COMMENTS OF THE BUREAUS OF ECONOMICS,
COMPETITION, AND CONSUMER PROTECTION OF
THE FEDERAL TRADE COMMISSION
Washington, D.C. 20580
December 4, 1986

Introduction

The staff of the Federal Trade Commission ("FTC") is pleased to offer comments on the Notice of Proposed Rulemaking ("NPRM") concerning homeworkers published by the Department of Labor ("DOL").[1] DOL requested comments on the possibility of replacing the outright ban on homework in six industries with a certificate system designed to insure compliance with the minimum wage law.

In brief, we conclude that relaxing the homework ban in the six currently restricted industries will likely reduce total production costs in those industries. As a consequence, prices to consumers will likely be reduced. Using the sparse available data, we roughly estimate the gains to consumers and producers from removing the ban. Based on the productivity experience of one apparel firm and applying that experience to four apparel-related restricted industries, the estimated gains are on the order of $28-$150 million per year. Against such potential benefits must be weighed the potential costs of relaxing the ban, principally the possible evasion of the

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[1] Employment of Homeworkers in Certain Industries, 51 FR 30036 (August 21, 1986). These comments represent the views of the Bureaus of Economics, Competition and Consumer Protection and do not necessarily reflect the views of the Federal Trade Commission or any individual Commissioner. The Commission has, however, authorized the filing of these comments. Inquiries regarding these comments should be directed to John Woodbury, Bureau of Economics.

minimum wage law.[2] Because employers who wish to use homeworkers legally would have to comply with DOL's proposed certification standards, DOL will be in a position to monitor these employers to insure that they do not violate the minimum wage law. Indeed, as employers bring themselves within the monitoring system and the new option of legal homework employment, minimum wage violations may actually decline.

In section I of these comments, we consider the benefits from relaxing the ban, while in section II we address the possible costs of lifting it. In section III we summarize our conclusions.

I. BENEFITS FROM RELAXING THE BAN

Originally promulgated by DOL in the 1940's, the current homework ban applies to six industries employing 550,000 production workers and producing goods valued at $29 billion in 1982.[3] While employers in these industries have been prohibited from hiring homeworkers, the total number of homeworkers in other industries has grown dramatically. In 1959, DOL estimated that a total of 22,580 homeworkers were employed by U.S.

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[2] For the purpose of this comment, we do not address whether the minimum wage law advances the interests of consumers or efficient resource allocation.

[3] The six industries are women's apparel, gloves and mittens, embroideries, handkerchiefs, jewelry, and buckle and button manufacturing. Approximately 91.2% of employees and 85.6% of the value of shipments are derived from the four apparel-related industries. U.S. Department of Commerce, 1982 Census of Manufacturers, General Summary, Table 3, pp. 1-6, 1-8, 1-10, 1-18. The ban was issued following passage of the Fair Labor Standards Act ("FLSA") of 1938, which first promulgated (among other provisions) a national minimum wage. The original homework ban also encompassed a seventh industry, knitted outerwear. In December 1984, DOL replaced the ban in knitted outerwear with a detailed certification system.

manufacturers.[4] By 1980, that number had grown to 731,660.[5] By 1985, the number of homeworkers had further grown to three million, 57,000 of whom were in apparel manufacturing.[6] With recent advances in computer technology permitting an increasing use of remote work stations, the number of homeworkers in all industries is forecast to grow to ten million by 1990[7] and twenty million by the year 2000.[8]

This increasing prevalence of homework suggests that employers consider homework an effective means of reducing production costs. Thus, the primary benefit from relaxing the homework ban in the six restricted industries is likely to be the ability of firms in these industries to employ less costly techniques of production. For example, while the competitive wage for homeworkers may be above the minimum wage, it may be less than that for factory workers. If so, then to comply with the existing ban, firms in these industries have likely utilized more capital and plant space and more expensive labor inputs to produce any given level of output. Alternatively, because of differences in the working environment or because of the form in which wages are paid (for example, a piece rate rather than an hourly rate), homeworkers may be more productive than factory workers. For reasons such as these, the prices consumers must pay for the output of these firms

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[4] DOL, Employment of Workers Under FLSA (1959), Table 4, p. 31, and DOL, Employment and Earnings (April 1960), Table SB-2.

[5] Bureau of Census, Work at Home Tabulation: Reference Week in 1980 (1985), Table 2, p. 19.

[6] Bureau of Labor Statistics (BLS), "Work Patterns and Preferences of American Workers," News (August 1986), p. 1 and Table 2, and from BLS personnel.

[7] "Telecommuting," Cleveland Plain Dealer (July 14, 1985), pp. 61, 66.

[8] "Homework," Fortune (August 25, 1984), pp. 10-11.

are probably higher than they would be absent the ban. By permitting a more efficient use of resources, a relaxation of the homeworker ban will tend to reduce both costs and prices in the restricted industries.[9]

Not only will consumers in general benefit from a relaxation of the ban, but current and prospective homeworkers will benefit as well. Relaxation of the ban will increase the employment options available to individuals who prefer to work at home. The ban on homework in the six industries may mean that some of these individuals now work at home in other unrestricted industries, work in less preferred (even if more highly compensated) factory positions, or do not work at all. Further, because the utilization of homeworkers is reduced by the ban, the compensation of homeworkers is now less than it otherwise would be.

