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AN ECONOMIC EVALUATION OF THE PATTISON PROPOSAL TO REDUCE CIGARETTE BOOTLEGGING

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The existence of a bootleg cigarette operation is currently causing considerable controversy and discussion in the United States. The problem exists because each state establishes its own individual tax on cigarettes. Since tax rates differ by states, the retail price of cigarettes is different in different states and consequently, the distribution of total tax revenues is affected. The per unit cigarette tax is lowest in North Carolina (2¢), Kentucky (3¢), Virginia (25¢) and is highest in Connecticut (21¢), Massachusetts (21¢) and New Jersey (19¢) (see Table 1). The bootleg cigarette operation exists between the low-tax states and the high-tax states. Bootleg operators can buy low-tax cigarettes in North Carolina and other low-tax states such as Virginia and Kentucky, and then they illegally sell these cigarettes in high-tax states for a profit. Because of recent widespread attention, several different methods of solving the problem have been proposed.

Some feel the solution is a police matter, but the cost of police enforcement would be very great. "Federal law enforcement officials familiar with this problem have testified that with a major increase in manpower and effort (read 'major increase in spending') they could halt 30 percent of the bootlegging. It is just impossible to stop and search every vehicle traveling from North Carolina to New York, and our Constitution prohibits wholesale searches without probable cause. It is time to stop pretending that better law enforcement is a solution to the bootleg problems."[1] Other methods that are much more practical and much less costly are preferred to police action to end the bootlegging problem.

Table 1. STATE CIGARETTE TAX RATES, 1970-1977
(During fiscal years ending June 30)

State	1970	1971	1972	1973	1974	1975	1976	1977**
Ala.	12¢	12¢	12¢	12¢	12¢	12¢	12¢	12¢
Alaska	8	8	8	8	8	8	8	8
Ariz.	10	10	10	10	10	13	13	13
Ark.	12.25	17.75*	17.75	17.75	17.75	17.75	17.75	17.75
Calif.	10	10	10	10	10	10	10	10
Colo.	5	5	5	5	10	10	10	10
Conn.	16	16	21*	21	21	21	21	21
Del.	11	11	14*	14	14	14	14	14
D.C.	4*	4	4	6*	6	6	10*	13
Fla.	15	15	17	17	17	17	17	17
Ga.	8	12*	12	12	12	12	12	12
Hawaii	8	9†	10†	10†	10†	10†	10†	11†
Idaho	7	7	7	9.1	9.1	9.1	9.1	9.1
Ill.	12*	12	12	12	12	12	12	12
Ind.	6	6	6	6	6	6	6	6
Iowa	10	13*	13	13	13	13	13	13
Kan.	8	11	11	11	11	11	11	11
Ky.	2.5	3	3	3	3	3	3	3
La.	8	11*	11	11	11	11	11	11
Maine	12	12	14	14	14	16	16	16
Md.	6	6	6	6	6	10*	10	10
Mass.	12	16*	16	16	16	16	21	21
Mich.	11*	11	11	11	11	11	11	11
Minn.	13	13	18*	18	18	18	18	18
Miss.	9	9	9	9	11	11	11	11
Mo.	9*	9	9	9	9	9	9	9
Mont.	8	12*	12	12	12	12	12	12
Neb.	8	13*	13	13	13	13	13	13
Nev.	10	10	10	10	10	10	10	10
N.H.	7	8.5†	11*†	11†	11†	11†	12	12
N.J.	14	14	19*	19	19	19	19	19
N.M.	12	12	12	12	12	12	12	12
N.Y.	12	12	15*	15	15	15	15	15
N.C.	2*	2	2	2	2	2	2	2
N.D.	11	11	11	11	11	11	11	11
Ohio	10*	10	15*	15	15	15	15	15
Okla.	13	13	13	13	13	13	13	13
Ore.	4	4	9*	9	9	9	9	9
Pa.	18*	18	18	18	18	18	18	18
R.I.	13	13	13	13	13	18*	18	18
S.C.	6	6	6	6	6	6	6	6
S.D.	12	12	12	12	12	12	12	12
Tenn.	13	13	13	13	13	13	13	13
Tex.	15.5*	15.5	18.5	18.5	18.5	18.5	18.5	18.5
Utah	8	8	8	8	8	8	8	8
Vt.	12	12	12	12	12	12	12	12
Va.	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Wash	11	16*	16	16	16	16	16	16
W.Va.	7	12	12	12	12	12	12	12
Wisc.	14*	14	16*	16	16	16	16	16
Wyo.	8	8	8	8	8	8	8	8

