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DETERMINANTS OF LABOR SUPPLY IN ARGENTINA:  
THE IMPORTANCE OF CYCLICAL FLUCTUATIONS IN LABOR  
FORCE PARTICIPATION

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# DETERMINANTS OF LABOR SUPPLY IN ARGENTINA

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# DETERMINANTS OF LABOR SUPPLY IN ARGENTINA

## I. INTRODUCTION

### A. Background

*Labor force base and participation.* The evolution of the labor force is strongly influenced by changes in the population size, which is determined by the rate of natural increase and net migration. These patterns - especially the rate of natural increase - are relatively slow to change. Due to sociological and other factors, which also are slow to change, economies generally exhibit long-term tendencies in labor force participation, such as increased participation of women. Speaking of "trend" labor force growth based on growth of the population base and these long-term changes in labor force participation is not unreasonable. But the size of the labor force also responds to shorter-term (or cyclical) changes, which largely operate through rapid - though often predictable - changes in the labor force *participation rate*. These changes have received considerable attention in recent labor policy debates in Argentina, and are the main concern of this paper.

*Population growth.* Argentina's population grew at an annual rate of 1.4 percent between 1980 and 1991. This growth in population - which is high as compared to Europe (0.3 percent) and North America (1.0 percent) - is mostly due to the rate of natural increase: between 1980 and 1991 the population born in foreign countries actually decreased by 14 percent for the country as a whole and by 16 percent for the Greater Buenos Aires (GBA) area. The number of immigrants from neighboring countries has increased in absolute numbers, but not as a proportion of the population.<sup>1</sup> While the stock of migrants is important, though, changes in the number of migrants are not large enough significantly affect overall labor supply, and labor market outcomes such as employment, unemployment, and wages.

*Labor force participation.* The main changes in labor supply that are pertinent to discussions of unemployment are the result of changes in the labor force participation (LFP) rate. Table 1 shows the evolution of the labor force participation rate in the GBA area by sex for the population aged 15 to 64 years.<sup>2</sup> The participation of males was relatively constant at 84 per cent between 1980 and 1995. For women, the labor force participation rate increased by 10 percentage points, from 43 percent in 1987 to 53 percent during 1995. Figure 2 shows that female participation rate increased very rapidly from October 1991 to peak in May 1993 at 51 percent and decreased since then in two percentage points until May 1995 when it again peaked at 53 percent, declining again in October 1995. This rise in female labor force participation has coincided - during the last five years - with a rise in the unemployment rate, fueling speculation that this is the main *cause* of rising joblessness.

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<sup>1</sup>These numbers refer to legal immigrants. It is believed that there are between 800,000 to 1 million foreigners working illegally in Argentina, mostly as maids, construction and agricultural workers. [*Migrant News*, March 1996].

<sup>2</sup>Since data are not readily available for the rest of the country, we use data for the Greater Buenos Aires area for all estimations, unless stated otherwise.

*Labor force participation and unemployment.* Recent labor policy discussions have sometimes revolved around the decomposition of increases in unemployment into a component related to labor demand (or an unexpected slowing down of employment growth in the 1990s) and another related to labor supply (or unexpected increases in the labor force participation), especially of women. While such exercises are useful mostly just for accounting purposes - since all practical policy measures for reducing unemployment must rely on stimulating labor *demand* and not discouraging labor supply - they can be important in determining whether labor reforms are urgent or unimportant. In joining this debate, we contend that the definition of "unexpected" or "abnormal" fluctuations in labor supply employed so far ignores a fundamental attribute of the Argentine labor market, viz., that labor force participation is positively correlated with the unemployment rate over the business cycle. The main contribution of this paper is to "explain" shorter-term labor force participation patterns in Argentina using established theory and econometric techniques, re-examine the decomposition of unemployment using these results, and draw policy implications from these exercises. A companion paper (Pessino and Gill, 1996) examines the determinants of labor demand.

The analysis of variations in female labor force participation has a central role in this paper. Pessino and Giacchino (1994) calculate what the unemployment rate would have been with unchanged LFP by women, and show that this measure - net of compositional changes - is almost identical to the actual unemployment rate. We re-examine this issue in this paper, using data upto October 1995 to distinguish trend from cyclical behavior, illustrating through econometric techniques the correlation between LFP and unemployment rates, and then incorporating this analysis to determine the extent to which increased labor force participation can legitimately be "blamed" for the rapid increase in unemployment since 1990.