In the appendix, we have estimated both the gains to consumers from the lower apparel product prices that would prevail in the absence of the ban and the gains to homeworkers (and other input suppliers) from higher compensation levels. Our calculations are based on the productivity experience of a single apparel firm in a restricted industry that employed

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[9] A large number of economic studies have concluded that, in general, restrictions on production techniques increase the cost of production and increase prices paid by consumers. For example, see J. Perlof, "The Impact of Licensing Laws on Wage Changes in the Construction Industry," Journal of Law and Economics (October 1980), pp. 409-28, D. Caves, L. Christensen, and J. Swanson, "Economic Performance in Regulated and Unregulated Environments: A Comparison of U.S. and Canadian Railroads," Quarterly Journal of Economics (November 1981), pp. 559-81, and A. DeVany, W. Gramm, T. Saving, and C. Smithson, "The Impact of Input Regulation: The Case of the U.S. Dental Industry," Journal of Law and Economics (October 1982), pp. 367-81.

The ban may also have skewed the outcome of normal competitive processes in other ways. The NPRM notes a number of anomalies created by the current ban. For example, homeworkers can produce bathrobes and metal buttons but not housecoats or wooden buttons, so that production and consumption are likely to have been diverted from the latter to the former.

homeworkers until DOL required their termination. These calculations assume that the productivity experience of this single firm would be typical of that in four restricted apparel related industries. We estimate that consumers and production inputs would experience a gain of between $28 million and $150 million per year if the ban were removed.[10]

Finally, relaxation of the ban may improve the international competitiveness of the restricted industries. For example, import penetration in women's apparel has grown from 1.8% in 1967 to 17.0% in 1983.[11] These increasing imports, particularly in the apparel-related industries, have led to the imposition of quantitative restrictions on imports that deny consumers the opportunity to choose imported instead of domestic apparel.[12] By enabling the firms in the restricted industries to employ the most cost-effective production techniques through a relaxation of the ban, the rate of

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[10] We provide a range of estimated gains because of data difficulties and a number of simplifying assumptions. Thus, our estimates are likely to be quite imprecise. A complete discussion of these issues can be found in the appendix. Because of data limitations the estimated gains are for four of the six restricted industries.

[11] These figures cover only SIC 233, which represented approximately 75% of value of shipments in women's apparel in 1982 (1982 Census of Manufactures). Time series data on import penetration are not available for the rest of the restricted industries or for the remainder of the women's apparel industry. The data for SIC 233 are from U.S. Department of Commerce, 1984 U.S. Industrial Outlook (1984), pp. 41-1 to 41-11, and 1978 U.S. Industrial Outlook (1978), pp. 245-50.

[12] The U.S. imposes textile import quotas on 22 countries under the umbrella of the Multifiber Arrangement (MFA). M. Morkre, Import Quotas on Textiles: The Welfare Effects of U.S. restrictions on Hong Kong (FTC, 1984), p. 1. Tariffs on textiles and clothing in industrial countries are between two and three times higher than tariffs on manufactured goods as a whole. The textile and clothing industries are the only ones given formal exemption from the normal world trading rules administered by GATT. The Economist (July 28, 1984), p. 57.

increase in imports and industry demand for trade protection may be reduced.

In sum, replacing the ban in the six restricted industries with a certification system may reduce prices to consumers, increase the economic well-being of current and prospective homeworkers, and improve the international competitiveness of the restricted industries.

II. POTENTIAL COSTS OF LIFTING THE BAN

The primary objection raised by those who oppose relaxation of the ban on homework is the possible inability of DOL to detect violations of the minimum wage provisions of FLSA.[13] However, the NPRM describes an intensive monitoring and enforcement program adopted by DOL when it dropped the ban in knitted outerwear and replaced it with a certification program. By all appearances, this program has achieved its goals. Between December of 1984 and April of 1986, DOL reports that it completed investigations of 35 of 50 certified employers in this industry. Of these 35, 14% (i.e., 5 employers) were found to have underpaid some of their homeworkers, and by an average of $100 per underpaid worker during the period of investigation. This contrasts sharply with the results of DOL complaint-based investigations of employers in all other industries, 66% of which have disclosed the existence of minimum wage violations. If DOL applies the same enforcement program to the currently restricted industries,

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[13] International Ladies' Garment Workers' Union, "Fact Sheet on Homework," before the Subcommittee on Labor Standards of the Committee on Education and Labor of U.S. House of Representatives (Sept. 16, 1986), pp. 2-13; Federationist, "Homework: A Return to the Industrial Sweatshops and No Protection" (August 2, 1986), p. 3.

the certification program should have comparable results in deterring FLSA violations by certified employers.[14]

Because certified employers of homeworkers will have to identify themselves to DOL, one significant administrative cost--that of locating employers of homeworkers--will be reduced. Therefore, the certification program may result in a lower administrative cost to maintain the same level of FLSA compliance in the six restricted industries as in other industries.[15]

