A METHOD FOR DEVELOPING ARMY RECRUITING BUDGETS

BY

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Properly sized recruiting budgets have a significant impact on the Army's ability to penetrate the high-school-diploma-graduate-male market. Since the early years of the all-volunteer force, the Army has concentrated recruiting efforts on these individuals because experience has revealed that the diploma graduate completes his enlistment at a rate two times that of the non-high-school graduate. During the late seventies, although recruiting budgets were relatively constant, high-school-diploma-graduate-male enlistments declined.

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This decline of enlistments was caused by changes in the youth attitude toward joining the Army but was not offset by corresponding increases in recruiting budgets. These budgets can be accurately estimated using an exponential-forecasting-curve technique based on the relationship between recruiting budget levels (resources the Army requires to influence the market), a measure of youth attitudes (how the youth population feels about joining the Army), and high-school-diploma-graduate-male enlistments.

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AN INDIVIDUAL STUDY PROJECT

by

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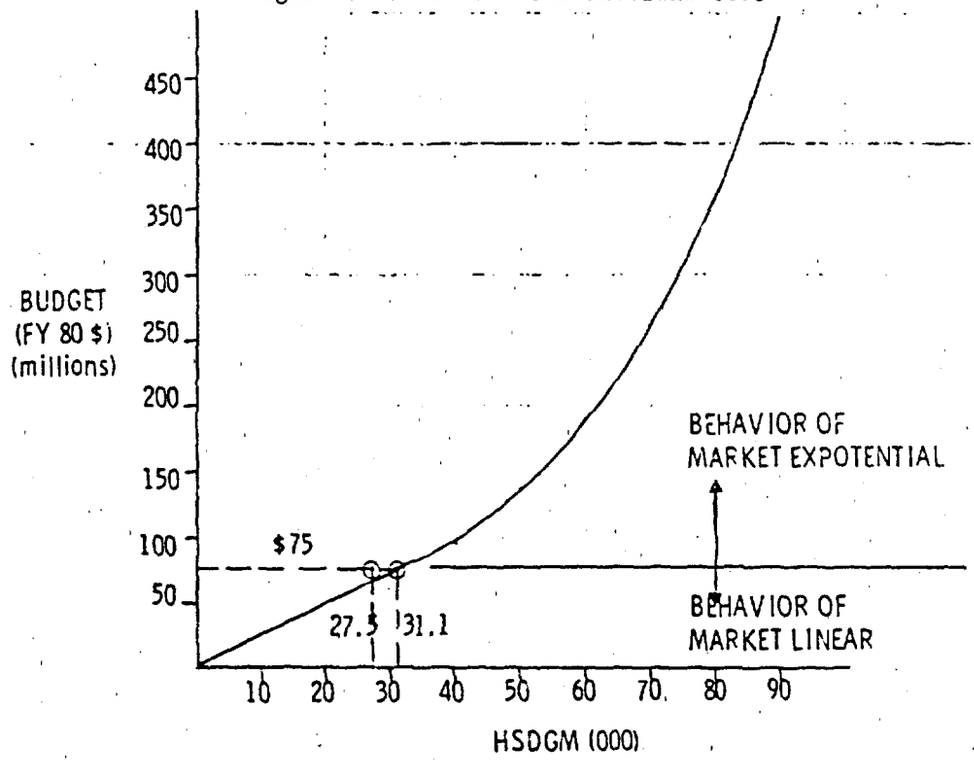
CHAPTER I

INTRODUCTION

The early seventies marked the end of the draft era and the beginning of the all-volunteer Army. This was a time of vast learning experiences in terms of definition of the recruiting market and the resources required to penetrate that market. The recruiting market consisted primarily of 17-to-21-year-old males, who were further divided into two major categories: high-school-diploma-graduate males (HSDGM) and non-high-school-graduate males (NHSGM). Early experiences revealed that the diploma graduate completed his enlistment at a rate two times that of the non-high-school graduate. Therefore, the Army focused its efforts on recruiting the former group.

The early years (Fiscal Years 1974-1977) can be characterized as successful. In general, the Army recruited a sufficient number of volunteers to man the force. During this same period recruiting budgets declined, but the high-school-diploma-graduate-male enlistments remained relatively constant. Fiscal Years 1978-1980 can be characterized as a failure in terms of sufficient enlistments of high-school-diploma graduates. Although recruiting budgets

Figure 6: FY 1978 - The Baseline Year



exponential) and the comparison of the Army and Marine Corps in that market. In FY 1978 the Marine Corps budget, expressed in FY 1980 constant dollars, was $75 million (2). With that budget they enlisted 27,500 HSDGM (4). The propensity for the Marine Corps in FY 1978 was 8.3%; this is compared to the Army's 9.4%. Expressed in another way, the youth attitude of HSDGM was 1.13 times greater in favor of joining the Army. Therefore, had the Army's budget been the same as that of the Marine Corps, The Army should have enlisted 31,100 HSDGM. Thus, in the first iteration, the 31,100 HSDGM enlistments at a

CHAPTER II

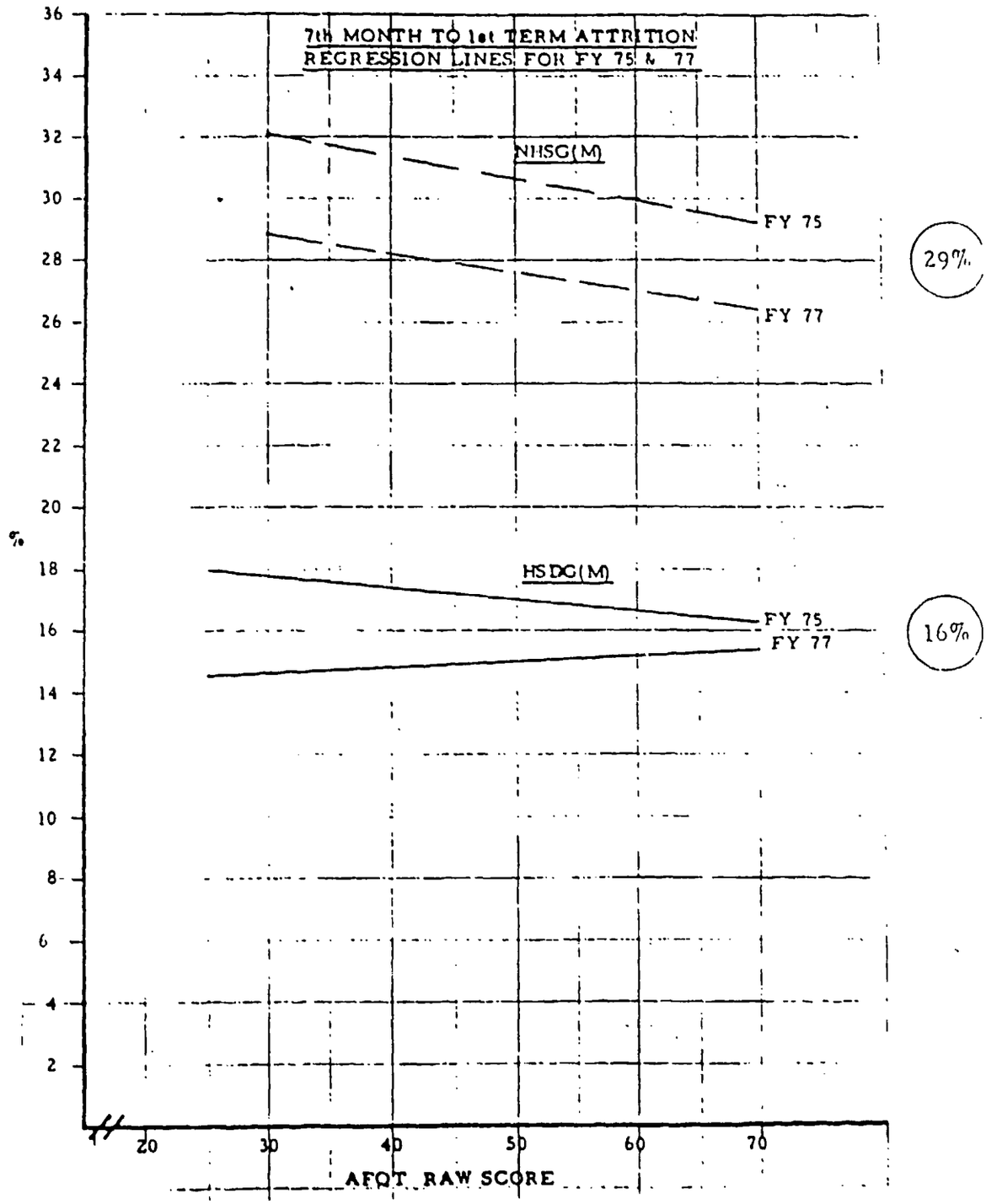
THE RECRUITING MARKET

The recruiting market consists of all 17-to-21-year-old males and females. From this population the Army currently divides its enlistments into four major categories: high-school-diploma-graduate males (HSDGM), non-high-school-graduate males (NHSGM), high-school-diploma-graduate females (HSDGF), and prior service. The female and prior service enlistments represent a small portion of the total enlistments; therefore, the focus of effort has been on the high-school-graduate male and non-high-school-graduate male.