Source:

*Indicates that the rate change shown became effective after the beginning of the fiscal year.

**For rates as of November 1, 1977 see Table 6.

†Hawaii tax is 40% of wholesale price. New Hampshire tax was 42% of retail price until July [illegible], 1975

Recently, the State of Pennsylvania has offered a reward for any information relating to any person running bootleg cigarettes.[2] Pennsylvania has a high tax rate - eighteen cents.[3] Pennsylvania Governor Milton J. Shapp estimated his own state's loss at $35 to $40 million a year.[4] No doubt it was this sizeable tax loss that prompted him to offer a reward as one solution. However, the reward method of solving the bootlegging problem is a weak one. Assuming that organized crime may be a major participant in the bootleg operation,[5] the reward method loses its effectiveness because of the danger involved in being an informant.

The most efficient way to end cigarette bootlegging is to remove the economic incentive by providing for a uniform tax on cigarettes. Representative Ned Pattison of New York has proposed that the retail price of cigarettes be made equal in all states. He feels this can be done by raising all state taxes to twenty-three cents equal to the highest present state and local tax combination.[6] Both Governor Milton Shapp and James H. Tully, Jr., New York's commissioner of taxation and finance, agree that a tax equalization law would quickly eliminate cigarette bootlegging by removing the profit potential.[7]

Representative Pattison's proposal is basically a simple one.

> "Specifically, the bill would increase the federal tax on cigarettes to 31 cents, a sum equivalent to the current federal tax of eight cents, plus the highest state and local tax of 23 cents. This additional federal tax would then be rebated to the states in proportion to their cigarette consumption. Consequently, under the plan no state would be made worse off and many states would have large revenue gains."[8]

Before this proposal can be evaluated, information is needed on the magnitude of cigarette bootlegging. A second question is whether the Pattison Proposal is an economically feasible way to combat the bootlegging problem. Thirdly, what would be the total revenue effects on the states. And last, the question arises as to the effect the proposal would have on tobacco producers and cigarette consumers.

TABLE 2.

STATE	1977 ACTUAL TAX-PAID SALES (PER CAPITA)	1977 PREDICTED CONS. (PER CAP.)	DIFFERENCE (PACKS PER CAPITA)	POPULATION (MILLIONS)	TOTAL TAX PAID SALES (MIL. OF PACKS)	TOTAL PRED. CONS. (MIL. OF PACKS)	TOTAL VOLUME DIFF. (MIL. OF PKS)	STATE TAX RATE	TAX REV. GAINED (LOST) BY BOOTLEGGING (MIL. OF DOLLARS)
N.C.	217.0	159.5	57.5	5.5	1186.5	877.2	316.25	.02	6.325
KY.	229.4	159.0	70.4	3.4	786.3	540.6	241.30	.03	7.239
VA.	157.7	154.0	3.7	5.0	793.7	770.0	13.37	.025	4.469
CONN.	117.3	118.0	-.7	3.1	365.7	365.8	-2.18	.21	(.458)
MASS.	118.9	119.0	-.1	5.8	690.5	691.1	-.60	.21	(.126)
N.J.	122.8	120.0	2.8 a*	7.3	901.0	876.0	7.337	.19	1.294
N.Y.	124.0	125.5	-1.5	18.1	2268.7	2271.55	-27.00	.15	(4.05)

Revised table

SOURCE: SAME

a* SAME

To study the effect of proposals such as the Pattison plan we must first estimate the volume of bootlegging. A valid method of estimating this volume is to estimate a national demand curve for cigarettes and then compare actual per capita sales figures by states with state sales that would be anticipated at various prices on the national schedule.

