by the BLS (and as indicated in Table 4) it is clear that TAA petitions cover only between 14 and 50 percent of the total.

North Carolina thus has both a large representation of textiles plants and evidence of large-scale plant closure, unemployment and petitions for TAA benefits. In what follows I investigate more formally the pattern of unemployment, WARN notification and TAA certification as observed in North Carolina through analysis of plant closure and unemployment in the textiles sector of North Carolina.

The evolution of textiles production in North Carolina can be traced through the entries of plants listed in Davison's Textile Blue Book through the 32 years between 1975 and 2007.<sup>22</sup> As Table 5 indicates, the number of plants in operation in North Carolina dropped by 57 percent (from 1266 to 543) over that period. Even those totals fail to illustrate, however, the tremendous turnover in business establishments. Between 1975 and 1980, for example, 321 plants went out of business while 153 plants opened: that is 25 percent exit offset by 11 percent new entry.<sup>23</sup> In each five-year period, the percent of plants closing down or going under new management was between 20 and 30 percent. The percent of new plants entering was much more volatile, running from 16 to 40 percent of existing operations. Net exit must involve the shuttering of plants, while net entry represents the bringing online of capacity unused in the previous period.

Textiles production in North Carolina was by the numbers dominated by single-plant firms. Table 6 illustrates the entry and exit of firms through the years. Comparing the numbers of plants to the number of firms in 1975 implies, correctly, that the overwhelming majority of firms controlled a

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<sup>21</sup> Thanks to the Division of Trade Adjustment Assistance, US Department of Labor, for making these available.

<sup>22</sup> Davison's Textile Blue Book has been published since 1866 by Davison Publishing Company of Concord, NC. It provides a listing of textile mills, dyers and finishers by state in the United States, Canada and Mexico, including information on employment, equipment, and type of product manufactured. We have collected the data for North Carolina firms from the 1975, 1980, 1985, 1990, 1995, 2000, 2005 and end-2007 editions of this Blue Book.

<sup>23</sup> The term "operation" refers to the same firm operating a facility in the same physical location in both years. The number of new firms will be less than the number of new operations, since existing corporations can buy the facilities of failing competitors and re-open those facilities. If a firm "reincorporates" under a new name, or moves its operations to a different address, it is treated as a new operation in these figures.

single plant. In that year, only 81 of the firms were multi-plant firms. Among the multi-plant leaders, the firm J.P. Stevens owned 26 separate plants, while Fieldcrest Mills owned 18 plants.<sup>24</sup>

Tables 5 and 6 illustrate the dynamic of the textiles industry in the period since 1975. As productivity growth in these plants outstripped the growth in textiles demand, the number of plants, and firms fell up until 1985. The period 1985-1990 was one of expansion of plants and firms. From 1990 on the number of plants and firms fell off at an accelerating rate.

The churning that goes on in textile operations is evident in Table 7. I have identified each separate plant in the dataset by use of city, street address and other identifiers.<sup>25</sup> Of the 2756 plants in the sample, 30 percent (or 839) are observed only in one year. Eighteen percent (or 508) plants are observed twice. Only eight percent of the plants (or 217) are observed in each of the eight years sampled. The left-hand side of Table 4 separates these same 2756 plants into groupings depending upon how often the ownership of the plant (as identified by the name of the operator) changed. The supermajority of 84 percent (or 2321) had only a single operator, while for one plant there were six different firms listed as operators over the sample. This is of course a lower bound on estimates of churning due to the five-year sampling frame of the observations. Any changes in status that occur in intermediate years will not be recorded.

Table 8 provides another indication of the dynamic of this industry through a comparison of the multi-plant firms of 1975 and 2007. All firms with five or more operations in the state in 1975, or at least three in 2007, are identified by name; other multi-plant operations are combined into a single percentage.<sup>26</sup> It is evident in comparing the two lists that some of the big names in 1975 have dropped away (e.g., Klopman Mills), while others (e.g., American & Efird) have maintained their position in both lists. The degree of concentration of operations in 1975 was almost identical to that in 2007: the top 17 firms controlled 181 operations in 1975, while a different group of 17 firms controlled 75 operations in 2007: in each case these represented 14 percent of total plants. This smaller number of plants in the

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<sup>24</sup> The main office of the firm is reported in Davison's Textile Blue Book as a separate "plant". Main offices enter these calculations, but will be removed when I begin evaluations of the TAA and WARN programs.

<sup>25</sup> Each independent physical plant is a geographic location. In the absence of other information, each plant/year observation is assumed to be independent. When the street address of the plant is the same across years, then it is considered to be the same physical plant. If there is some discrepancy in the address (e.g., it is missing for one year, or is given in "rural route" form in one year and in street address in another) then the physical plant is assumed the same if it is in the same city, with the same product, and having the same number of machines. If two observations have two different street addresses the two observations are treated as independent, even if the product and number of machines is the same.

<sup>26</sup> If the firm listed a main office in North Carolina, that will also be counted into the number of operations.



later period is not an indication of reduced capacity, however; the productivity of each of these operations is much greater than in 1975.

While there was a decreased number of plants owned by the firms at the top of the lists, there was an increase in the percentage of multi-plant firms over time. In 1975, there were 1002 firms represented among textile operations, and 81 of these (or 8 percent) were multi-plant firms. In 2007 there were 461 firms represented, and 51 of these (or 11 percent) were multi-plant firms. There were only 64 plants in the sample that remained in operation throughout the sample and maintained the same ownership throughout.<sup>27</sup>

The dataset created from Davison's Textile Blue Book provides an excellent benchmark for the evaluation of the coverage of the WARN and TAA programs, since it provides an independent measure of plant closures and net reduction in employment. When I compare the data from the Davison's Textile Blue Book to the net reduction in employment reported by the US Bureau of Labor Statistics (BLS), I find that it provides good coverage of overall changes in the industry. I report the results of this comparison in Table 9. The first column reports the net reduction in textiles employment as reported by the BLS for three subperiods corresponding to the Davison's sampling frame: 1995-1999, 2000-2004, and 2005-2007. The BLS reports a total net reduction over that period of 237 thousand jobs. The comparable figure from the Davison's dataset is 225.1 thousand, derived from the last observed employment at plants that have closed plus the reduction in employment reported at plants in continuing operation.<sup>28</sup> Of the total reduction in employment, over 70 percent is attributable to plant closure while the remainder is due to downsizing at continuing plants.