ATTRITION

The focus of the Army's effort can be further explained by examining the ability of high-school-graduate males and non-high-school-graduate males to complete their first term of enlistment. Figure 1 shows attrition trend lines for high-school graduates and non-high-school graduates in Fiscal Years 1975 and 1977. These trend lines show a comparison between the percent of attrition (those who did not complete their first term of enlistment) and the Armed Forces Qualification Test (AFQT) score. On the average, the high-school-graduate male attrition rate was 16% and non-high-school-graduate attrition rate was 29%. These trends have been consistent throughout the

Figure 1: Attrition Trend Lines for HSDG1 and NHSG1-FY 1975 and FY 1977 (Data from 7)

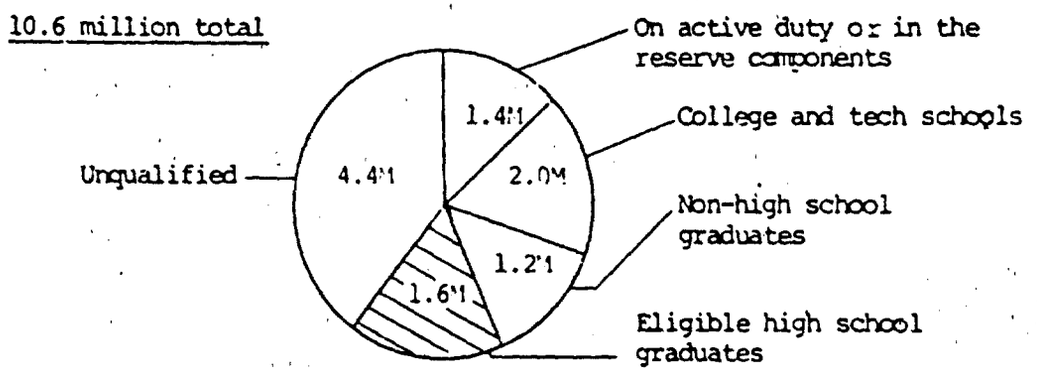


volunteer force era. Therefore, the Army focused its effort on what was considered the "prime market": the high school diploma graduate male.

THE SIZE OF THE MARKET

The size of the market is an important consideration in evaluating the Army's ability to recruit a sufficient number of high-school-diploma graduates to man the force. Figure 2 shows

Figure 2: Size of the 17-to-21-year-old Male Market (11:II-30)



the approximate size of the 17-to-21-year-old male market. In any given year there are approximately 10.6 million males available. This total is broken down into categories as shown: 4.4 million are physically or mentally unqualified, 1.4 million are on active duty or in the reserve components, 2.0 million are in colleges or tech schools, and 1.2 million are non-high-school graduates. The remaining 1.6 million are those high-school graduates that make up the "prime market." Considering

recruiting objectives over the past several years, Department of Defense requires approximately two out of every ten of these high-school-graduate males.

CHAPTER III

THE PROBLEM IN BUDGETING

During the early years of the all-volunteer Army, there were sufficient recruiting resources to man the force at required levels (see Table I). During the period FY 1975 to

Table I: Army Recruiting Resources and High-School-Diploma-Graduate-Male Enlistments (data from 2 and 4)

	FY75	FY76	FY77	FY78	FY79	FY80
Recruiting Resources(FY80 constant $ in millions)	320	292	235	236	252	294
HSDGM (000)	93	91	86	75	66	67

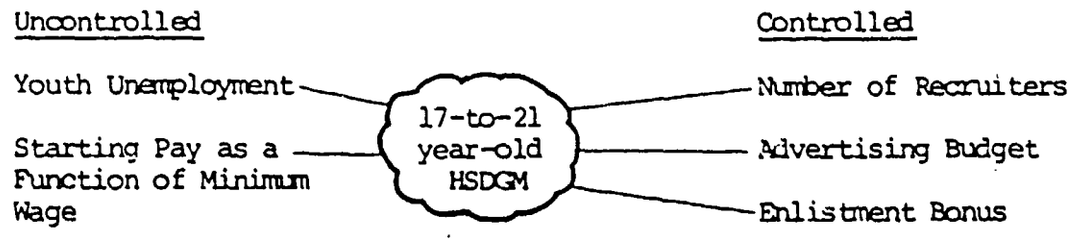
NOTE: See Appendix 1 for detailed Recruiting Resources.

FY 1977, recruiting budgets and HSDGM enlistments declined. The recruiting budget leveled off in 1978, but HSDGM enlistments continued to decline. FY 1979 marks the beginning of budget increases; however, HSDGM enlistments continued to decline until a substantial budget increase in FY 1980 resulted in a slight increase of HSDGM enlistments. These trends suggest that other influences besides the Army budget caused the erosion of HSDGM enlistments.

INFLUENCES ON ARMY HSDGM ENLISTMENTS

There are several strong influences that affect the Army's ability to recruit HSDGM (see Figure 3). Some of these

Figure 3: Influences on HSDGM Enlistments



influences cannot be controlled by the Army: for example, youth unemployment and starting pay as a function of the minimum wage. Other influences that are budget oriented can be controlled, such as the number of recruiters, the advertising budget, and the enlistment bonus. Through the use of linear-regression analysis, it can be shown that all of these influences have a direct correlation to HSDGM production. For those who wish to analyze this further, these regression equations are contained in Appendix 2.

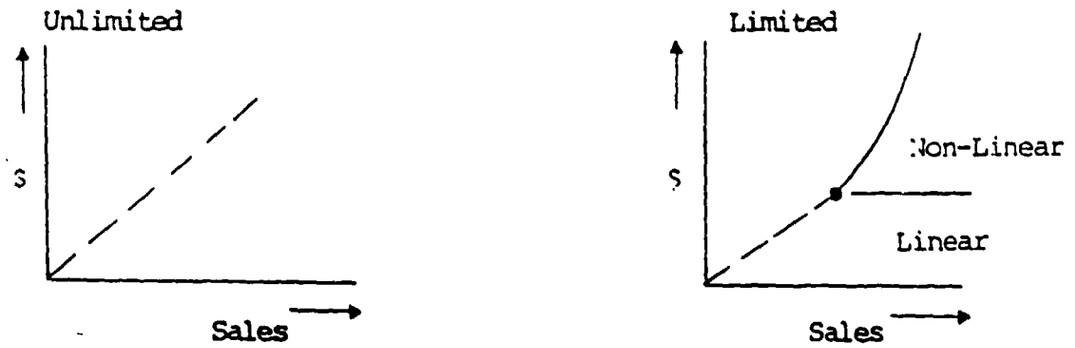
Beginning in FY 1977, we developed multiple-linear-regression models using these influences as variables. This type of modeling technique attempts to establish relationships between all the variables and to assign them weighted factors. Our predictions using this modeling technique were always

higher than the number of HSDGM actually enlisted. Or, to put it another way, we over estimated the impact our budget would have on the market. These inaccurate forecasts were a result of our failure to recognize that a linear model was not the proper technique.

LIMITED AND UNLIMITED MARKETS

These inaccurate forecasts can be further understood through a simple explanation of market behavior. Figure 4 shows two types of markets: limited and unlimited. Unlimited

Figure 4: Limited and Unlimited Markets

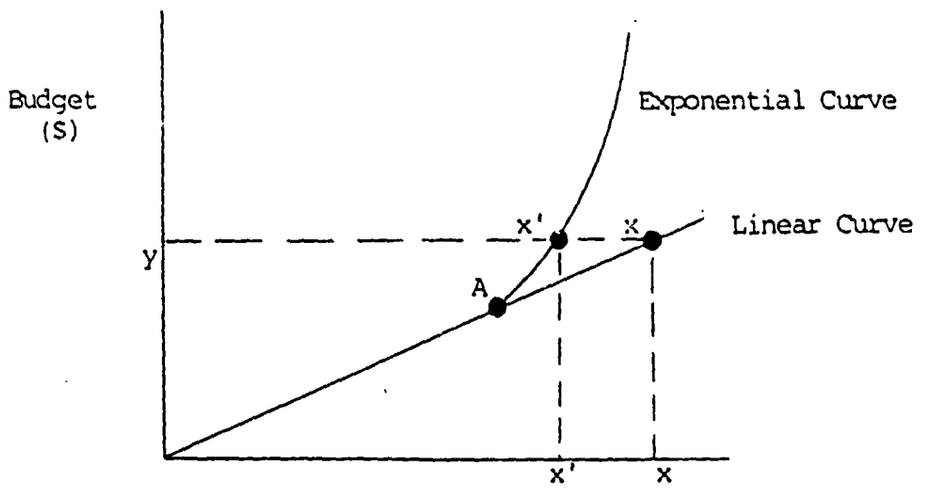


markets are characterized by greater demand for products than can be produced. For example, assume that one cobbler is the sole producer of shoes for a population of 100,000. At a given unit price, the cobbler could sell all the shoes he could produce. The limited market, on the other hand, is more complex because it has both linear and non-linear characteristics. That is, when demand is high and production

is low, the relationship between costs and sales is linear, as was the case in an unlimited market. This normally occurs in the early stages of penetrating a market. However, as demand decreases and production remains constant, the relationship between costs and sales begins to climb at a non-linear or exponential rate. This occurs when deep penetration of the market has been made.

This limited market condition existed for the Army in the late seventies. We were using linear-forecasting techniques, as previously discussed, in a non-linear market. Figure 5

Figure 5: Limited Market



HSDGM

demonstrates why our estimates of HSDGM were high. Point A represents that point in penetrating the market where the enlistment of HSDGM shifts from a linear to an exponential curve in relation to the budget. At a given budget figure

(point y), the estimate of HSDGM enlistments (point x) using the linear line is higher than the estimate of HSDGM enlistments (point x') using the exponential curve. In this manner we over-estimated the impact of our budget on producing the desired HSDGM enlistments.