The first step in arriving at a national demand curve was to estimate demand elasticity. We compiled an average of the elasticities from twelve recent studies of cigarette demand[9] and found the average of the various estimates to be -.67. There was no reason to expect that the national demand elasticity would be any different from that of any individual state. The 1977 national average retail price per pack and the number of packs consumed per capita,[10] establishes one coordinate on the national demand schedule. By assuming a constant elasticity, the national demand curve may be constructed (Figure 1).

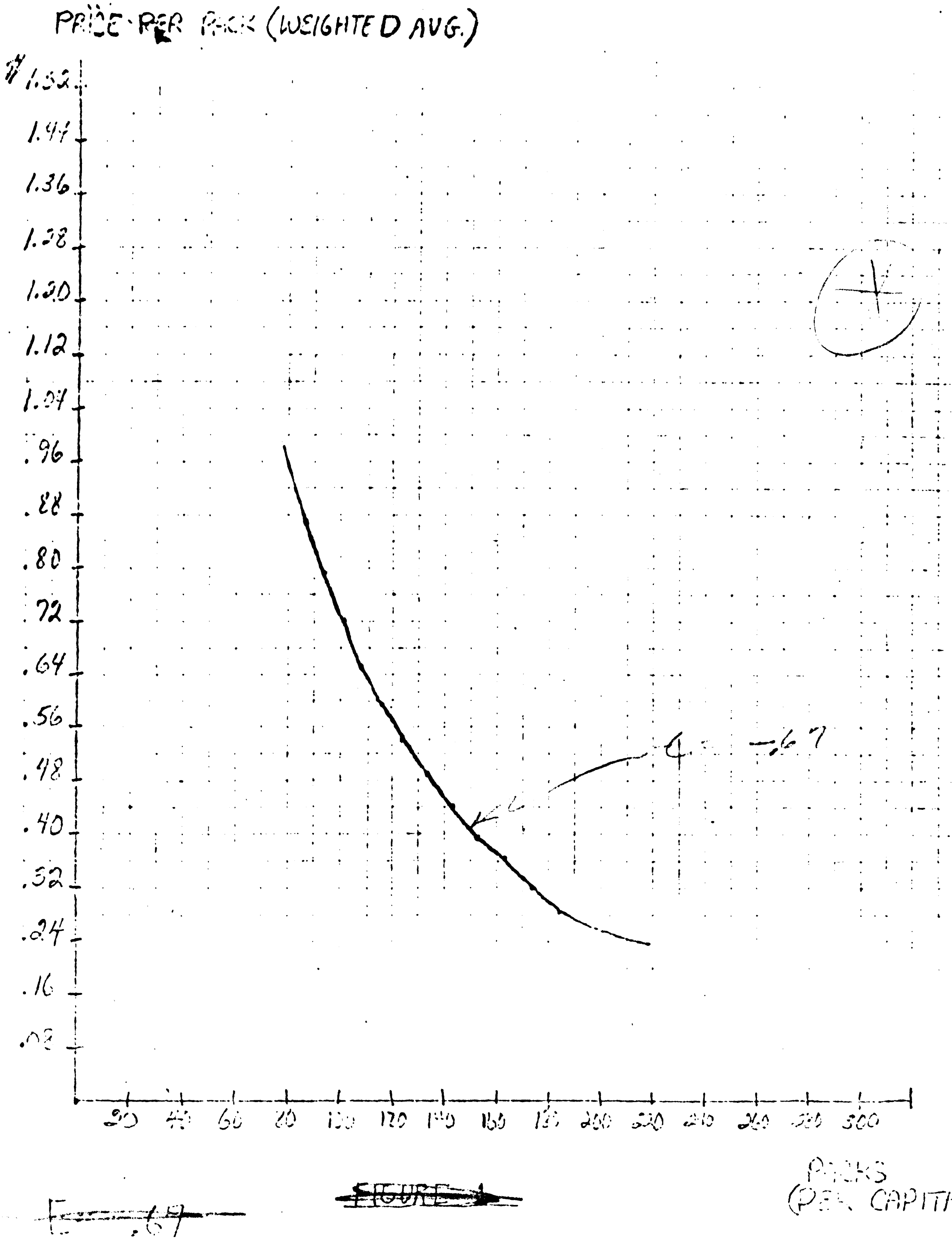
The average retail price per pack in 1977 was 36.6¢ in North Carolina and 53.8¢ in New York.[11] By using the national demand curve, 159.5 packs of cigarettes per capita were expected to be sold for consumption in North Carolina at the 36.6¢ average retail price (Figure 2). Also seen in Figure 2, the actual tax paid sales in North Carolina for 1977 was 217 packs (per capita).[12] On the other hand, 125.5 packs of cigarettes per capita were expected to be sold in New York by using the national demand curve at a 53.8¢ average retail price (Figure 3). The actual tax-paid sales in New York for 1977 was 124 packs per capita.[13] The remainder of the states used as examples are combined in Table 2, which is made up of data obtained from using the same procedure that was explained for North Carolina and New York.