Greater detail on the phenomena of plant closings and downsizing as chronicled in the Davison's dataset is reported in Table 10. For these employment statistics, the sample is drawn to exclude "main

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<sup>27</sup> This is a lower bound, since some firms (e.g., Sara Lee and Hanes) were rebrandings of the same company; while the name of the firm changed, we might consider it in actuality to be the same firm. For our purposes, firms with different names are treated as different firms. Note the comparison with Table 4: while 217 plants were in operation in each period, only these 64 had a single owner/operator throughout.

<sup>28</sup> There are a number of reasons possibly responsible for the divergence in aggregates. First, a sizeable percentage of plants did not report their employment in the Davison's Textile Blue Book. Second, employment was not observed for some plants in each period. The change in employment in the total may be relative to a base earlier than the beginning of the period listed in the table. Third, the most recent employment figure reported in Davison's Textile Blue Book for each plant is set when the owner updated his information, and not necessarily as of the end of the year in question. These factors will account for the aggregate shortfall as well as the relatively high reports in the first and third subperiods.

office” figures: as such, it is reduced from the total employment reported in the database.<sup>29</sup> The top panel of Table 10 reports on total plant closings in the sample. As is evident from the last column, there were 818 plants that ceased reporting during this period. Unfortunately, not all of these reported employment figures. The next rows of the table total the number of plant closures reporting associated employment statistics and the total reduction in employment from those closures. There were 585 plants with employment reports, and the total loss in employment over the period 1995-2007 from these closures was 119030.<sup>30</sup> Employment losses of at least 50 workers apiece per plant were observed at 400 plants with reduction in employment of 114138, or 96 percent of the total.

Plant closures are only one source of unemployment in textiles. Reductions in force, or layoffs, represent another important cause of unemployment. Table 10 also reports the reductions in employment as reported in the Davison’s data for this period. There were 355 plants reporting a net reduction in employment over the 1995-2007 period, with aggregate reduction in employment of 60514.<sup>31</sup> Of these, 182 plants reported reductions in employment of over 50 workers, and this subset of plants accounted for about 94 percent of the total reduction.

#### **4.1 Coincidence of TAA petitions and employment loss in Davisons.**

In the years 1995 – 2007, there are 1602 unique plants observed in the Davison’s database – many more than once. During that same period, 657 TAA petitions were received about layoffs from 438 plants in the Davison’s database. These petitions represented 89 percent of the total number of petitions identified with plants producing textile (SIC 22) goods. Table 11 identifies those plants not found in the sample as either those that are by description apparel firms (2 percent), those focusing upon distribution of textiles products or inputs and so excluded from the Davison’s database (2 percent), and those that chose not to be listed in Davison’s Blue Book (7 percent).<sup>32</sup> Table 12 provides three breakdowns of these plants. The top panel reports on the coincidence of plants in the two samples. Of the 438 plants both in the Davison’s database and having generated TAA petitions, 417 reported

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<sup>29</sup> Some of the multi-plant textiles corporations in the Davison’s sample chose to report employment figures for the whole firm rather than for individual plants. These were large numbers, but could not be associated with specific plants, and for that reason are excluded here.

<sup>30</sup> This figure should be compared with the 161.9 thousand figure from Table 5. The difference between the two is due to closure of multi-plant firms.

<sup>31</sup> The unemployment reported here is a lower bound on the total among Davison plants, as it is available only for those plants reporting employment figures.

<sup>32</sup> Of the 49 textiles plants found in TAA but not in Davison’s, nine of these are owned by firms in the Davison’s sample. This suggests that the plants may in fact be in the Davison’s sample, but are reported at a physical address that cannot be matched between the two samples.

operations in the period 1995-2007.<sup>33</sup> The remaining 1185 Davison's plants were not associated with TAA petitions during this period. When our sample is limited to those plants reporting employment figures in Davison's, 310 of the plants reporting TAA petitions are included. The bottom panel of Table 12 reports the subset of Davison's plants that reported a net job loss during the period 1995-2007: as is evident, this was true for 783 of the 1000 plants reporting employment figures.<sup>34</sup> Of this group reporting net job loss, only 262 plants (or 1/3 of the total) were associated with a TAA filing.

It is surprising that only 1/3 of the plants with identified net job loss over this period were the source of TAA petitions. It might be understandable if these losses were predominantly very small. In Table 13 I redo the calculations of the last panel of Table 12 for TAA petitions and Davison's job loss that are "large unemployment events", i.e., equal to or greater than 50 jobs lost. In this case, the number of plants with these large TAA petitions drops from 438 to 266. The number of plants in Davison's reporting net job losses greater than or equal to 50 drops to 525. Of these 525 plants, only 29 percent were associated with a TAA petition at any time in the period 1995-2007.

#### **4.2 Coincidence of WARN notices and employment loss in Davison's.**

In the period 1997-2007 there were 360 WARN notices issued in the textiles sector.<sup>35</sup> These notices were issued by 267 separate plants. Of the WARN notices, 297 were issued by plants in the Davison's database. Of the remainder, 41 were issued by unidentified plants but by firms in the Davison's database – this suggests that there may be a match in the database, but that the address used in Davison's and in the WARN notice did not coincide. Ten notices came from plants identified in Davison's, but for which there was no report of activity in 1997-2007. The remaining ten notices come from plants not represented in the Davison's database. These WARN notices identify 63754 employees affected by job loss.<sup>36</sup>

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<sup>33</sup> For the other 21, the plant is found within the Davison's sample but there is no evidence there of its operations in the period 1995-2007.