Another argument that opponents of the proposed relaxation have advanced is that while homeworkers may be paid at or above the minimum wage, the rate of compensation for homeworkers will nonetheless be lower

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[14] It is our understanding that employers of homeworkers in industries other than the original seven in which homework was prohibited must comply with DOL's detailed record-keeping requirements. DOL in turn conducts investigations of a sample of such firms to insure compliance with the provisions of the FLSA. However, none of these unrestricted homework employers must first be certified by DOL in order to employ homeworkers. Given the dramatic economy-wide growth in homework noted above, we are aware of no policy reason why homework employers in these seven industries should be certified to hire homeworkers. We are also unaware of any policy reason why DOL would adopt a higher FLSA compliance level for homework employment in the six restricted industries and knitted outerwear than in all other industries. Because of recent court decisions, we recognize that DOL may be required to institute a certification system if the ban is relaxed. NPRM, p. 30036. We suggest that DOL carefully weigh its legal options in this regard. If DOL does adopt a more stringent compliance level, DOL may wish to consider alternative schemes for enforcing FLSA that could result through deterrence in lower administrative costs.

[15] Another reason why the proposed relaxation may result in fewer violations is that under a certification program a homeworker may be less reluctant to report FLSA violations to DOL. Under the proposed relaxation, the provisions of the FLSA would prevent such an employee from being fired (provided that the employer corrects the FLSA violations and thus retains his or her homework certificate). Under the current ban, a homeworker complaint to DOL compels DOL to order the employer to terminate homework which puts its homework employees out of work.

than that of their factory counterparts.[16] Even if that is true, it is not necessarily undesirable. Differences in competitive wages between homeworkers and factory workers can be explained by a whole array of factors. On the demand side, for example, there may be a tendency for the homeworker wage to be higher than that for factory workers if the use of homeworkers results in reduced need for plant space and, therefore, savings to the employer. But there may also be additional costs to the employer utilizing homeworkers that are not incurred with factory workers. For example, because all workers in a factory are physically proximate, assignments can be made and changed more easily than for homeworkers. Monitoring of work quality of factory workers can likewise occur as the work is in progress rather than after the work is completed. These other factors would tend legitimately to reduce the compensation of homeworkers.

On the supply side, there may be differences in skill levels between homeworkers and factory workers that affect the competitive wage of homeworkers. In addition, homeworkers will not require a higher wage to compensate them for travel time to and from work. Homework also provides direct benefits to employees, including satisfying the desire to remain at home with children or other family members, the ability to set one's own work schedule, and the ability to pursue other interests while working full- or part-time at home.

In order to compare the level of competitive compensation of homeworkers to that of factory workers, all of these factors and others must be considered fully. Since competitive labor markets are unlikely to sustain

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[16] Thirty-Ninth Report by the Committee on Government Operations. Homebased Clerical Workers: Are They Victims of Exploitation? (July 16, 1986).

unwarranted wage discriminations, there is probably little or no difference between the ultimate compensation paid homeworkers and that paid factory workers after accounting for these factors. Further, if compensation for homework in the now-restricted industries is less than that for homework elsewhere, individuals are unlikely to accept a less desirable homeworker position in the currently restricted industries.

Two other possible objections to repeal of the current ban should also be discussed. First, some have argued that homework will exacerbate the discomfort of the already crowded living conditions with which some homeworkers must contend.[17] Because of the equipment and supplies required by the homeworker, homework could aggravate living conditions that are already crowded. This argument is not persuasive. The selection of homework over factory work by an individual in these circumstances would indicate that the gains from homework outweigh the costs, including that of additional crowding. Further, by expanding earning opportunities for such individuals, a relaxation of the homework ban should enable them to ameliorate their living conditions.

A second possible objection to repeal is that employment of factory workers may be reduced in the now restricted industries.[18] However, there is some evidence to suggest that when an employer has more options in choosing and paying the workers hired, total employment possibly including

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[17] Federationist (August 2, 1986), p. 2.

[18] International Ladies' Garment Workers' Union, "Questions and Answers on Industrial Homework" (1982), p. 2.

that of factory workers actually increases.[19] Further, even a small reduction in the costs of the restricted industries may dramatically improve their international competitiveness. Consequently, consumers will tend to increase their purchases of domestic goods and reduce their purchases of foreign goods, leading to an even larger increase in domestic output and employment.

In sum, there appears to be no reason to believe that homeworkers will be paid a lower-than-competitive wage by employers or that the relaxation of the homeworking ban would aggravate the crowded living conditions experienced by some individuals. Further, there is some evidence to suggest that total employment in the affected industries could increase following relaxation of the ban.