CHAPTER IV

DEVELOPMENT OF THE BUDGETING TECHNIQUE

The initial effort in developing a budgeting technique was based on two assumptions: that the Army was operating in a limited market and that we had penetrated that market to a depth where the relationship between budget and HSDGM enlistments was exponential. The first step is to establish the point where this market relationship becomes exponential.

DEFINING THE LINEAR MARKET

The establishment of a point where the market relationship becomes exponential can be done by trial and error. I will initially establish this point by comparing the Marine Corps, which has relatively low requirements for HSDGM (less than 30 thousand a year), and the Army, which has relatively high requirements for HSDGM (between 80 and 90 thousand a year). Since the Army has no experience at these lower enlistment levels, the purpose of this comparison is to estimate what HSDGM enlistments the Army could obtain in the lower or linear spectrum of the market.

This comparison of Army and Marine Corps enlistments can be made by considering the two services according to a common measure: propensity. Propensity is a measure of positive youth attitudes toward joining a military service. Surveys are taken

twice a year and published by the Department of Defense in the Youth Attitude Tracking Study. Propensity is a good overall measure of the market condition because it reflects how uncontrolled influences will affect recruiting. Specifically, propensity reflects youth attitudes that result from such things as unemployment and starting pay in the military compared to minimum wage. Finally, propensity reflects youth attitudes toward joining a specific military service. Propensity survey results for the Army are shown by fiscal year in Table II. The propensity rate for the Army beginning in

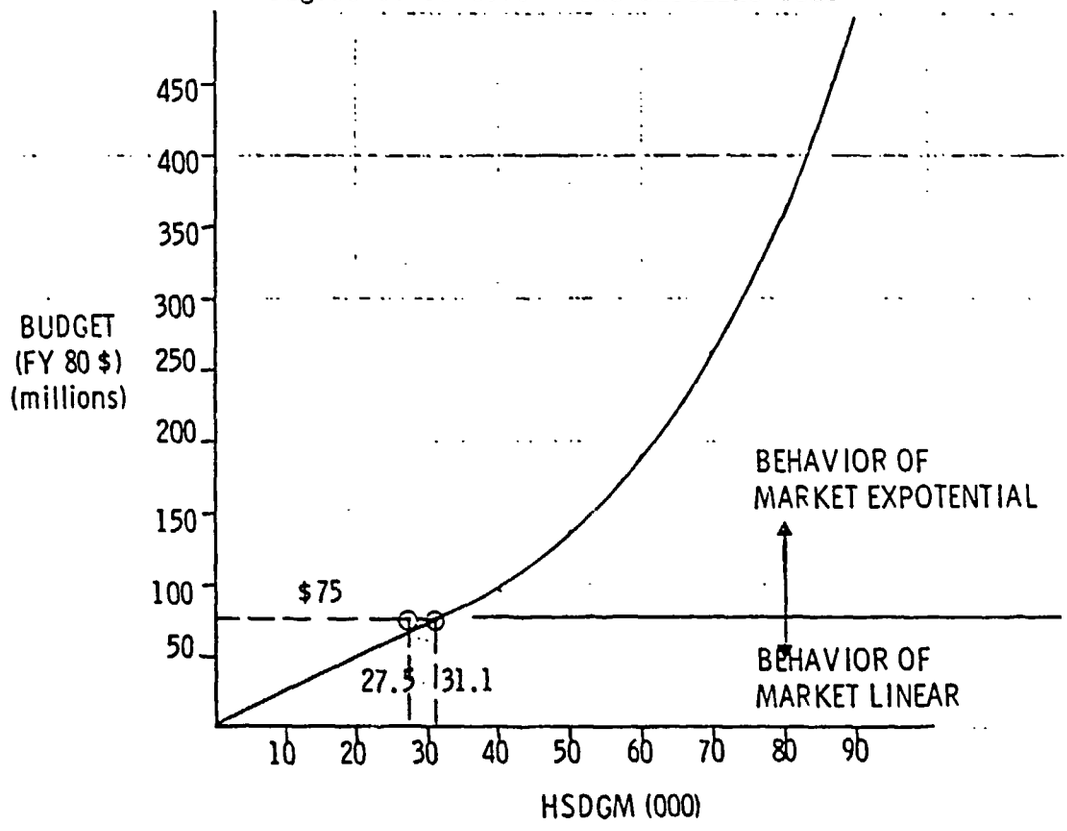
Table II: High-School-Graduate-Male (HSDGM)
Propensity(%) (2 and 6)

	FY77	FY78	FY79	FY80	FY81	FY82
Army Propensity(%)	11.2	9.4	7.5	7.5	9.3	9.7

FY 1977 was 11.2%. That is, it is estimated that 11.2% of the HSDGM population had a favorable attitude towards joining the Army in FY 1977. Propensity declined through FY 1979 and FY 1980 and then increased through FY 1982.

Fiscal Year 1978 will be used as the baseline year for comparing the Army and the Marine Corps. This was the first year the Army experienced severe problems in HSDGM enlistments, and the Marine Corps was experiencing similar difficulties. Figure 6 shows a limited market behavior (linear and

Figure 6: FY 1978 - The Baseline Year



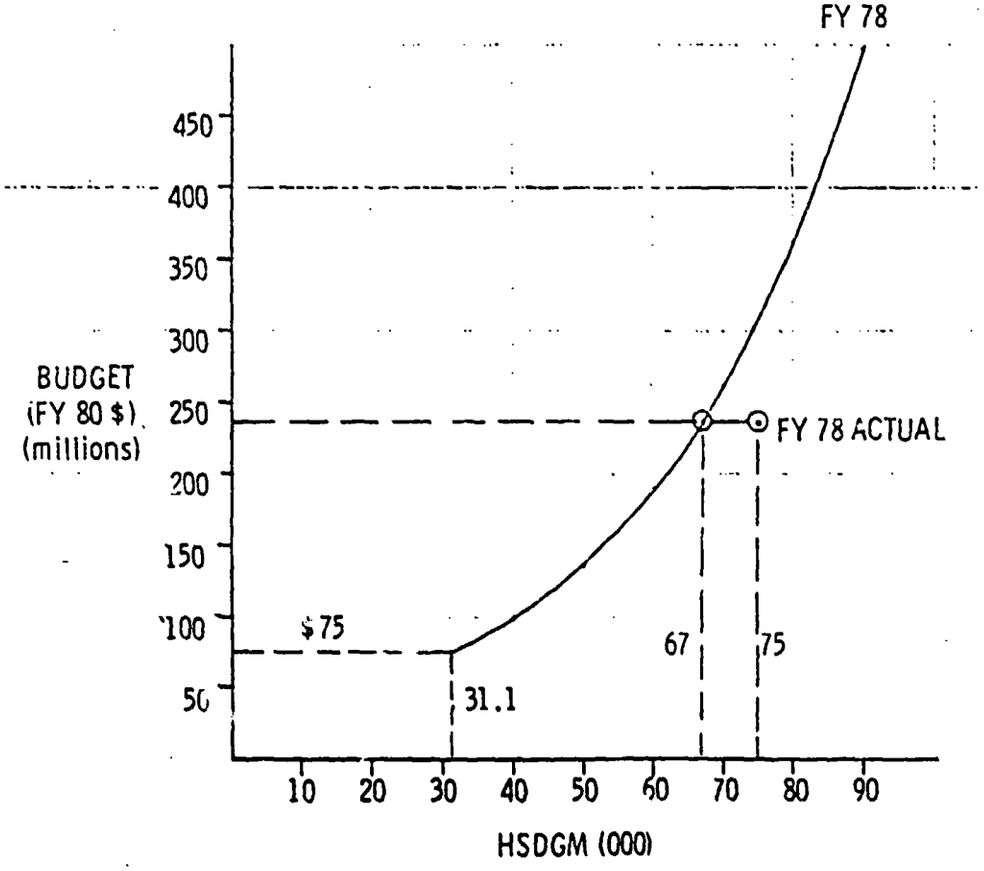
exponential) and the comparison of the Army and Marine Corps in that market. In FY 1978 the Marine Corps budget, expressed in FY 1980 constant dollars, was $75 million (2). With that budget they enlisted 27,500 HSDGM (4). The propensity for the Marine Corps in FY 1978 was 8.3%; this is compared to the Army's 9.4%. Expressed in another way, the youth attitude of HSDGM was 1.13 times greater in favor of joining the Army. Therefore, had the Army's budget been the same as that of the Marine Corps, The Army should have enlisted 31,100 HSDGM. Thus, in the first iteration, the 31,100 HSDGM enlistments at a

budget of $75 million represent the upper limit of the linear market, that is, the point at which the market relationship is assumed to be exponential.

DEVELOPING THE FY 1978 CURVE

From this linear baseline, the portion of the market assumed to be exponential can now be shown (see Figure 7).