The combined data from Figures 1, 2, and 3 and Table 2 can be used to prove the existence of a bootleg cigarette operation. North Carolina, a low cigarette tax state, sells many more cigarettes per capita than could be expected.

Figure 1.

CIGARETTE DEMAND

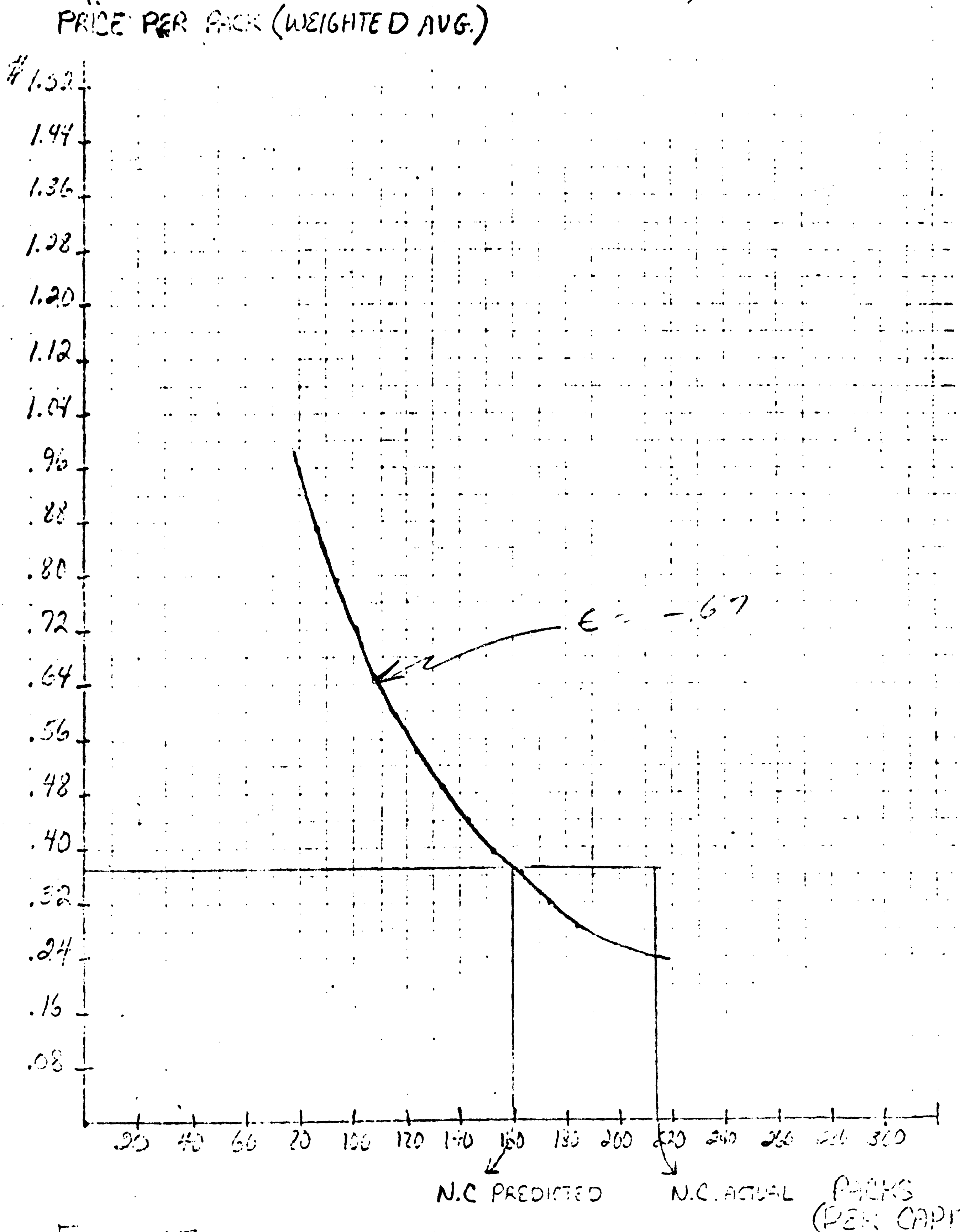
~~FOR~~ UNITED STATES, 197?.