III. CONCLUSION

The existing homeworker ban in six industries has likely resulted in inefficient production techniques, higher costs, and higher prices to consumers than would exist otherwise. Using the limited available data, we provide DOL with an estimate of the possible magnitude of the benefits that could accrue if the homeworker ban were relaxed. Our calculations, while valid only within the confines of the assumptions used, indicate that the gains could be on the order of $28-$150 million annually. Included in these gains, but worthy of separate mention, is the social benefit of giving

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[19] A recent study shows that total employment may expand if a wage-differential is permitted for different worker categories. C. Brown, "Estimating the Effects of A Youth Differential on Teenagers and Adults," Minimum Wage Study Commission, Vol. V (June 1981), p. 389. As a result of a cost decline, industry output will expand, generating a higher level of total employment. If the output expansion is sufficiently large, total employment can rise beyond the level experienced prior to the cost decrease.

workers a wide range of employment options from which to choose. The alleged potential costs of removing the ban include increased violation of the minimum wage laws and therefore reduced income for workers. Such costs do not seem likely to occur to any substantial degree in competitive labor markets given the certification program and the current level of DOL enforcement. Assuming that the administrative costs of the certification program do not outweigh the estimated gains from relaxing the ban,[20] we recommend that the homeworker ban be removed.

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[20] But see note 14 above.

APPENDIX

Estimating the Price and Output Effects of Lifting the Homework Ban

by
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In this appendix, we describe the method used to estimate the price and output effects of lifting the homework ban in four apparel industries, predominantly women's apparel.[1] We first describe the model, and the supply and demand conditions assumed in these industries, and then we detail the sources for the parameters used. Next, we derive the new prices and quantities resulting from use of more efficient production techniques following removal of the ban. Finally, we describe the method used to calculate the social benefits from lifting the ban.

A1. The Model

We assume that the four apparel industries can be integrated into a single industry with one homogeneous output that we will call 'gloves' measured in dozens of pairs. We assume perfect competition, and we further assume that linear relationships exist between price and quantity for both demand and supply.[2]

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[1] These industries are women's apparel, gloves and mittens, embroideries, and handkerchiefs. We excluded jewelry and button/buckle manufacturing because the available data upon which we base our calculations appears more relevant for apparel-related industries.

[2] This convenient assumption is consistent with other analysis of the apparel industry. See, for example M. Morkre, Import Quotas on Textiles: The Welfare Effects of United States Restrictions on Hong Kong (FTC, August 1984), p. 14 (hereafter, 'Morkre').

Demand is the same before and after lifting of the ban:

$$(1) \quad p^d = a + b\,Q^d$$

where: Q^d = the quantity of glove units demanded by U.S. consumers

p^d = the price of gloves which U.S. consumers are willing to pay at any given quantity

a = the highest price consumers will pay to move from zero to positive consumption

b = the reciprocal of the number of glove units a consumer will give up in response to a one unit increase in price.[3]

In contrast to the stable demand, the supply relationship is assumed to shift down after lifting of the ban so that supply price is less by the same dollar amount at every previously supplied quantity.[4] Supply before the ban is lifted is:

$$(2a) \quad p^s = c + d\,Q^s$$

while supply after lifting the ban is:

$$(2b) \quad p^{s'} = c' + d\,Q^{s'}$$

where: Q^s = the quantity of gloves that manufacturers will supply at any given price, with ban

p^s = the supply price which will call forth a given quantity of gloves, with ban

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[3] Because of the pervasiveness of import quotas, we assume that the quantity of imports in the four restricted industries remains constant, i.e., even at a lower price, the quantity of imports supplied would not be reduced. In effect, we assume a pent-up demand for imports. Thus our representation of consumer demand should be considered as domestic demand net of this constant quantity of imports. Because only incomplete data on imports in the restricted industries is available, we have not calculated the consumer gains derived from purchasing the fixed quantity of imports at a lower price following the ban's relaxation. Therefore, the consumer gains presented in the text will understate the true extent of gains.

[4] See footnote 12 for details of this shift.

c = the price necessary to begin glove production, with ban

d = the reciprocal of the number of additional glove units supplied in response to a one unit increase in supply price

$p_{s'}$ = the supply price, without ban

$Q_{s'}$ = the quantity of glove units supplied for any given supply price, without ban

c' = the equivalent of c but without ban.

Finally, market equilibrium before and after the ban is relaxed requires that at the market price, quantity demanded equals quantity supplied.

A2. Parameters Used in the Model

The starting values for our model of the restricted portion of the apparel industry were those for the calendar year 1982. To arrive at quantity we multiply an apparel output/labor ratio without homework[5] by the total number of production workers[6] in the four restricted apparel industries. To arrive at price,

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[5] The output/labor ratio at one glove factory which employed 85 homeworkers and 165 factory workers was 60.0 dozen pairs a week; this ratio fell to 48.5 dozen pairs per week when the homeworkers were laid off. These data were provided by plant personnel at Tom Thumb Glove, Wilkesboro, N.C. Tom Thumb is a firm which illegally employed homeworkers and was compelled by DOL to terminate its employment of homeworkers. Tom Thumb's homeworkers averaged $5 to $6 per hour. This information was provided by The Center on National Labor Policy.

[6] U.S. Department of Commerce, 1982 Census of Manufactures.

we divide the value of shipments[7] for these restricted industries by the quantity just calculated. These initial quantity and price figures are:

Q = 1,262.8 million dozen pairs of gloves[8]

P = $19.79 per dozen pairs of gloves.