Figure 7: FY 1978 Exponential Curve



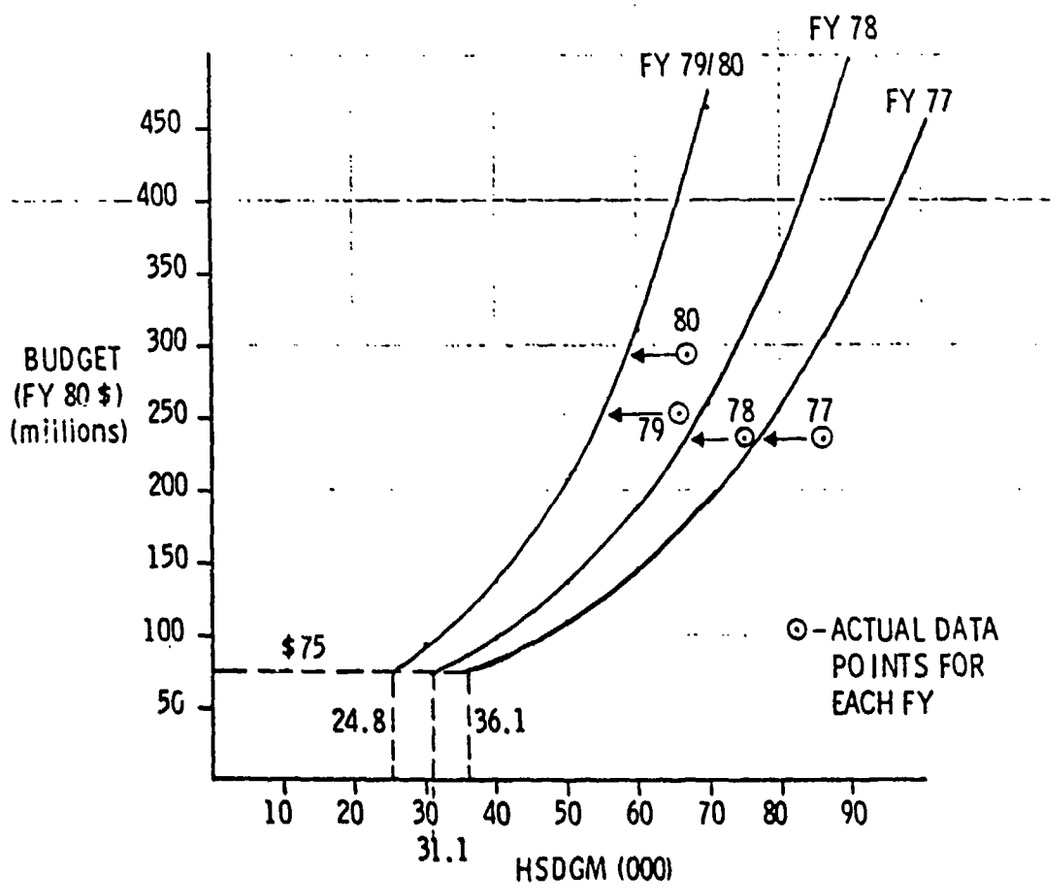
Note: the exponential-equation calculation is shown in Appendix 3. The Army budget for Fiscal Year 1978 was $236 million, and the Army enlisted 75,000 HSDGM. Using the theoretical curve,

we would have predicted that the Army would have enlisted 67,000 HSDGM at that budget level in FY 1978. This difference is sufficiently small to warrant development of curves for other years.

DEVELOPING CURVES FOR FISCAL YEARS 1977-1980

Using Fiscal Year 1978 as the baseline year, curves are drawn for the entire period FY 1977 through FY 1980 (see Figure 8). At the beginning of each exponential curve, an adjustment

Figure 8: Exponential Curves= Fiscal Years 1977-1980

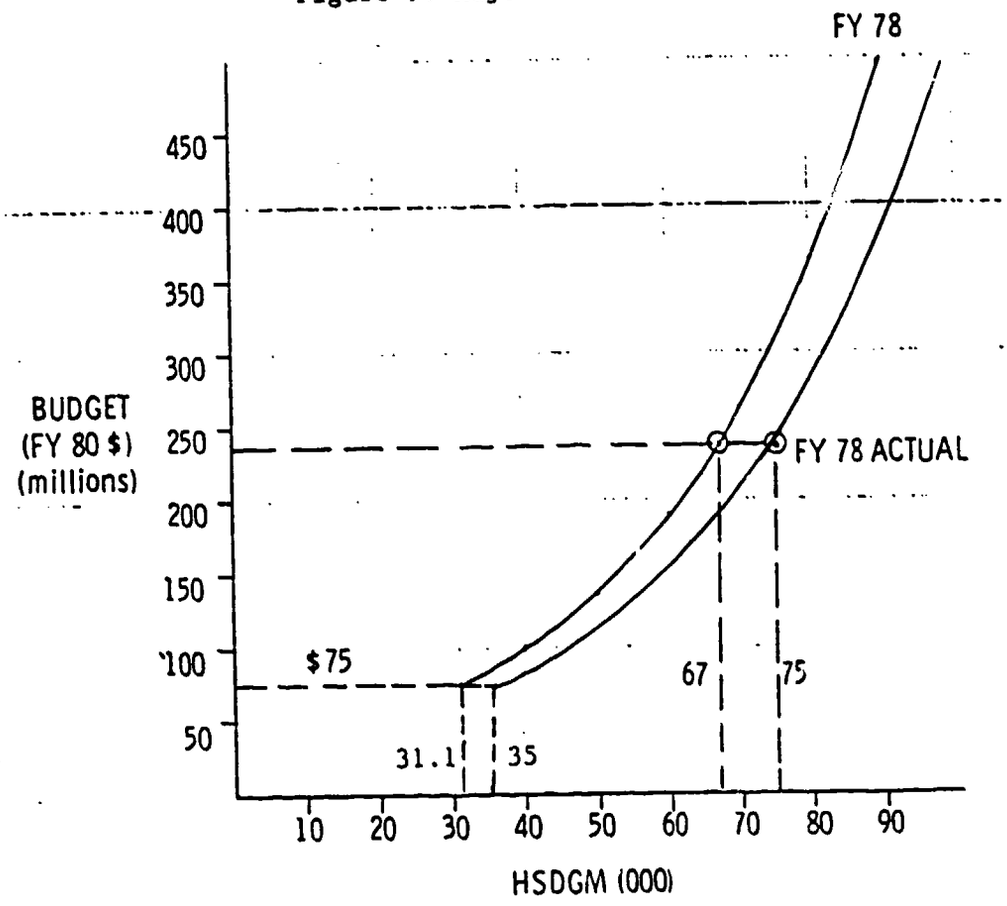


is first made for propensity shifts. For example, the propensity in FY 1978 (the baseline year) was 9.4% compared to 11.2% in FY 1977; or, in other words, the youth attitude was 1.16 times more favorable for the Army in FY 1977 than in FY 1978. Therefore, at the $75 million level, the Army would have enlisted 36,000 HSDGM in FY 1977. Since propensity declined in FY 1979 (in comparison to FY 1978), the resultant HSDGM at the $75 million level also declines to 24,800 HSDGM. FY 1979 and FY 1980 have the same propensity values; therefore, the curves are the same. The actual budget figures, expressed in FY 1980 constant dollars, and the HSDGM enlistments for each year are shown. Note that in every case the actual budget and HSDGM points fall to the right of the theoretical curve for that fiscal year. This consistent pattern suggests that the theoretical curves are valid but that the initial baseline established for FY 1978 was incorrect.

ADJUSTMENT OF FISCAL YEAR 1978 BASELINE

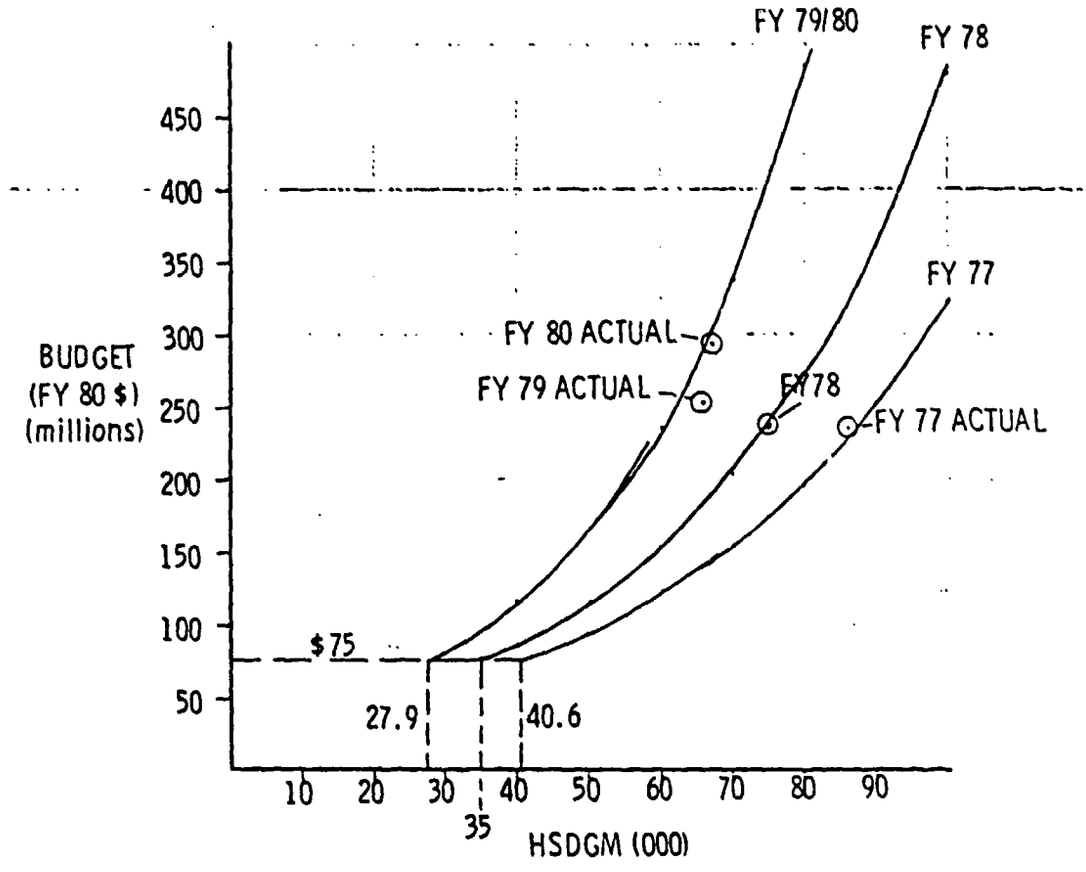
The next logical step is to adjust the FY 1978 baseline so that the exponential curve for that year coincides with the actual budget level and HSDGM enlistments. In other words, the 1978 baseline curve is shifted to the right, as shown in Figure 9, so that it coincides with actual FY 1978 HSDGM production. Note that the revised upper limit of the linear market is 35,000 HSDGM at the $75 million level.