~~FIGURE~~

.67

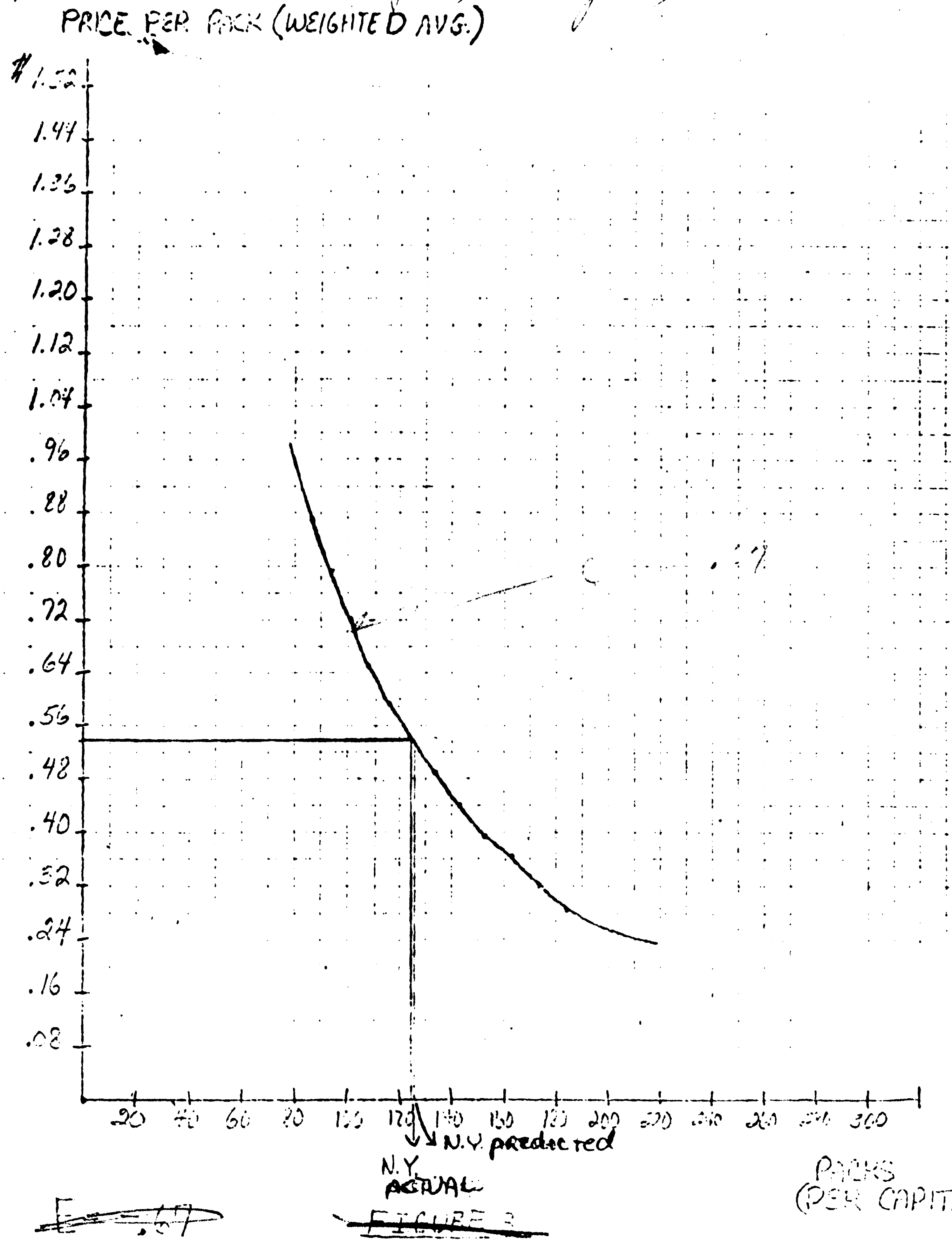
~~FOR UNITED STATES~~
North Carolina, 1977.