In addition to initial price and quantity, we require parameters for the demand and supply models. To calculate the slope of the demand equation ('b' in equation (1)), we utilize an estimate of -.282 for the price elasticity of demand for the entire apparel industry at the original price and quantity of the four restricted industries.[9] With this estimate and our initial price and quantity estimates we calculate **a** in equation (1) as

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[7] Value of shipments in 1982 was estimated to be $24,992.0 million. U.S. Department of Commerce, 1982 Census of Manufactures. This estimate was made in the following manner. The Census of Manufactures provided complete data for one of the four industries, women's apparel (SIC 233, 234, and 236). Value of shipments in women's apparel totaled $24,278.6 million. SIC 2381, 3151, and 3199 encompass gloves but SIC 3199 also encompasses other leather goods. Both SIC 2395 and 2397 include embroideries as well as pleating, buttonhole making, crochet ware and tucking. Handkerchiefs are part of SIC 2389 as are armbands, footlets, garters and suspenders. For these four mixed SIC groups, we attributed only 18 percent of the combined value of shipments to the four restricted industries. Because employment data for gloves, embroideries and handkerchiefs were also included in the same mixed SIC groups, we only attributed 18 percent of the employment in those SIC groups to the four restricted industries.

[8] Q = 500,700 workers x 52 weeks x the output/labor ratio (48.5).

[9] H. Houthakker, "New Evidence on Demand Elasticities," Econometrica (1965), p. 280.

$89.97 and **b** as -5.56×10^{-8}.[10] Because there are no available estimates of the supply elasticity, we utilize two different assumptions. In one case we assume that the supply elasticity is infinite, i.e., that the supply curve is horizontal at the market price. In the second scenario, we assume that the supply elasticity is 20, imparting a modest upward slope to the supply curve. With the horizontal supply curve, **c** in equation (2a) equals $19.79 and **d** equals zero. When the supply curve is upward sloping, **c** equals $18.80 and **d** equals 7.84×10^{-10}.[11]

The last parameter necessary to proceed with the calculations is **c'**, the intercept of the post-ban supply curve in equation (2b). The lower intercept represents a downward shift in the supply curve. The downward shift results from the reduction in production costs following relaxation of the homework ban. We calculate this downward shift by applying the percentage increase in productivity (i.e., the percentage change in the output/labor ratio) resulting from the use of homeworkers to the percent of total variable costs accounted for by production workers in the

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[10] With equation (1), the demand curve, and the initial values of price and quantity, we can solve for **a**, the initial intercept value for the demand equation:

$$a = P_D - b Q_D$$
$$= 19.79 + (.0000000556)(1,262,765,400) = \$89.97$$

[11] The intercept for the upward sloping supply curve is found in the following manner:

$$c = P - d Q$$
$$= \$19.79 - (.000000000784)(1,262,765,400) = \$18.80$$

four restricted industries.[12] The new intercept (c') is $19.55 for the horizontal supply curve, while that for the upward sloping supply curve is $18.58. Essentially, removal of the homeworker ban reduces costs by 1.2 percent.

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[12] Based on the experience of Tom Thumb, the effect of the ban's relaxation is to increase the output/labor ratio from 48.5 to 60.0, a 23.7 percent increase in productivity. This higher level of productivity is associated (in Tom Thumb) with a homeworker to total worker ratio of .34 (85 homeworkers out of 250 total workers). To calculate the likely percentage of homeworkers in the four restricted industries following the ban's relaxation, we first assume that all 57,000 homeworkers in the apparel industry (DOL, Bureau of Labor Statistics (BLS), News, August 7, 1986, and from BLS personnel) are employed by the unrestricted industries. Thus, homeworkers compose 12.4 percent of production employment in states that do not ban homework in these industries (production employment in restricted and unrestricted apparel industries from U.S. Department of Commerce, 1982 Census of Manufactures). We then assume that the percentage of homeworkers in the restricted industries will also be 12.4 percent following the ban's relaxation. Assuming no change in total employment in the restricted industries, there will be 49,900 homeworkers (based upon 402,400 production workers in restricted industries who are not covered by state bans on homeworkers). Rather than estimate a continuum of production functions from zero homeworkers/all factory workers to all homeworkers/zero factory workers -- both the ends of the spectrum are not uncommon -- we have assumed a dichotomous production pattern. That is, we have assumed that all homeworkers combine with all workers at the Tom Thumb ratio, .34 (i.e., 49,900 homeworkers out of a total of 146,800 homeworker/factory workers) and the remaining production workers produce in factories without any homeworkers. Thus, out of 500,700 production workers, 146,800 (29.3 percent) produce at the output/labor ratio of 60.0, and the other 353,900 (70.7 percent) produce at the output/labor ratio of 48.5.