Figure 9: Adjusted FY 1978 Baseline



The entire process of adjusting the fiscal years is then repeated. The results of this adjustment are shown in Figure 10. In every case, the actual budget and HSDGM enlistments are close to the corresponding exponential curve. The largest deviation occurs in FY 1979, where the predicted value from the FY 1979 theoretical curve (62,000) is 4,000 HSDGM less than the FY 1979 actual enlistments (66,000).

Figure 10: Adjusted Exponential Curves
For Fiscal Years 1977-1980



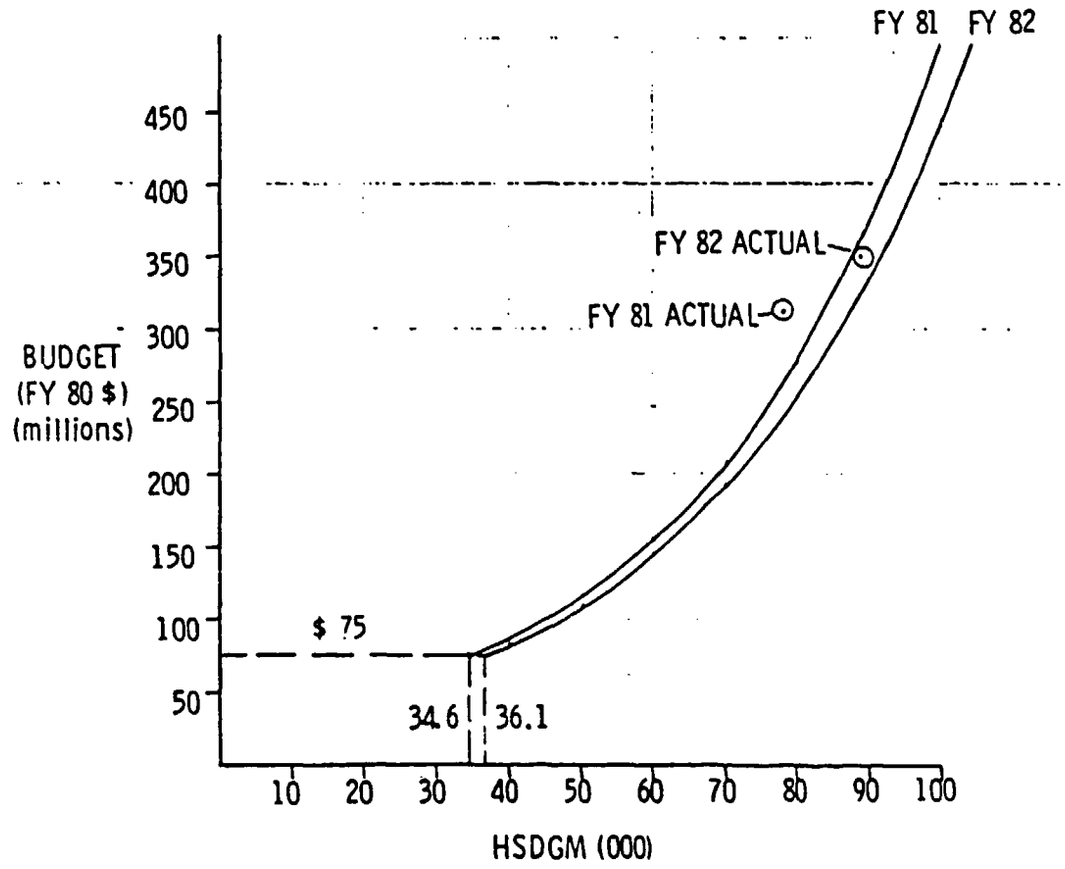
DEVELOPING THE FISCAL YEAR 1981 AND 1982 CURVES

The next step is to extend the analysis to include FY 1981 and FY 1982. This is an important check in this analysis because the Army received increased budgets in FY 1981 and 1982, and at the same time propensity increased. Therefore, the Army had more dollars with which to penetrate a market that had a more favorable attitude compared to Fiscal Years 1978 through 1980.

FY 1981 and 1982 budgets included substantial increases with which to modernize the management of the recruiting force. These initiatives included ADP upgrades, communications upgrade, and vehicle upgrades. In comparison to other parts of the recruiting budget (such as advertising, number of recruiters, and enlistment bonus), these modernization upgrades do not contribute directly to production of HSDGM. I have, therefore, reduced the FY 1981 and FY 1982 budgets by $47 million, the average increase in this type of cost over the earlier years. This makes the FY 1981 and 1982 budgets more comparable with the budgets of the earlier years.

The FY 1981 and FY 1982 curves are shown in Figure 11. Baseline adjustments for propensity are made from FY 1978, as was done with the other curves that have been developed. The FY 1981 budget ($311 million in FY 1980 dollars) and the FY 1982 budget ($350 million in FY 1980 dollars) are plotted with corresponding enlistments of HSDGM (Appendix 4 shows detailed budget data for both fiscal years). Although the budgets and propensity for these years are significantly higher than those in FY 1978 and FY 1979, the actual budget and HSDGM enlistments are close to the predicted values made from the theoretical curves. Using FY 1978 as the baseline year, I have thus developed theoretical exponential curves for five other years. The consistency of comparisons of actual data with the

Figure 11: Exponential Curves for
Fiscal Years 1981 and 1982



forecasts made from these curves shows a very strong non-linear relationship between propensity, the annual budget, and HSDGM enlistments.

CHAPTER V

TESTING THE THEORY-FISCAL YEARS 1983-1987

Fiscal Years 1983 through 1987 can now be used to test the exponential-curve theory. This time period is characterized by propensity shifts and significant budget increases when compared to previous years.

EXAMINING THE DATA

Propensity data from FY 1977 through 1987 is shown in Table III. Market Facts, Inc. administered the Army contract

Table III: Propensity FY 1977-1987

(expressed in %)

	77	78	79	80	81	82	83	84	85	86	87
Market Facts	11.2	9.4	7.5	7.5	9.3	9.7					
Research Triangle Institute	[15	16]	17.5	14.3	14.7	15.8	15.5				

for conducting the propensity surveys through 1932. In 1983, Triangle Research Institute was awarded the contract to continue these surveys. Note the significant increase in FY 1983 (17.5%) when compared to previous years. This increase was caused by the new contractor using a different method to calculate propensity to join the Army. However, Triangle Research Institute weighted previous data from 1981 and 1982

(shown as 15% and 16%, respectively); thus, providing a method by which to compare old and new propensity figures. The weighted propensity figures for FY 1983 through 1987 are shown in Table IV.

Table IV: Weighted Propensity-FY 1983 to 1987

(expressed in %)

83	84	85	86	87
10.8	8.8	9.0	9.7	9.5

Army recruiting budgets significantly increased over the period FY 1983 through 1987(see Table V) when compared to

Table V: Budget Data FY 1983 to 1987(data from 9)

(FY 1980 constant $ in millions)

1983	1984	1985	1986	1987
381.9	381.4	399.6	394.7	354.0

previous years. A portion of this increase, however, included military retirement accrual as a part of military pay beginning in FY 1985. Therefore, a 25% reduction in the military pay account for FY 1985 through 1987 was made so that the budget data are consistent with previous years (10). The detailed budget breakout for these years is shcwn in Appendix 5.

FORECASTS: FISCAL YEARS 1983-1987

With weighted propensity data and recruiting budgets for FY 1983 through 1987 expressed in 1980 dollars, HSDGM forecasts can now be made using the exponential-equation form. These forecasts are shown in Table VI (a sample calculation of these

Table VI: HSDGM Forecasts FY 1983 to 1987

(expressed in thousands)

	83	84	85	86	87
HSDGM Forecast	105.6	86.2	89.5	96.1	90.4
HSDGM Actual	99.7	102.3	92.6	100.1	96.9
% Deviation	5.6%	15.7%	3.4%	4.0%	6.7%

forecasts is shown in Appendix 6). All forecasted values are very close to actual HSDGM production with the exception of Fiscal Year 1984 which has a 15.7% deviation between the predicted value and the actual numbers of HSDGM recruited. There is one reasonable explanation. The recruiter writes contracts on individuals entered in the delayed entry program (DEP). In a good year such as 1983, recruiters build a substantial DEP. That is, contracts that were written in 1983, became accessions in 1984. Recruiting Command had built such a DEP for 1984. Therefore, they produced a greater number of accessions in 1984 than would have been predicted. In general, the developed theory using Fiscal Years 1977 through 1982 has

proven very positive when testing with Fiscal Years 1983 through 1987.