~~FIGURE 2~~

Figure 5.

CIGARETTE ~~DEMAND~~
FOR UNITED STATES



By our estimate, 57.5 additional packs of cigarettes per capita were sold in North Carolina during 1977 than were expected to be consumed in the state. Thus, the estimated volume of bootleg cigarettes going out of North Carolina during 1977 was 57.5 packs of cigarettes per capita. New York, a high cigarette tax state, sells 1.5 packs per capita fewer cigarettes than would be expected. In other word the estimated volume of bootlegging in New York during 1977 was 1.5 packs of cigarettes per capita. By using New York and North Carolina as examples, the incentive of bootlegging operation is illustrated. Bootleggers use North Carolina as a net export state and New York as a net import state for bootleg cigarettes.

When the data is changed to a total population basis, the gain in packs sold in North Carolina (population of 5.5 million)[14] is 316.27 million packs while the loss in packs sold in New York (population of 18 million)[15] is 27 million packs. This amounts to a gain of $6,324,800 in tax revenue for North Carolina (based on $.02/pack state tax)[16] and a loss of $4,050,000 in tax revenue for New York (based on $.15/pack state tax).[17]

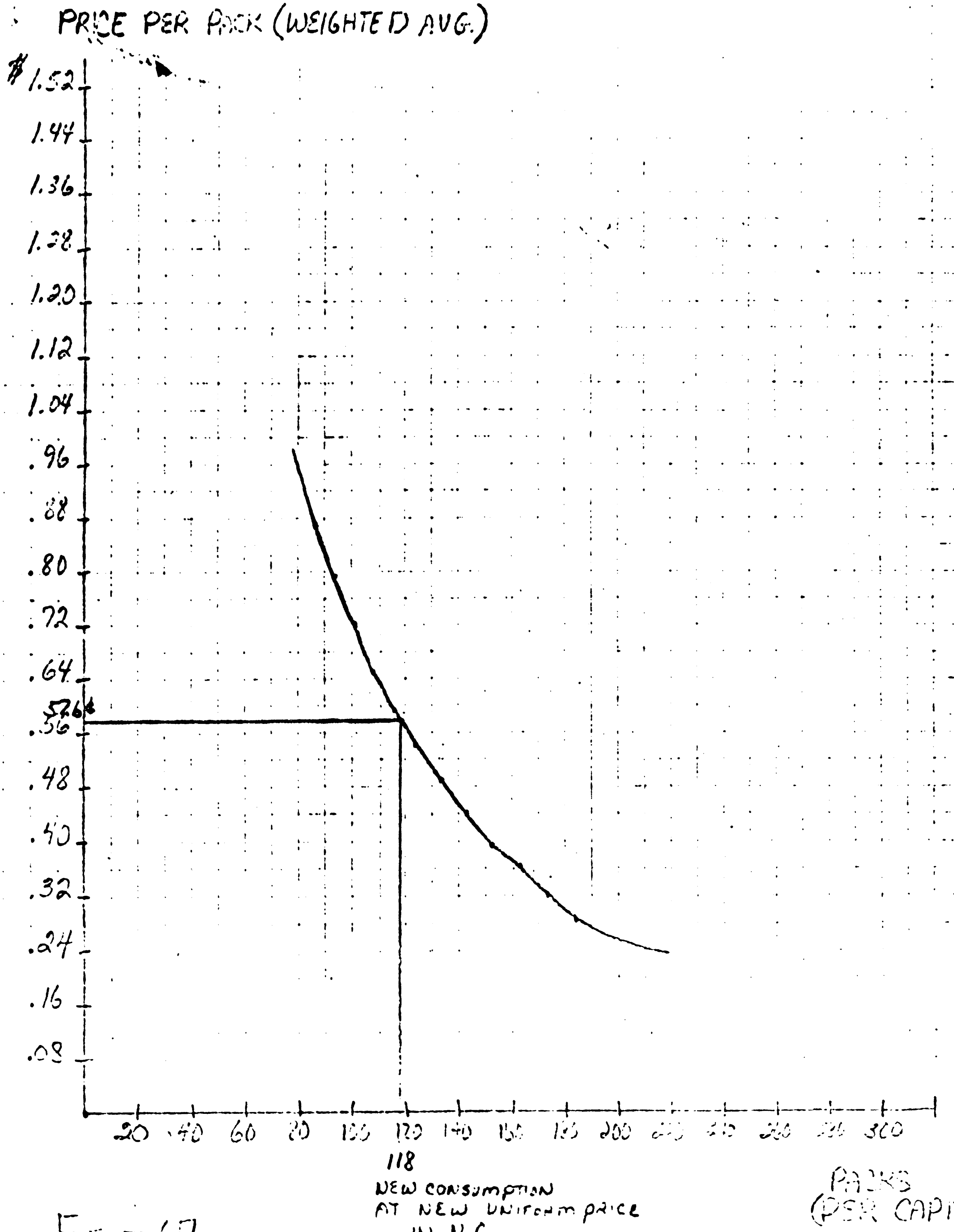
A solution to the bootleg cigarette operation is desirable. The most efficient method of stopping the bootleg cigarette operation would be to impose a uniform cigarette tax across the nation. This method takes away any economic incentive to bootleg cigarettes. The Pattison Proposal offers one alternative for imposing a nationally uniform cigarette tax.