An increase in worker productivity indicates that the costs of producing any given level of output falls: the same amount of labor can produce a greater output or equivalently any given level of output can be produced with fewer labor inputs. Thus, a 23.7 percent increase in productivity results in a 19.2 percent decline in labor costs. To see why this is so, consider the following example. Assume that the current daily output level

(Footnote continues)

Thus, we now have all the information needed to calculate the new prices and quantities following the ban's relaxation. By way of summary, the parameters for the demand curve are:

$a = \$89.97$

$b = -5.56 \times 10^{-8}$

For the horizontal supply curve:

$c = \$19.79$

$c' = \$19.55$

$d = 0.0$

For the upward-sloping supply curve:

$c = \$18.80$

$c' = \$18.58$

$d = 7.84 \times 10^{-10}$

(Footnote continued)

(without homeworkers) is 100 units, the daily wage of workers is $50 and that there are a total of 100 workers. Then the current labor cost per unit of output is $50. After the homework ban is relaxed, daily output rises to 123.7 units and the average labor cost per unit of output falls to $40.42, a decline of 19.2 percent.

In the four restricted industries, the percentage of total variable (labor plus materials) cost accounted for by production workers is 22.2 percent (from 1982 Census of Manufactures). Therefore the reduction in total variable costs by firms employing homeworkers in the restricted industries is 19.2 percent times 22.2 percent, or a 4.26 percent cost reduction. Because the cost reduction is only attributable to 29.3 percent of employment in the four restricted industries, the average cost reduction experienced by the four industries in total will be 29.3 percent times 4.26 percent, or 1.2 percent.

For the horizontal supply curve scenario, the vertical downward shift in the supply curve is .012 times $19.79, the original supply price. Thus, in this case, the price following the ban will be $19.55. In the case of the upward sloping supply curve, we calculated the absolute cost decline ($.22) at the original intercept. Had we used the original price, the absolute cost reduction would have been somewhat larger and the gains from the ban's relaxation would have been somewhat greater.

A3. Quantities and Prices Resulting from Lifting the Ban

The original and post-ban market positions are depicted in figure 1 (horizontal supply curve case) and in figure 2 (upward sloping supply curve case). In both figures, the original quantity supplied and demanded is Q_B while the market clearing-price is P_B. Following the ban's relaxation, the supply curves in both figures shift down as a result of the induced reduction in cost. The new equilibrium quantity is Q_C and the new market clearing-price is P_C. Equating price in equation (1) (demand) with price in equation (2b) (new supply), we can solve for the new quantity resulting from lifting the ban, Q_C:

$$a + b\,Q_C = c' + d\,Q_C;$$
$$Q_C = (a - c')/(d - b).$$

In the case of horizontal supply, the new intercept (c') is the new price (P_C) and d (slope) = 0. New output (Q_C) is:

$$Q_C = (a - P_C)/(-b) = 70.42/.0000000556$$
$$= 1,267.0 \text{ million.}$$

In the case of upward-sloping supply, new output is:

$$Q_C = (a - c')/(d - b) = 71.39/.0000000564$$
$$= 1,266.8 \text{ million.}$$

In the case of horizontal supply, the new market price (P_C) is the same as the new intercept (c'), or $19.55. In the case of the upward sloping supply curve, market price remains to be determined using the new output (Q_C):

$$P_C = a + b\,Q_C = \$89.97 - (.0000000556)(1{,}266.8 \text{ mil})$$
$$= \$19.57$$

A4. Estimated Gains from Relaxing the Ban

Here we detail a method of measuring the gains to the economy from relaxing the ban on homework. Lifting the ban would induce an increase in the output and lower the price of goods in the restricted apparel industries. Gains from lifting the ban would consist of the changes in consumer and producer surplus that result from the improved use of resources. To compute these changes we first look at what consumers would gain. At the initial point B in figures 1 and 2 the consumer surplus is that area above price, but below the demand curve. This is represented by the area of the triangle $a\text{-}P_B\text{-}B$. After the ban is lifted consumers and producers will be at point C. The consumer surplus is represented by the area of triangle $a\text{-}P_C\text{-}C$.

Changes in consumer surplus as a result of lifting the ban are the differences between the second and first triangles. For the horizontal supply curve the gain is $300,411,438. For the upward sloping supply curve the gain is $281,392,757.

We now compute the changes in producer surplus resulting from lifting the ban, represented in figures 1 and 2 as a move from point B to point C. In the case of a horizontal supply curve this area is zero. For the upward sloping supply curve the methodology is identical to that in the consumer surplus case.

Producer surplus before the ban is lifted is represented by the triangle $P_B\text{-}c\text{-}B$. This area can be calculated as:

$$\text{Area}(P_B\text{-}c\text{-}B) = 1/2\ (P_B - c)Q_B$$
$$= \$624{,}800{,}000.$$

Producer surplus after the ban is lifted, where point C represents the new price and quantity, is represented by:

$$\text{Area}(P_C\text{-}c'\text{-}C) = 1/2\ (P_C - c')Q_C$$
$$= \$628{,}767{,}638$$

The gain in producer surplus is thus $3,967,638.

Finally the total gain to society as a result of lifting the ban is simply the sum of the gains in consumer and producer surplus.

For the case of the horizontal supply curve, the change in producers surplus is zero. Therefore the total gain is $300,411,438.

For the upward sloping supply curve case, the total gain is $285,360,395.