CHAPTER VI

CONCLUSIONS

The problems associated with determining the size of the Army recruiting budget have been at the forefront of Army concerns for the past several years. Because of the difficulties the Army experienced with obtaining a sufficient number of HSDGM enlistments in Fiscal Year 1978, a great deal of effort went into developing techniques to accomplish this task. Our original efforts of constructing a budget assumed a linear relationship between those market variables that influence our ability to recruit this group. This assumption led to continuous over-estimation of the budget impact.

The critical data and results associated with the exponential forecasting curves I have developed are summarized in Table VII. During the period FY 1977 to FY 1982, the Army budget and the attitude of the youth population to join the Army fluctuate considerably, but it is these fluctuations that lend credibility to this analysis. That is, even though the differences in the budget levels ($115 million between FY 1977 and FY 1982 in constant dollars) and the propensity shifts (11.2% in FY 1977 to 7.5% in FY 1979 to 9.7% in FY 1982) are significant, the difference between actual HSDGM enlistments and values predicted from the exponential curves is small. This difference is shown as % deviation in Table VII. For example, the largest difference between a predicted value of

Table VII: Summary-FY 1977 to 1982-Budget, Propensity, and HSDGM Enlistments (Actual and Predicted)

	FY77	FY78	FY79	FY80	FY81	FY82
Budget (FY80 constant $ in millions)	235	236	252	294	311	350
Propensity (%)	11.2	9.4	7.5	7.5	9.4	9.7
Actual HSDGM Enlistments (000)	86	75	66	67	78	89
redicted HSDGM Enlistments (000)	87	Base-line	62	66	84	92
% Deviation	1.2		6.0	1.5	7.7	3.4

HSDGM '84,000) and actual enlistment of HSDGM (78,000) occurs in F. 981, a deviation of 7.7%. All other deviations are smalle..

The results of testing the developed theory for Fiscal Years 1983 to 1987 have proven just as positive with the exception of Fiscal Year 1984. However, if we take the sum total of predicted HSDGM production from 1977 to 1987 and compare that to HSDGM actual, the % deviation over that eleven year period is only 2.1%. Almost any company would like to be able to project sales to budget ratio with that small of a deviation.

In summary, the exponential curves show a valid relationship between budget (a market influence) and propensity (the attitude of the market) and the combined impact of these

variables on HSDGM enlistments for the Army in a limited market.

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APPENDIX 1

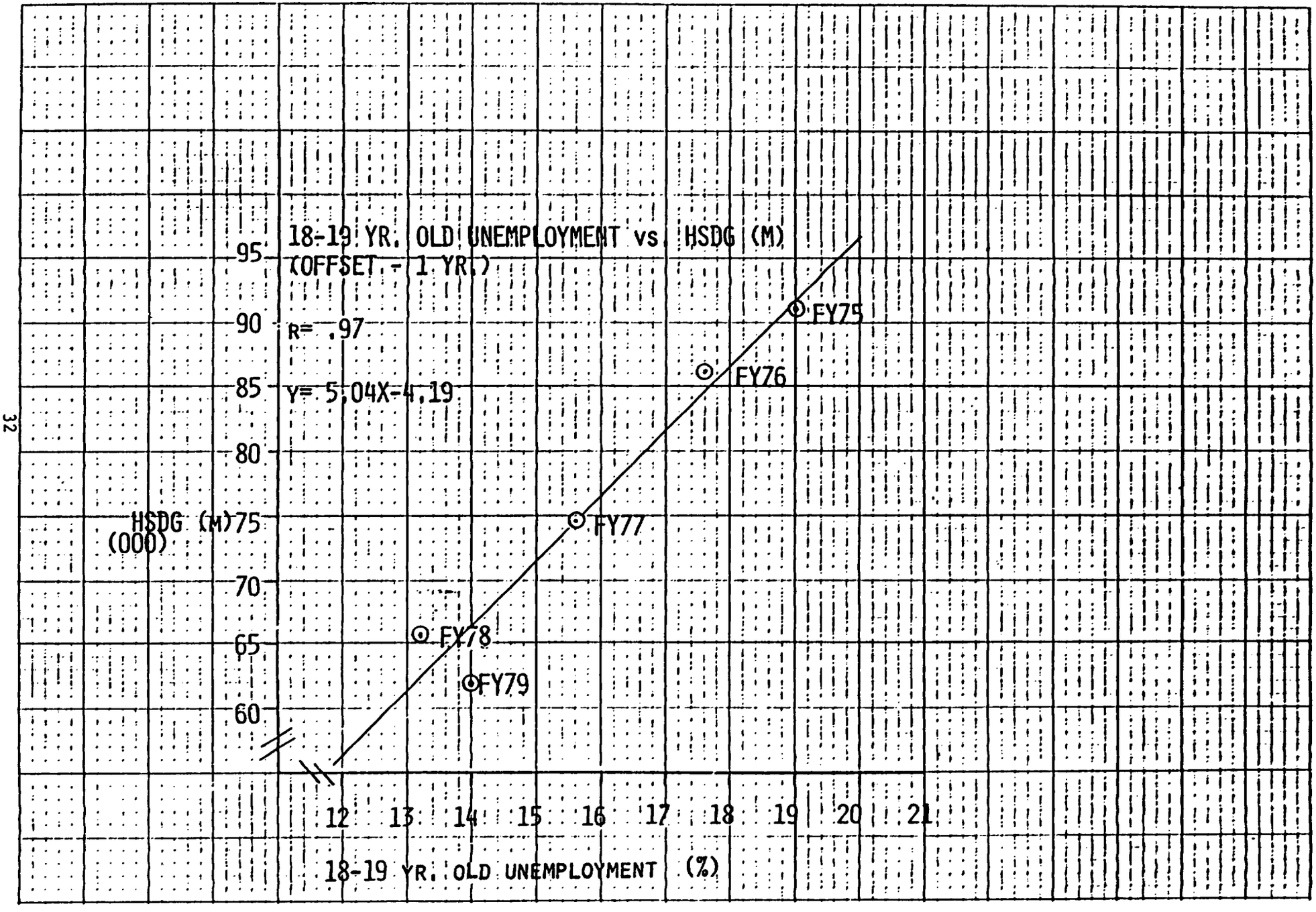
RECRUITING RESOURCES: FY 1975 to 1980
(in millions of $)

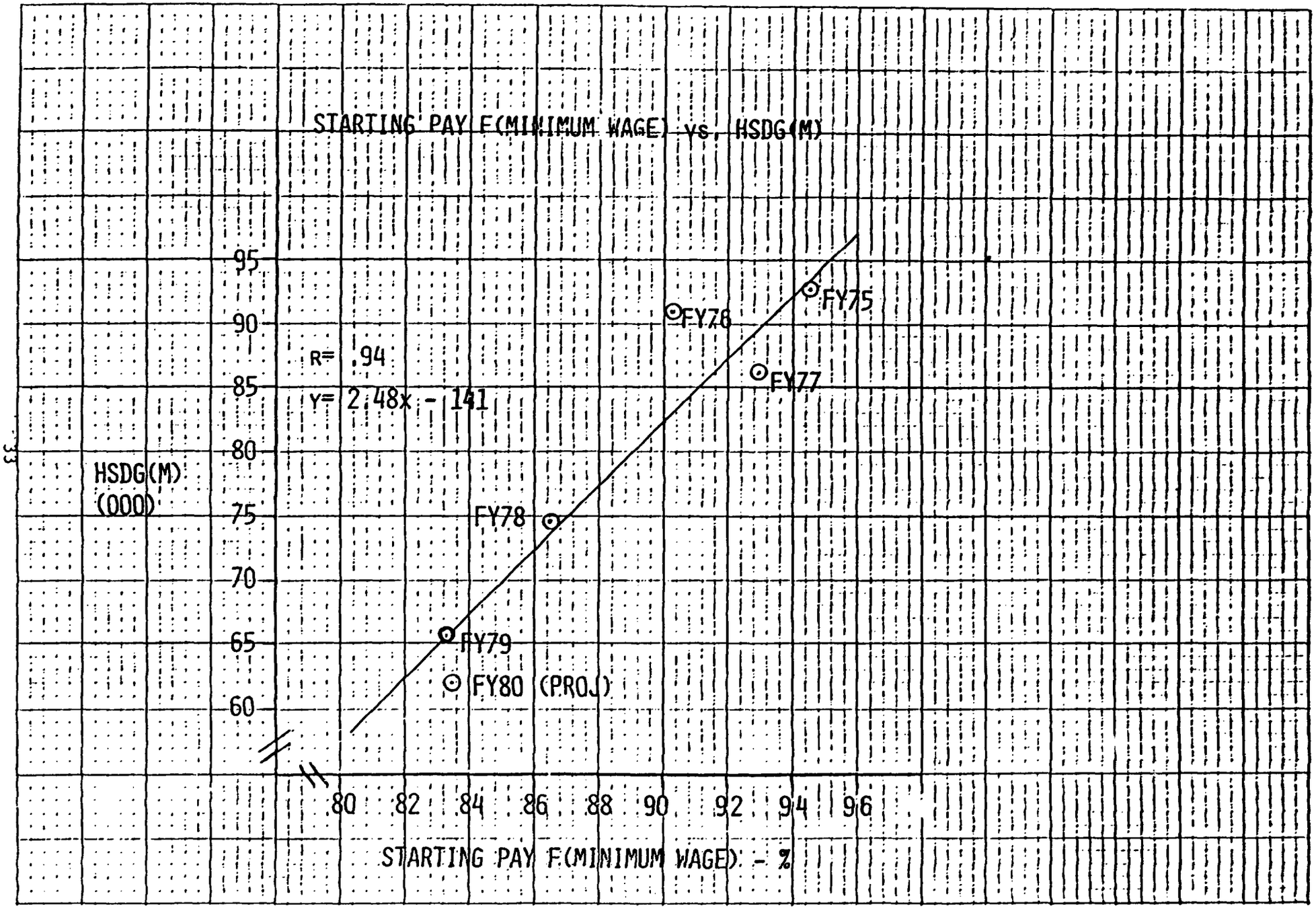
	FY1976	FY1977	FY1978	FY1979	FY1980
Military Pay	102.4	98.5	97.8	101.4	107.3
Civilian Pay	19.3	20.0	20.3	20.2	20.0
Enlistment Bonus	79.2	31.8	31.9	36.7	40.0
Advertising	37.7	39.5	40.8	45.1	53.2
Recruiter Aides	7.7	9.0	9.8	9.3	17.6
Recruiter Support	45.6	36.1	35.5	38.9	55.9
Total in FY 1980 $	291.9	234.9	236.1	251.6	294.0