<sup>34</sup> Plants could "report job loss" in the Davison's sample either through reporting reduced employment at a plant in continuous operation or through closure of a plant at which there was positive employment reported in the previous period. As noted above, 78 percent of the 1000 plants with employment reports reported net job loss in the period 1995-2007.

<sup>35</sup> The data were provided by the North Carolina Department of Commerce Office of Workforce Development. There were 433 WARN notices reported in textiles and apparel from 324 plants. Of these, 49 notices came from apparel firms and 24 notices from distribution firms and dyes manufacturers, categories excluded from the Davison's database. Remaining are 360 notices over this period.

<sup>36</sup> WARN notices categorize job loss as "closure permanent", "layoff permanent", or "layoff temporary". "Closure permanent" was reported in 243 cases, with job losses of 45375. "Layoff permanent" was reported in 108 cases, with job losses of 16072. "Layoff temporary" was reported in nine cases, with 2307 affected employees. This

The first panel of Table 14 provides a correlation of the 267 plants associated with WARN notices in this period with the Davison's database. Of these, 207 are identical to plants reported in Davison's over this period, and another 8 are plants identified in the Davison's database prior to this period. Forty-three are plants not identified in Davison's but owned by firms reporting in the Davison's database (and so may be duplicates of Davison's plants but with different address given in the two locations). For the remaining nine, neither plant nor firm can be matched with a Davison's entry. There are 1395 separate plants in the Davison's database during this period with no associated WARN notice.

In the second panel of Table 14, the sample is restricted to those reporting employment numbers in the Davison's database. There are 1000 plants in the Davison's database with employment reports (just as in Table 12). Of these, 157 filed WARN notices. The remaining 110 plants identified in WARN notices include the 59 (8+43+9) reported in the first panel plus an additional 51 for which employment figures are not available.

The textiles sector in North Carolina was under tremendous competitive pressure during this period, but not all plants will have filed WARN notices. In the final panel of Table 14 I restrict attention to those 783 plants in the Davison's sample that reported job loss. Of those plants, only 141 (or 18 percent) filed a WARN notice. There are also anomalies: 16 plants (126 in panel three minus 110 in panel two) filed WARN notices while (as reported in Davison's) having no net job loss over the period.

As noted above, firms are not required to file WARN notice unless they anticipate a one-time job loss of 50 employees or more. Table 15 reports the subset of plants from the Davison's database for which employment reduction is at least 50 over the period. First, note the smaller number of WARN-notice plants: only 209 of the 267 plants reported job loss of 50 or more. Of those, 125 were also associated in the Davison's database with job loss of 50 or greater. Eighty-four of the plants reported "affected employment" of 50 or more on the WARN notice but reported employment loss of less than 50 in Davison's over the period. In the Davison's database, there are 525 plants with reported job loss of 50 or more (as in Table 12); only 125 of these (or 24 percent) filed a WARN notice during the same 10-year period.

#### **4.3 Coincidence of WARN notices and TAA petitions.**

While the WARN notice and the TAA petition are designed for two different purposes, the prerequisite of job loss makes useful a comparison of the incidence of the two. Table 16 reports the

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totals 63754. There were an additional 12845 job losses reported in notices from the apparel and dye/distribution plants.

results of this comparison. In the first panel, I examine the coincidence of WARN notice and TAA petition for those plants found in the Davison's database. In the second panel, I examine those plants for which there is no corresponding entry in the Davison's database.

The first panel illustrates that for the vast majority of plants (1132 of 1602, or 70 percent) there was no report of either WARN notice or TAA petition during the period of study. There were 207 plants with WARN notices and 417 plants with TAA petitions, and the intersection of this group comprised 154 plants. These plants represent 37 percent of those reporting TAA petitions and 75 percent of those with WARN notices.

In the second panel, those plants not identified in the Davison's database are even less likely to coincide. Only 5 of the 21 plants with TAA petitions also filed a WARN notice during this period. There were 55 additional WARN notices filed without a corresponding TAA petition.

Table 17 reports a decomposition when the subset of the Davison's database is created with plants reporting job loss of 50 or more in the period 1995-2007. Only 79 of the 525 plants in this subset reported both TAA petition and WARN notice during the same 10-year period. By contrast, 325 plants (62 percent) reported neither TAA petition nor WARN notice.

#### **4.4 Conclusions and qualifications to the TAA/WARN/Davison's comparisons.**

Examination of TAA petitions and WARN notices within the context of the Davison's database of textile plants leads to a number of important conclusions.

- Relatively few plants file TAA petitions and WARN notices. Even within an industry under such competitive pressure as the textiles industry in North Carolina, a minority of plants were associated with these. The Davison's database includes 783 separate plants reporting job loss during the period, and 525 separate plants with job loss of 50 or more workers. Only 417 of Davison's plants were associated with TAA petitions, and only 207 of Davison's plants filed a WARN notice. Further, the correlation between job loss as reported in Davison's and filings of petitions or notices is not strong.
- In principle, WARN notices should precede large unemployment events and TAA petitions should follow them. In practice, plants with one or more WARN notice in the period were associated with one or more TAA petitions about 75 percent of the time. However, when the Davison's database is restricted to consideration of those plants reporting job loss of 50 or

more, of the 525 plants in that category only 15 percent reported both WARN notice and TAA petition. Over half reported neither WARN notice nor TAA petition.

While it is surprising that so few of the plants reporting large employment events are associated with either TAA petitions or WARN notices, this is not evidence of wrongdoing. The WARN notice is only required when a “large employment event” is to occur within the next 6 months, while the calculations of unemployment from the Davison’s database cover total net employment change over the 12-year period. For plants that slowly lay off workers, a WARN notice isn’t necessary – even if the cumulative result is a “large employment event”.