We note that the assumptions used to generate the percentage cost reduction may result in the producer and consumer gains being overestimated. Approximately 97 percent of the value of shipments in these four industries (an estimated $25 billion) is accounted for by women's apparel. It may be that the productivity gains using homeworkers in women's apparel would not be as substantial as those experienced by Tom Thumb in glove production. Further, our baseline calculations assume that absent the ban, the percentage of homeworkers in the four industries would be identical to that in the unrestricted apparel industries (i.e., 12 percent of all production employees in states that do not ban homework). But the actual percentage

could be lower if cost-efficient production techniques in women's apparel in particular do not include an extensive use of homeworkers. For example, in knitted outerwear, certified homework employees accounted for only 2.7 percent of all knitted outerwear employees (data provided by DOL officials). Finally, we do not know the extent to which illegal homework occurs in the four restriced industries even while the ban is in effect.

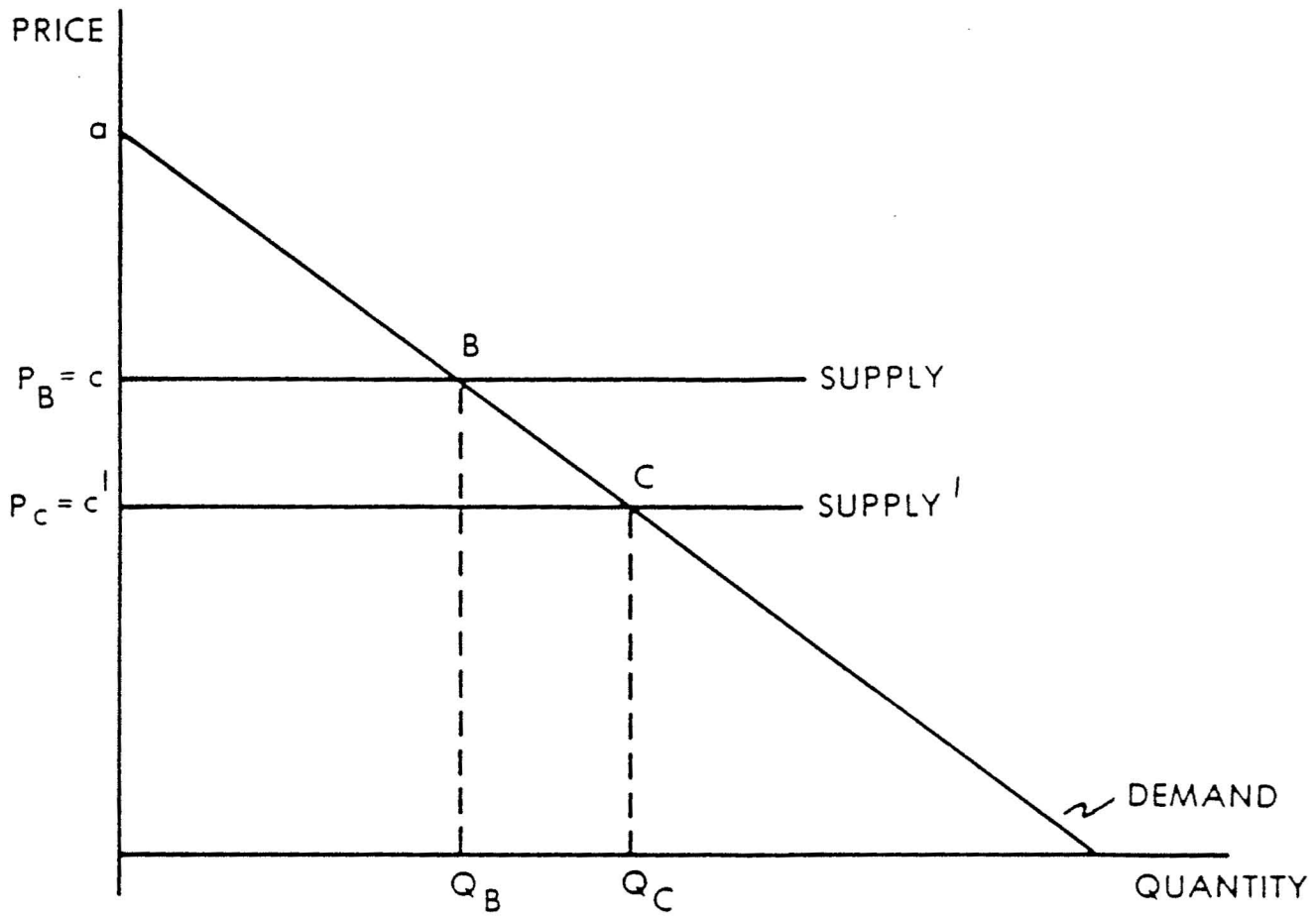
For these reasons, the estimate of the gains are deflated by 90 percent and by 50 percent to reflect our uncertainty. For example, the 10 percent estimates would be roughly equivalent to assuming that only 1.2 percent of the employees in the four restricted industries would be homeworkers absent the ban. We present these deflated estimates in Table 1, the basis for the gains reported in the text.