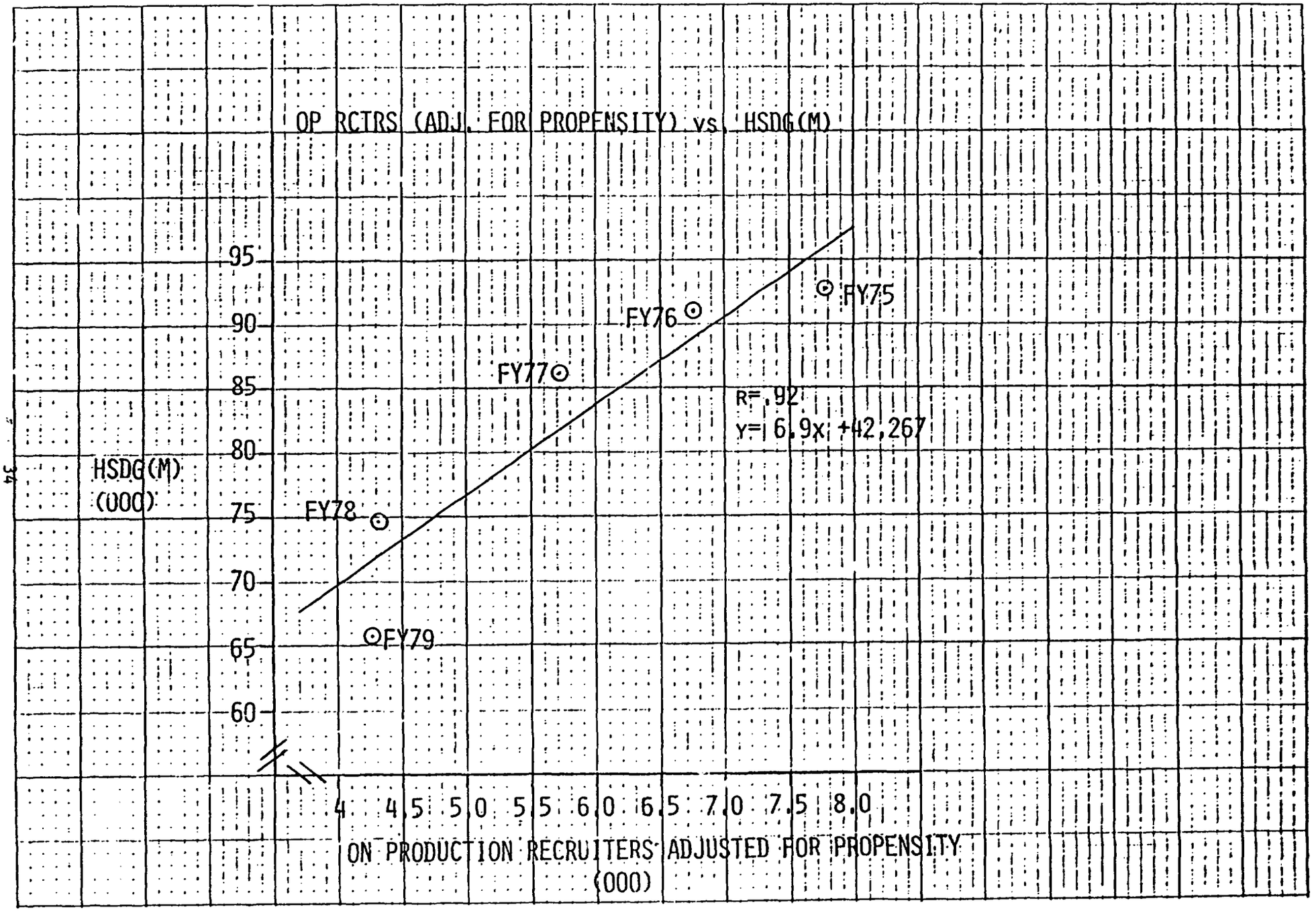
NOTE: Detailed breakout of FY 1975 is not available.