The comparison I make here between Davison’s reports, TAA petitions and WARN notices is informative, but not precise. With Davison’s observations only every five years, it is impossible to determine whether petitions and notices associated with specific plants are filed in a timely fashion. One useful extension of the work reported here will be to compile the Davison’s data for intermediate years.

## **5. Conclusions about the TAA/WARN policy framework for an import-competing sector.**

The policies designed to assist dislocated workers have two goals: to mitigate the impact of dislocation on worker income, and to speed the relocation of the worker to new remunerative employment. The WARN and TAA programs are for the most part designed to achieve that second goal. As I report in this paper, they have design features that limit their potential effectiveness.

The first part of the analysis examines the evolution of job loss in the import-competing US textiles industry. Productivity growth has been rapid, and workers lost jobs even as output expanded. Jobs are seldom lost in “large unemployment events”; more consistent with past behavior has been the gradual whittling down of the size of the work force through layoffs and individual terminations. Import competition plays a crucial role in all employment loss in this industry, even when the proximate cause is the rise in real wages. The plants in import-competing industries face the “scissors” of rising input costs and constant or falling price of imported competing goods. It makes little sense to speak of one blade of a scissors as “causing” the cut. In our simulations, for example, plant closure more often followed rising real wages. However, the decision to close is made in the context of the pressure of the price of imported competing goods. Given these dynamic features of employment in import-competing industries, it makes little sense for the law to restrict WARN notices to “large employment events” or for the Labor Department to require proof that import competition played a dominant role in job loss. Each

of these design features could lead to underuse of the WARN/TAA policy framework and thus to more drawn-out transition from old job to new.

The second part of this analysis uses evidence from North Carolina textiles producers to demonstrate that the filing of WARN notices and petitioning for TAA status occurs in a minority of plants for which these policies are appropriate. Employees are not benefiting from the assistance and resources associated with the Rapid Response framework and the TAA benefits as often as they could – and should.

Why is this the case?

One reason is the reliance of the policies on filings and petitions by the employer. A firm facing imminent closure or downsizing of a plant will have many preoccupations, particularly when the plant is the sole productive location of the firm. When going out of business, the firm’s primary concern will probably be the maximization of value distributed to shareholders. Filings and petitions to benefit employees will be given less importance. The evidence of this paper suggests that in import-competing industries like textiles, those responsible for implementing these policies should be able to establish a presumption of assistance needed at the industry level. Employees in those industries could then be approached directly with information about resources available through Rapid Response or TAA. If the reliance on the employer is to continue, the penalties for WARN non-compliance should be made more severe.

A second reason is the requirement that the petitioner for TAA status demonstrate that job loss was due importantly to import competition. The simulation results demonstrate that one cannot attribute primacy to any one cause of job loss, just as you can’t identify the blade of a scissors primarily responsible for cutting a paper. Import competition exerts constant pressure on firms in import-competing sectors like textiles. Requiring a demonstration of that just delays, and sometimes short-circuits, the transition process.<sup>37</sup>

A third reason is the provision that a WARN notice is required only for “large employment events”. This is an arbitrary provision, and as the simulations show is not likely to be met in downsizing cases even if the cumulative effect on employment over the medium term is “large”. States may wish to

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<sup>37</sup> In about 10 percent of the sample of TAA petitions considered here, the plant and its workers were not certified to receive TAA assistance. This was either because the preconditions were not met, or (and more commonly) the petition did not include enough information for the determination and the firm did not supply the additional information when requested. In these cases, the firm may be out of business – but the workers continue to bear the costs.

consider deploying the Rapid Response teams to plants with historical record of continuing small layoffs. This can be done without prejudice to the economic health of the employer, but will provide useful information for workers to consider should they be faced with downsizing in coming years.

The analysis of this paper provides a broad-brush picture of the use of government policy by firms initiating closure or downsizing. The picture painted – i.e., a minority of plants with declining employment being associated with government adjustment policies during the same 5-year period – suggests that greater success is possible in extending these benefits to workers, and I’ve provided recommendations to achieve that.

A more precise question about these programs will examine their timing. Does the historical record indicate that plants with unemployment events first exhibit a WARN notice followed shortly thereafter by employment loss and then a TAA petition? This is precisely the logic of trade adjustment policy, but it is a very rare event in the Davison’s database. In future research, I will examine the historical record for reasons why this progression appears to be so rare.





Table 3: **WARN Notifications in Textiles in North Carolina**

Year	Number of Plants	Estimated Number of Affected Workers in WARN notices (thousands)	Memo: Reduction in Textile Employment in North Carolina by year (thousands)	Memo: Percentage covered by WARN notices
1997	13	2.2	14.4	15.3
1998	38	7.4	20.3	36.4
1999	49	9.1	23.5	38.7
2000	31	7.8	18.0	43.3
2001	73	12.7	35.6	35.7
2002	39	5.6	23.9	23.4
2003	47	11.6	21.4	54.2
2004	27	3.7	20.8	17.8
2005	46	6.8	13.1	51.9
2006	41	5.9	13.9	42.4
2007	28	3.7	14.4	25.7

Data:

- (1) WARN notifications, State of North Carolina: Notifications classified by the year of the initial notice.
- (2) Bureau of Labor Statistics, Statewide Employment in Textiles (Textile Mills, Thread Mills, Product Mills, Fabric Mills and Textiles Finishing).

Table 4: **TAA Petitions and Number of Affected Workers**

Year	Firms	Estimated Number of Affected Workers (thousands)	Percent of total unemployed as reported by BLS (see Table 1)
1997	18	2.1	14.7
1998	17	3.0	14.8
1999	44	8.3	35.5
2000	34	4.8	27.0
2001	72	9.1	25.7
2002	66	4.5	18.9
2003	135	10.6	49.3
2004	75	3.4	16.4
2005	109	5.9	45.0
2006	77	4.9	35.2
2007	60	7.2	50.0

Sources: DTAA and Bureau of Labor Statistics, US Department of Labor.