We must also recognize that a higher uniform cigarette tax will affect sales in the present low tax states. To find the effects of the Pattison Proposa on cigarette sales in North Carolina, the price of North Carolina cigarettes must be raised to the proposed level on the national demand curve in Figure 1. The price of cigarettes in North Carolina after implementation of the Pattison Propos would be 57.6¢ (based on the 36.6¢ current average retail price plus the addition equalizing tax).[1/]

1/

36.6¢	North Carolina Average Retail Price (1977)
- 2.0¢	North Carolina State Tax (1977)
34.6¢	
- 8.0¢	Federal Tax (1977)
26.6¢	Base Price for Cigarettes
+31.0¢	Amount of Tax from Pattison Proposal
57.6¢	Adjusted Price of Cigarettes

FOR UNITED STATES



E = -.67

FIGURE 4

By using the national demand curve from Figure 1, the predicted consumption in North Carolina at the New Price would be 118 packs of cigarettes per capita (see Figure 4). This change results in an annual decrease of 41.5 packs per capita. Based on a population of 5.5 million,[18] the total real decrease (adjusted for the loss in bootlegging effects) in sales is 228,250,000 packs of cigarettes.

This decrease in sales in North Carolina as an example is evidence that the Pattison Proposal can cause a decrease in sales in any state that must raise the price of their cigarettes, assuming constant demand. An important point to recognize is that the Pattison Proposal would cause a price rise in every state but the highest tax one. Therefore, total present U. S. cigarette consumption of 133.6 pks p/cap would surely fall, given constant demand. We estimate the new national consumption to be 116 pks per cap. resulting in a loss of federal tax revenue of $3,021,446.