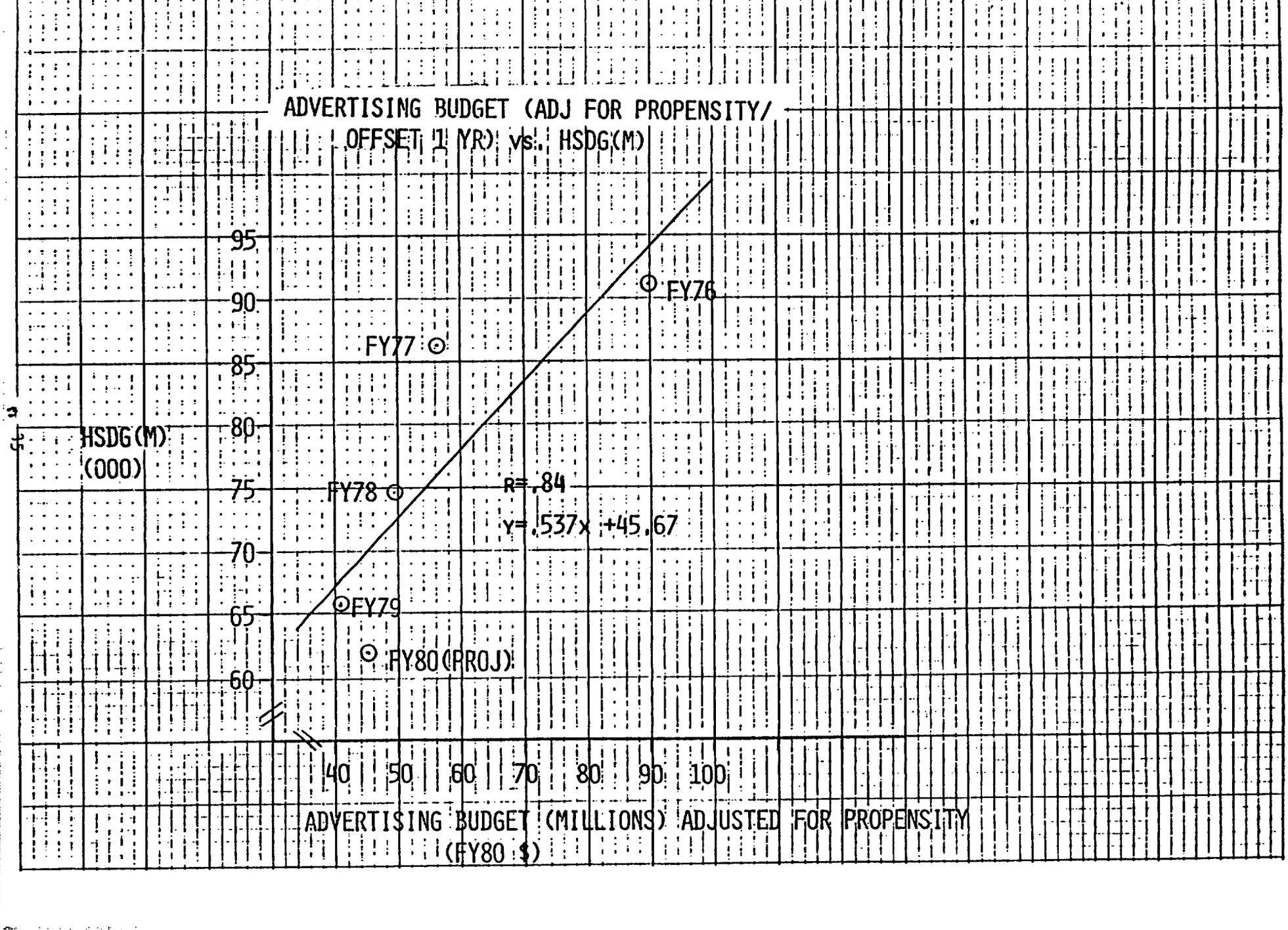
APPENDIX 2

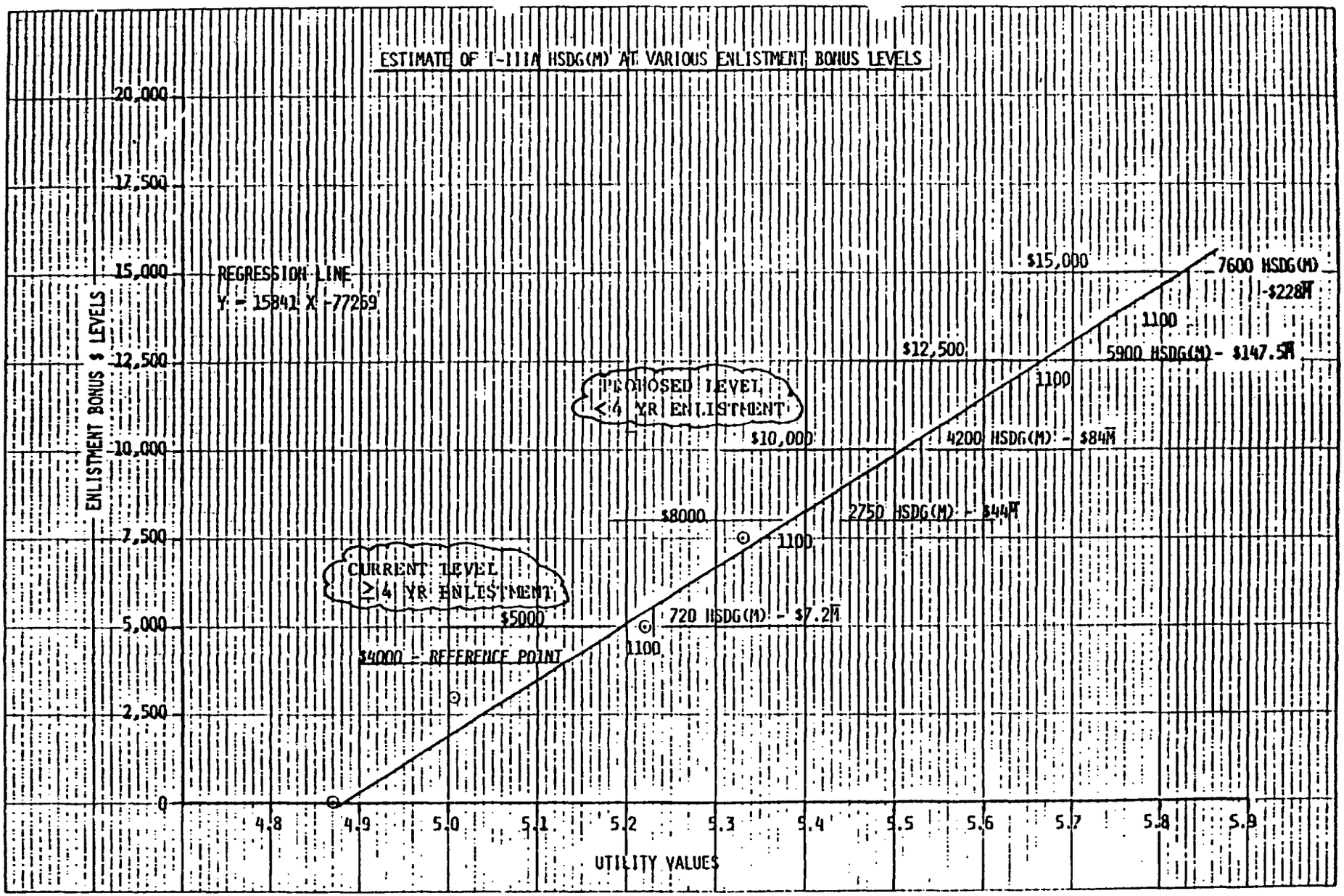
REGRESSION EQUATIONS SHOWING THE RELATIONSHIP BETWEEN MARKET INFLUENCES AND HIGH-SCHOOL-DIPLOMA-GRADUATE-MALE ENLISTMENTS


18-19 YR. OLD UNEMPLOYMENT vs HSDG (M)
(OFFSET - 1 YR.)
R= .97
Y= 5.04X-4.19
HSDG (M)
(000)
95
90
85
80
75
70
65
60
FY75
FY76
FY77
FY78
FY79
12
13
14
15
16
17
18
19
20
21
18-19 YR. OLD UNEMPLOYMENT (%)


STARTING PAY F(MINIMUM WAGE) vs. HSDG(M)
R= .94
Y= 2.48x - 141
HSDG(M)
(000)
95
90
85
80
75
70
65
60
FY75
FY76
FY77
FY78
FY78
FY79
FY80 (PROJ)
80
82
84
86
88
90
92
94
96
STARTING PAY F(MINIMUM WAGE) - %


OP RCTRS (ADJ. FOR PROPENSITY) vs. HSDG(M)
HSDG(M) (000)
95
90
85
80
75
70
65
60
FY75
FY76
FY77
FY78
FY79
R=.92
Y=16.9X+42,267
4
4.5
5
5.5
6
6.5
7
7.5
8.0
ON PRODUCTION RECRUITERS ADJUSTED FOR PROPENSITY (000)


ADVERTISING BUDGET (ADJ FOR PROPENSITY/
OFFSET 1 YR) vs. HSDG(M)
HSDG(M)
(000)
95
90
85
80
75
70
65
60
FY76
FY77
FY78
FY79
FY80(PROJ)
R=.84
Y=.537x +45.67
40
50
60
70
80
90
100
ADVERTISING BUDGET (MILLIONS) ADJUSTED FOR PROPENSITY
(FY80 $)


ESTIMATE OF I-IIIA HSDG(M) AT VARIOUS ENLISTMENT BONUS LEVELS
ENLISTMENT BONUS $ LEVELS
20,000
17,500
15,000
12,500
10,000
7,500
5,000
2,500
0
REGRESSION LINE
Y = 15841 X -77269
$15,000
7600 HSDG(M)
-$228M
1100
$12,500
5900 HSDG(M) - $147.5M
1100
PROPOSED LEVEL
≤4 YR ENLISTMENT
$10,000
4200 HSDG(M) - $84M
$8000
2750 HSDG(M) - $44M
1100
CURRENT LEVEL
≥4 YR ENLISTMENT
$5000
720 HSDG(M) - $7.2M
1100
$4000 - REFERENCE POINT
4.8
4.9
5.0
5.1
5.2
5.3
5.4
5.5
5.6
5.7
5.8
5.9
UTILITY VALUES

APPENDIX 3

THE EXPONENTIAL EQUATION

1. Equation Form

$Y = ae^x$

where Y = budget level on y-axis
a = constant baseline on y-axis

x = rate of change on x-axis

2. Sample Calculation

a = $75 million (from the FY 1978 baseline)

$$x = \frac{\text{HSDGM - Baseline HSDGM}}{\text{Baseline HSDGM}}$$

then at 67,000 HSDGM

$Y = 75e^{(67-31.1)/31.1}$

or Y = $237.9 million

NOTE: In this manner any point can be calculated along the exponential curve beginning at the point where the market is assumed to become exponential.

APPENDIX 4

RECRUITING RESOURCES: FY 1981 and 1982

(current dollars in millions)

	FY 1981	FY 1982
Military Pay	142.3	157.6
Civilian Pay	21.8	25.6
Enlistment Bonus	56.8	90.6
Advertising	52.4	59.7
Recruiter Aides/Tng	4.4	4.3
Recruiting Support	91.2	93.7
Communications	14.3	16.1
Total	383.2	447.6
Subtract ADP,Commo, and Vehicle Upgrades	-47.0	-47.0
	336.2	400.6
O&M Factor to Convert to 1980 dollars	1.0810	1.1446
TOTAL in 1980 $	311	350

APPENDIX 5

RECRUITING RESOURCES: FY 1983 - 1987

(expressed in current dollars in millions)

	FY1983	FY1984	FY1985	FY1986	FY1987
Military Pay	153.9	162.0	223.1	229.8	237.8
Civilian Pay	26.5	27.4	28.8	28.9	29.0
Enlistment Bonus	103.6	93.4	96.8	105.9	66.5
Advertising	62.5	62.0	75.4	76.9	70.8
Recruiter Aides	.9	1.7	8.4	1.9	0.0
Recruiter Support (includes commo and HQ Support)	110.4	127.2	135.2	133.8	136.0
TOTAL	457.9	473.7	567.7	577.2	540.1
Adjust 1985-1987 (Remove 25% Ret. accrual from MPA)	457.9	473.7	511.9	519.8	480.7
O&M Factor to Convert to 1980 $	1.199	1.242	1.281	1.317	1.358
FY 1980 Dollars	381.9	381.4	399.6	394.7	354.0

APPENDIX 6

SAMPLE CALCULATION-FORECASTING FY 1983-1987

Using the exponential-equation form, the forecasted value of HSDGM can be calculated at each budget level for Fiscal Years 1983 through 1987. The sample calculation here (using FY 1983 as an example) is accomplished in two steps:

Step 1 - Adjust FY 83 for Propensity shift from the FY78 baseline

FY 83 propensity = 10.8%
FY 78 propensity = 9.4% or 35k HSDGM at the baseline

$$\text{Change in propensity} = \frac{10.8 - 9.4}{9.4} = .1489$$

or propensity shift is 1.1489 times greater in FY 83

then 1.1489 x 35k HSDGM = 40.2K HSDGM (this is the point the market is assumed to become exponential in FY 1983)

Step 2 - Projected HSDGM in FY 1983

$Y = ae^x$ where Y = budget level on y-axis
a = constant baseline on y-axis
x = rate of change on x-axis

for a = $75 million

$$x = \frac{\text{HSDGM - baseline HSDGM}}{\text{baseline HSDGM}}$$

Y = $381.9 million FY 83 budget (expressed in FY 1980 $)

then

$$381.9 = 75e^{(\text{HSDGM}-40.2)/40.2}$$

solving for HSDGM = 105.6K HSDGM predicted for FY 1983