Table 1

Effects of the Ban's Relaxation*

	Horizontal Supply Curve	Upward Sloping Supply Curve
Change in Consumer Surplus		
10 percent of baseline	$ 30.0	$28.1
50 percent of baseline	$150.2	$140.7
Change in Producer Surplus		
10 percent of baseline	$0	$.4
50 percent of baseline	$0	$2.0
Total Change in Surplus		
10 percent of baseline	$30.0	$28.5
50 percent of baseline	$150.2	$142.7

* The baseline calculations assume (1) that Tom Thumb's productivity experience would be typical for the four restricted industries in the absence of the homeworker ban and (2) that homeworkers in the four restricted industries after the ban's relaxation will account for the same percentage of total production employment as in the unrestricted apparel industries.



$a = \$89.97$

$c = P_B = \$19.79$

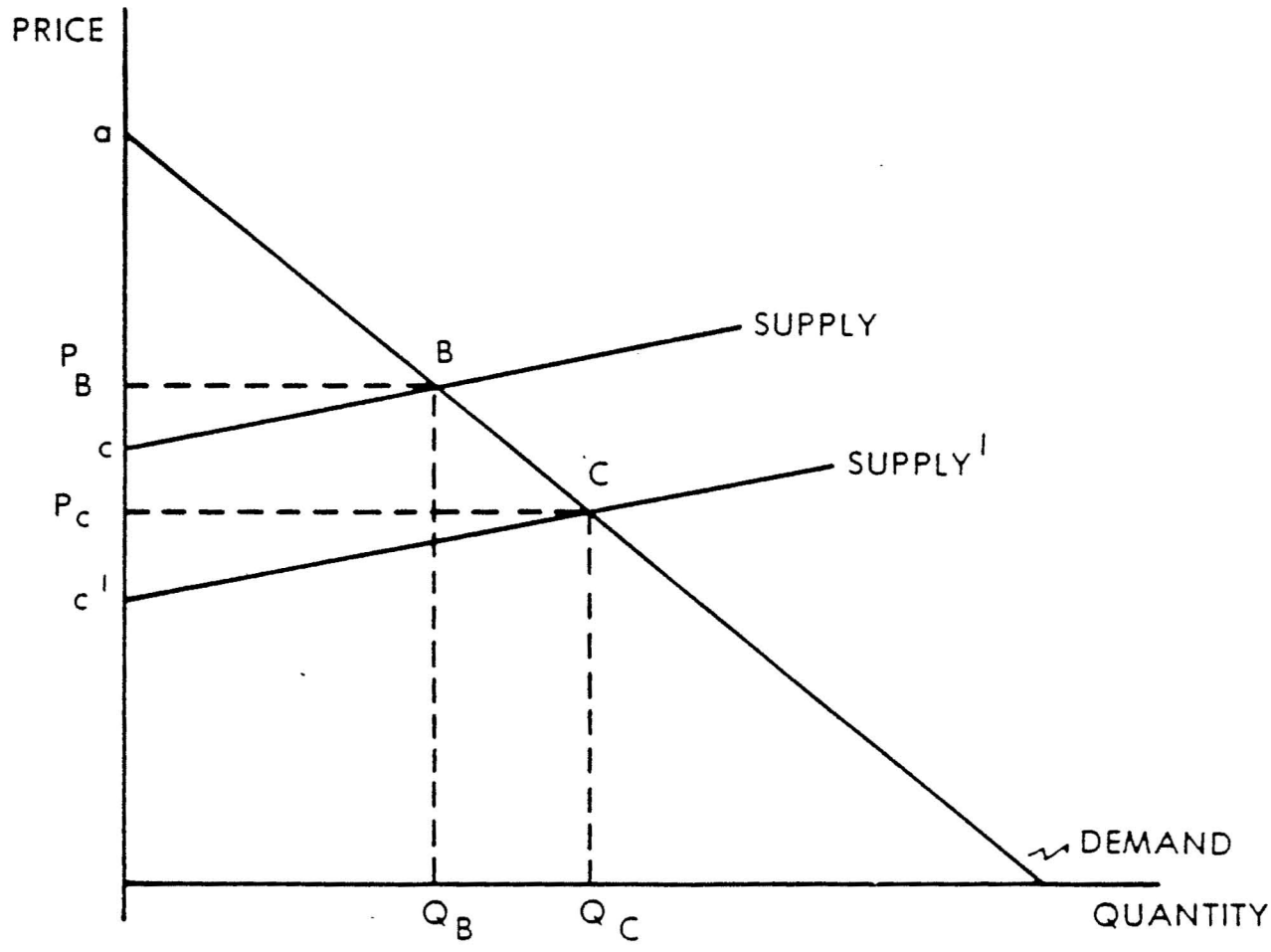
$c' = P_C = 19.55$

$Q_B = 1{,}262.8$ million dz. pairs gloves

$Q_C = 1{,}267.0$ million dz. pairs gloves

FIGURE 1

HORIZONTAL SUPPLY



a = $89.97

c = 18.80

c' = 18.58

P_B = $19.79

P_C = 19.57

Q_B = 1,262.8 million dz. pairs gloves

Q_C = 1,266.8 million dz. pairs gloves

FIGURE 2

UPWARD SLOPING SUPPLY