Table 5: **Plant Entry and Exit: North Carolina Textile Sector**

	1975	1980	1985	1990	1995	2000	2005	2007
Textile Operations	1266	1098	1024	1215	1152	1040	666	543
Operations exiting	321	215	212	305	377	462	221	--
Operations entering	153	141	403	242	265	88	98	--
Net entry	-168	-74	+191	-63	-112	-374	-123	
Percent exiting	25	19	21	25	32	44	33	
Percent entering	11	12	39	20	23	8	15	

Source: Davison's Textile Blue Books for 1975, 1980, 1985, 1990, 1995, 2000, 2005, end-2007.

Table 6: **Firm Entry and Exit: North Carolina Textile Sector**

	1975	1980	1985	1990	1995	2000	2005	2007
Textile Operations	1002	869	803	928	864	797	532	461
Operations exiting	263	189	174	229	261	350	149	--
Operations entering	130	123	299	165	194	85	78	--
Net entry	-133	-66	+125	-64	-67	-265	-71	
Percent exiting	26	22	22	25	29	44	28	
Percent entering	13	15	37	18	23	10	14	

Source: Davison's Textile Blue Books for 1975, 1980, 1985, 1990, 1995, 2000, 2005, end-2007.

Table 7: **Distribution of Plants during the period 1975-2007**

	Number	Percent		Number	Percent
Observed once	839	30	One firm	2321	84
Observed twice	508	18	Two firms	327	12
Observed three times	421	16	Three firms	79	3
Observed four times	255	9	Four firms	25	1
Observed five times	234	8	Five firms	3	0
Observed six times	184	7	Six firms	1	0
Observed seven times	98	4			
Observed eight times	217	8			
Total Plants in sample:	2756	100	Total	2756	100

Greatest possible number of observations per plant: eight.

Table 8: **Multi-plant Textile Operations in North Carolina (number of distinct plants)**

<b>1975</b>		<b>2007</b>	
J.P. Stevens	26	Parkdale Mills, Inc.	16
Fieldcrest Mills	18	Hanes Brands, Inc.	5
Klopman Mills	16	American & Efird, Inc.	5
Cone Mills Corporation	15	Guilford Mills	5
Cannon Mills	14	Kayser-Roth Hosiery, Inc.	4
Burlington Industries, Inc.	12	Carolina Mills, Inc.	4
Burlington Madison	11	Coats North America	4
American & Efird, Inc.	10	Mohawk Industries	4
Carolina Mills, Inc.	9	Unifi, Inc.	4
Collins & Aikman Corp.	9	Burlington Apparel Fabrics	3
Burlington House	7	Burlington House Fabrics	3
Galey & Lord, Inc.	7	Glen Raven Technical Fabrics	3
Adams Millis Corporation	6	Frontier Spinning, Inc.	3
Texfi Industries, Inc.	6	Moretz, Inc.	3
Beaunit, Inc.	5	National Spinning	3
Dixie Yarns	5	Tuscarora Yarns	3
Glen Raven Mills, Inc.	5	R.L. Stowe Mills, Inc.	3
<b>Total for 17 corporations</b>	<b>181</b>	<b>Total for 17 corporations</b>	<b>75</b>
Percent of all plants	14	Percent of all plants	14
And 64 other multi-plant firms		And 34 other multi-plant firms	
Percent multiplant firms	8	Percent multiplant firms	11

Source: Davison's Textile Blue Book, 1975 and end-2007.

Table 9: **Net Reduction in Employment in North Carolina (in thousands): Davisons vs. BLS**

Year	Net Reduction in textiles employment: BLS	Net Reduction in textiles employment: Davisons	Unemployment due to closures: Davisons	Net reduction due to downsizing of continuing plants: Davisons
1995-1999	75.9	86.6	56.9	29.7
2000-2004	119.7	90.3	66.4	23.9
2005-2007	41.4	48.2	38.6	9.6
Total	237.0	225.1	161.9	63.2

Data:

(1) Davison's data, as described in the text.

(2) Bureau of Labor Statistics, Statewide Employment in Textiles (Textile Mills, Thread Mills, Product Mills, Fabric Mills and Textiles Finishing).

Table 10: **Plant Closures and Downsizing in North Carolina Textiles**

		1995-2000	2000-2005	2005-2007	Total, 1995-2007
Plant closings, number		290	347	181	818
Plant closings for which employment data are available in final observed year					
	Number	206	233	146	585
	Total reduction in employment from these	42236	47224	29570	119030
Plant closings for which employment data are available, greater than 50 jobs lost					
	Number	137	162	101	400
	Total reduction in employment from these	40657	44889	28592	114138
Reductions in force, total observed					
	Number	120	159	76	355
	Total reduction in employment from these	22446	26480	11588	60514
Reduction in force of more than 50 workers					
	Number	58	85	39	104
	Total reduction in employment from these	21152	25115	10833	57100

Source: Davison's database

Table 11: **The TAA Petitions, as part of the Davison sample.**

	Included in Davison sample	Textiles, but not included	Dyes, chemicals, distribution	Apparel	Total
TAA 1995-2007	657	52	14	16	739
Percent of total	89	7	2	2	100

Sources: Davison's database.  
DTAA, US Department of Labor.

Table 12: **TAA plants in the Davison sample: all plants.**

	1995-2007 TAA petitions	No TAA petitions	Total
1995-2007 Davison	417	1185	1602
Not in Davison	21	0	21
Total	438	1185	1623
1995-2007 Davison with employment figures	310	690	1000
Not in this subset of Davison plants	128	0	128
Total	438	690	1128
1995-2007 Davison with reported job loss	262	521	783
Not in job-loss sub-sample	176	0	176
Total	438	521	959

Sources: Davison's database.  
DTAA, US Department of Labor.