Assuming an inelastic supply, this decrease in consumption would cause excess supply of cigarettes in the short-run and with no changes in present quotas the tobacco farmer will experience a loss in net revenue due to this excess supply. Luther Tweeten has set up a model showing the effects of excess supply on net farm income under free market conditions.[19] Using this procedure and with an intermediate run price elasticity of demand of -.67, if costs remain unchanged, each 1 per cent increase in farm output released on the market depresses prices 1.5 percent and gross receipts 0.5 percent. More likely, the tobacco program would reduce quotas to attempt to reduce production in line with lower market requirements.

The total revenue effects of the Pattison Proposal in selected states are shown in Table 3. If the tax revenue gains in the tobacco producing states (see Table 3) are used to compensate tobacco producers for the decrease in sales, then this inequity could be eliminated.

TOTAL 3. Total Revenue Effects Of The Pattison Proposal For Selected States

STATE	1977 TOTAL TAX REV. From Cigarette Sales (Thousands of Dollars)*	ESTIMATED TOTAL TAX REVENUE From Cigarette Sales Under Pattison Formula (Thsds. of Dollars)	TOTAL GAIN (LOSS) OF TAX REVENUE (Thsds. of Dollars)
N. C.	23,730	149,270	125,540
KY.	23,588	94,622	71,034
VA.	19,841	133,975	114,134
CONN.	76,803	80,569	3,766
MASS.	145,006	156,078	11,072
N.J.	171,187	193,924.5	22,737.5
N.Y.	340,307	484,989.5	144,682.5

*Source - <u>Tax Burden on Tobacco</u>, Tobacco Tax Council, Richmond, Va., Vol. 12, 1977.

NOTE: ADMINISTRATION COSTS ARE IGNORED.

The other group to consider is the cigarette consumers themselves, who will be faced with a retail price rise in every state but one. There is no way to alleviate this problem under the Pattison Proposal.

Our economic analysis of the Pattison Proposal leads us to accept all parts of the hypothesis stated in the introduction of this paper. By computing a national demand curve for cigarettes, we showed that a bootleg problem does exist, and by removing the price difference (as in the Pattison Proposal), the problem could be eliminated. From the same demand curve, we also showed that there would be a decrease in total U. S. consumption under this proposal. By following Tweeten's model, we showed that net receipts to tobacco producers would decline if they are not compensated from the gains in tax revenues in the tobacco producing states. Finally, cigarette consumers would be adversely affected by the retail price rise.

[1]Representative Ned Pattison, "Uniform cigarette tax would only hurt mobsters," The News and Observer, 12 February 1978, p. 5, col. 1.

[2]John Powell, "Pennsylvania advertises in North Carolina for bootleg tips," The News and Observer, 27 February 1978, p. t, col. 1.

[3]Tobacco Tax Council, Inc., The Tax Burden on Tobacco, Richmond, Virginia, Volume 12, 1977, p. 12.

[4]Bill Connelly, "Tough Smuggling Laws Advocated," Winston Salem Journal, 1 March 1978, p. 1, column 5.

[5]Pattison, p. 5.

[6]Ibid.

[7]Connelly, p. 1.

[8]Pattison, p. 5.

[9]Teresa Fang, Paul R. Johnson, and Charles R. Pugh, Unpublished abstract of demand studies, 1978.

[10]Tobacco Tax Council, Inc., pp. 24, 144-145.

[11]Tobacco Tax Council, Inc., pp. 144-145.

[12]Tobacco Tax Council, Inc., p. 24.

[13]Ibid.

[14]Tobacco Tax Council, Inc., p. 145.

[15]Tobacco Tax Council, Inc., p. 144.

[16]Tobacco Tax Council, Inc., p. 12.

[17]Ibid.

[18]Tobacco Tax Council, Inc., p. 145.

[19]Luther Tweeten, Foundations of Farm Policy (Lincoln, University of Nebraska Press, 1970), p. 325.

[20]Ibid.

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