Table 13: **TAA and Davison plants with reported job loss of 50 or more.**

	1995-2007 TAA petitions	No TAA petitions	Total
1995-2007 Davison	154	371	525
Not reporting employment in Davison	112	0	112
Total	266	371	637

Sources: Davison's database.  
DTAA, US Department of Labor.

Table 14: **WARN-notice plants in the Davison sample.**

	1997-2007 WARN notices	No WARN notices	Total
1995-2007 Davison	207	1395	1602
In Davison, but earlier	8	0	8
Firm in Davison, but plant not in Davison	43	0	34
Neither firm nor plant in Davison	9		9
<b>Total</b>	<b>267</b>	<b>1395</b>	<b>1662</b>
<hr/>			
1995-2007 Davison with employment figures	157	843	1000
No employment figures in Davison	110	0	110
<b>Total</b>	<b>267</b>	<b>843</b>	<b>1110</b>
<hr/>			
1995-2007 Davison with reported job loss	141	642	783
Not in job-loss sub-sample	126	0	126
<b>Total</b>	<b>267</b>	<b>642</b>	<b>909</b>

Sources: Davison's database

Employment and Training Department, NC Department of Commerce

Table 15: **WARN and Davison plants with reported job loss of 50 or more.**

	1997-2007 WARN notices	No WARN notices	Total
1995-2007 Davison with reported job loss of 50 or more	125	400	525
Not reporting employment loss of 50 or more in Davison	84	0	84
<b>Total</b>	<b>209</b>	<b>400</b>	<b>609</b>

Sources: Davison's database

Employment and Training Department, NC Department of Commerce

Table 16: **Coincidence of WARN notice and TAA petition by plant**

<b>For those plants reported in Davison's database</b>			
	1997-2007 WARN notices	1997-2007, No WARN notices	Total
1995-2007 TAA petitions	154	263	417
1995-2007, no TAA petitions	53	1132	1185
Total	207	1395	1602
<b>For those plants not reported in Davison's database</b>			
	1997-2007 WARN notices	1997-2007, No WARN notices	Total
1995-2007 TAA petitions	5	16	21
1995-2007, no TAA petitions	55	0	55
Total	60	16	76

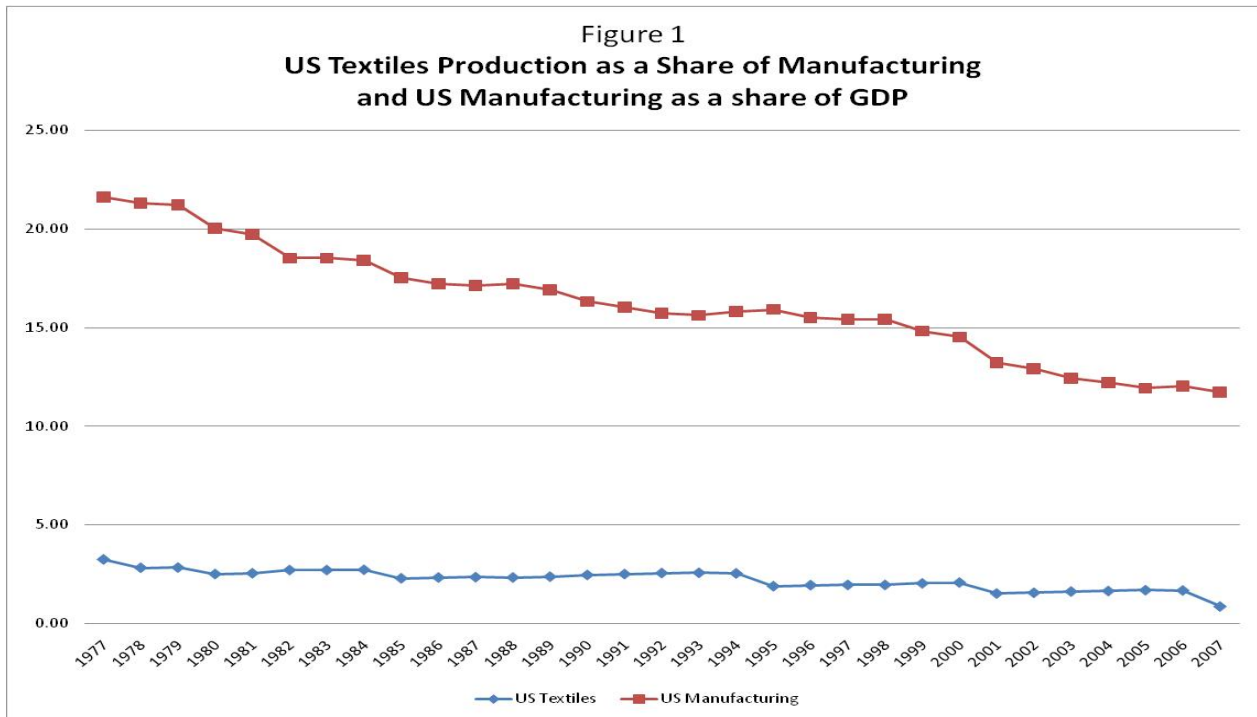
Sources: Davison's database  
 Employment and Training Department, NC Department of Commerce  
 US Department of Labor, DTAA.

Table 17: **Davison plants with reported job loss of 50 or more: coincidence of TAA petitions and WARN notices.**

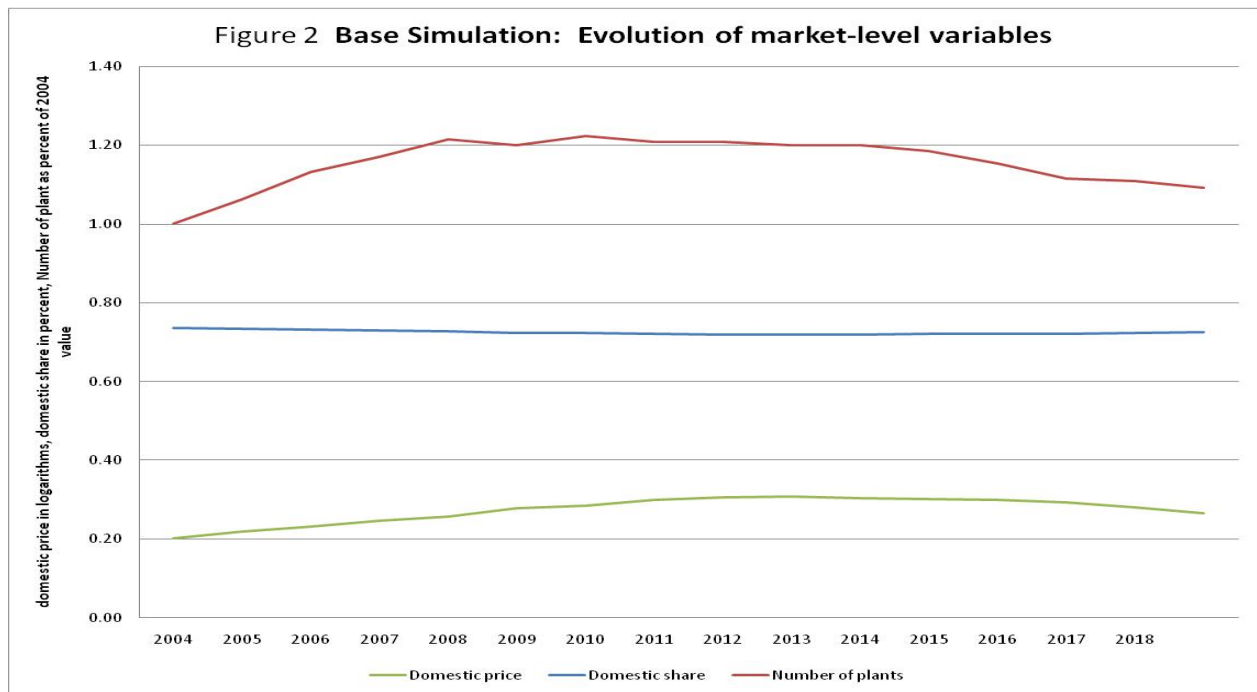
	1997-2007 WARN notices with job loss of 50 or more	No such WARN notice	Total
1995-2007 TAA petitions with reported job loss of 50 or more	79	75	154
No such TAA petition	46	325	371
Total	125	400	525

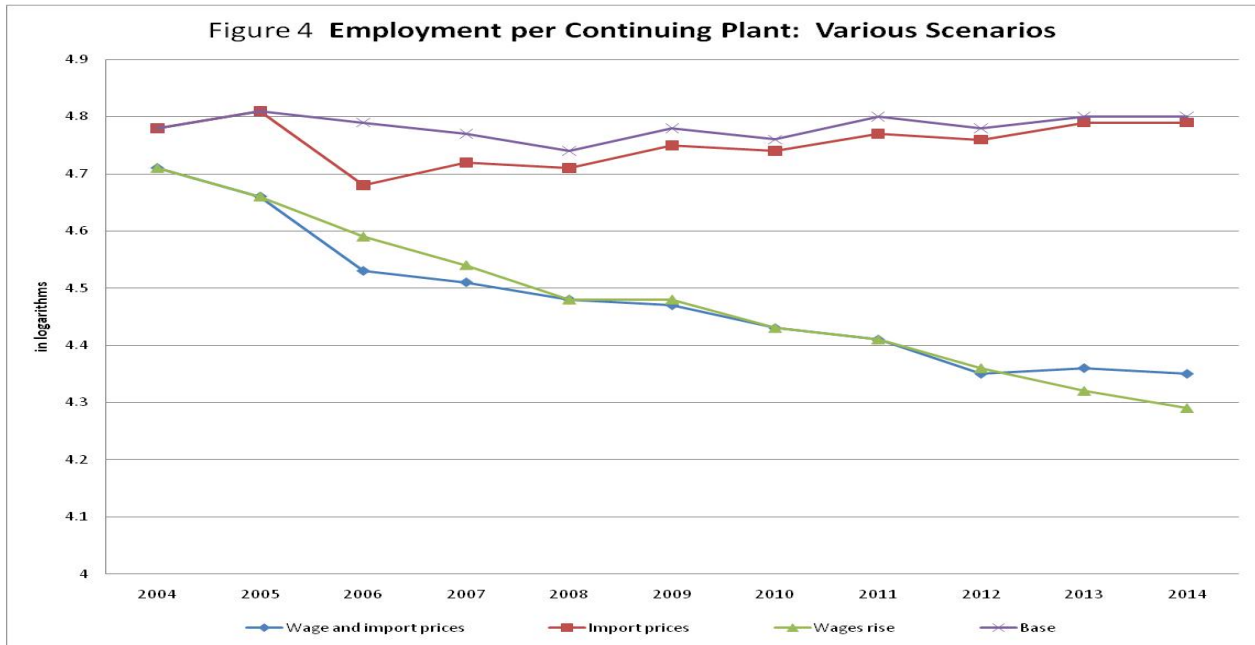
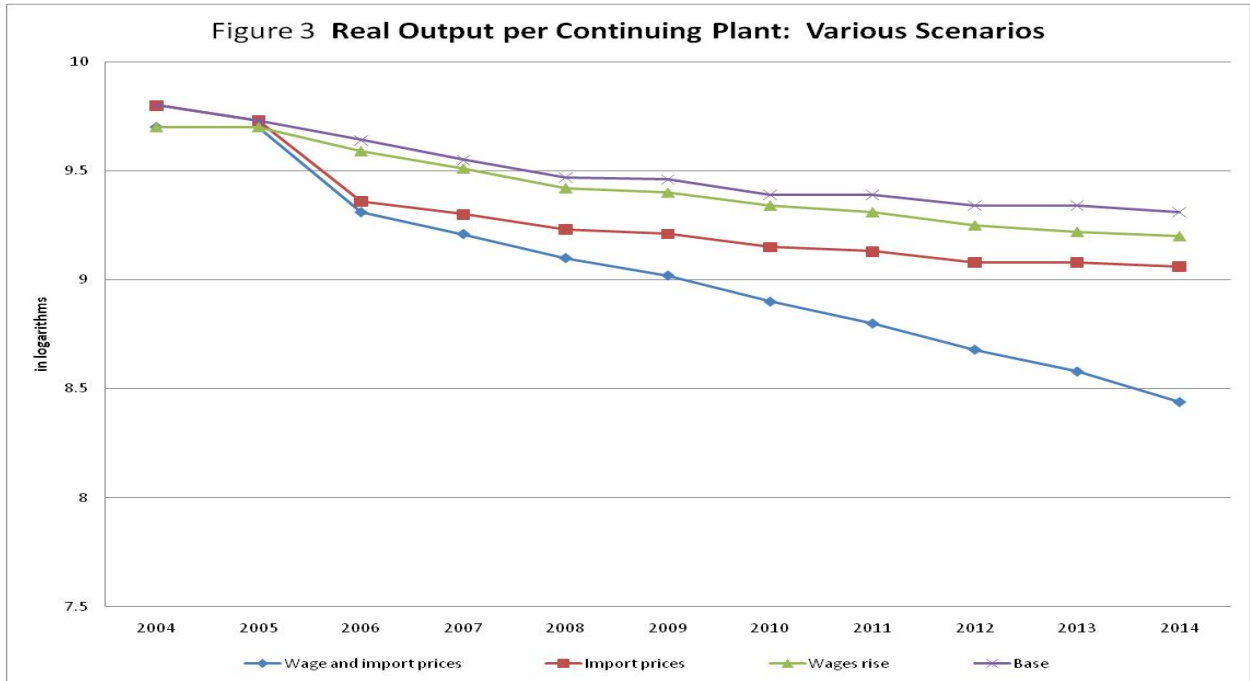
Sources: Davison's database; US Department of Labor DTAA;  
 Employment and Training Department, NC Department of Commerce

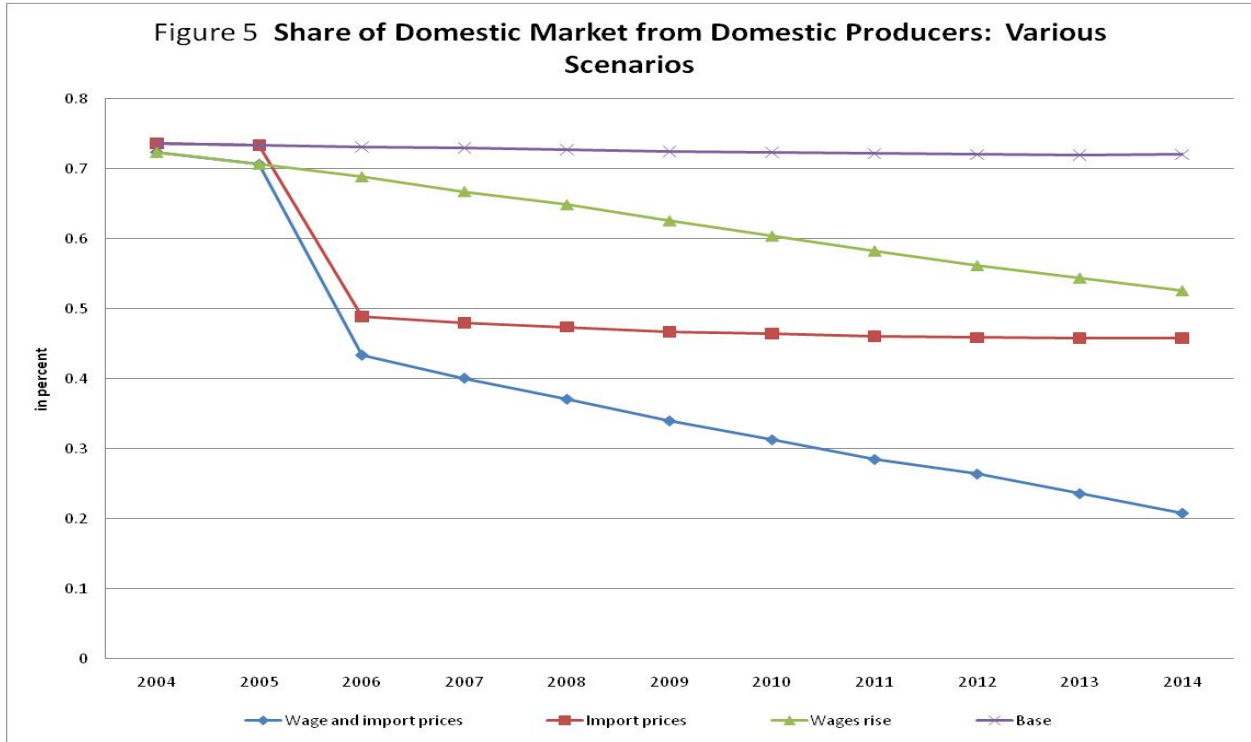




Source: US Department of Commerce







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**Data sources:**

Plant-level economic data: Center for Economic Studies, US Bureau of the Census.

TAA programs: Division of Trade Adjustment Assistance, US Department of Labor.

WARN notifications in North Carolina: North Carolina Department of Commerce, Employment and Training Department.