## **B. Approach**

The approach employed in this paper can be summarized as follows: First, we examine the basic patterns - trend (long-term) and cyclical (short-term) - in labor force participation of men and women. Second, we determine the underlying "cause" of year-to-year fluctuations in labor force participation, distinguishing between the wealth and substitution effects of business cycles for labor supply: the wealth effect arises because household wealth changes over the cycle, and the substitution effect because of wage fluctuations. We provide likely explanations for these patterns, contrasting Argentina's experience with other countries. Third, we examine the trends and structure of unemployment, to determine the extent to which increased labor force participation can account for the increased unemployment in recent years, or the extent to which reduced employment growth is responsible for this increase. Finally, we discuss the policy implications of these findings, both in terms of what Argentina can expect over the longer-term as benefits to labor reform, and the likely consequences of current labor supply patterns - on the sustainability of labor policies - if the proposed reforms are not implemented.

## II. TRENDS IN PARTICIPATION AND EMPLOYMENT

### A. Labor Force Participation

*Aggregate participation rates.* Labor force participation rates - the number of persons working or seeking work as a share of population aged 15-64 years - in Argentina rose by more than 10 percentage points (from 58 to 68 percent) between 1974 and 1995 [See Table 1]. This rise of 18 percent during the two decades was entirely accounted for by increased female labor force participation rates: female participation rates rose by 45 percent over 1974 levels (more than 16 percentage points), while male participation rates were the same in 1995 as they were in 1974. At an aggregate level, therefore, changes in female rates are of greater interest.

*Female participation rates.* There are three noteworthy observations regarding female labor force participation rates. First, they remained largely unchanged during the first decade, i.e., from 1974 to 1983. The 45 percent rise in LFP rates is thus a phenomenon of the last decade. Second, female LFP rates have fluctuated considerably from year to year: participation rose relatively steadily between 1983 and 1989 (by between 1 and 2 percentage points per year), but has exhibited sharper fluctuations since 1990. Between 1992 and 1993, and again between 1994 and 1995, female LFP rates rose by about 4 percentage points (in a single year). Finally, relative to OECD countries, female LFP rates are quite low in Argentina. In OECD countries, female LFP rates in 1973 averaged 48 percent, and 60 percent in the 1990s<sup>3</sup>. That is, a considerable "reserve" of potential workers exists in Argentina, which may be quite responsive to economic stimuli (e.g., increasing wages and declining household wealth that accompany business cycles). The considerable year-to-year fluctuations exhibited by female LFP rates since 1990 are consistent with this observation.

*Age-specific LFP rates.* For male participation in the labor force, the noteworthy observation is that for older workers ("retirees"), there was a steady decline in LFP rates in 1993 and 1994, followed by a sharp increase of 4 percentage points between October 1994 and May 1995. [See Figure 1] Female labor force participation behavior is similar for all age groups: an increasing trend since 1987, with a sharp increase between October 1994 and May 1995. For both males and females, a decline in LFP rates is observed between May and October 1995.

*Explanations.* In Argentina, in the first half of the 1990s, an increase in real wages accompanied an increase in the unemployment rate. In most OECD countries, during recessions, increases in unemployment rates are accompanied by falling real wages. Hence, expected real wages decrease both because of the decrease in the probability of finding a job, and the decrease in the real wage rate. So there is lower expected household income and a lower real wage for women. In this case, it is ambiguous whether participation rates will increase or decrease since the income effect (the 'added worker effect') will imply higher participation, but the substitution effect (the 'discouraged worker effect') will imply lower participation. In Argentina, on the other hand, the wealth effect and substitution effect both work to increase participation.

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<sup>3</sup>In North America, female LFP rates averaged 69 percent in the 1990s.

**LABOR FORCE PARTICIPATION, BY SEX**  
(Greater Buenos Aires: 15 - 64 years of age, percent)

Year	All	Female	Male
1974	58.1	36.6	85.3
1975	58.4	36.3	85.9
1976	58.3	35.7	86.2
1977	57.9	35.8	85.1
1978	57.8	37.8	83.8
1979	58.1	37.3	84.3
1980	60.6	38.1	84.8
1981	60.1	38.5	83.6
1982	60.0	38.5	84.5
1983	58.6	36.6	83.0
1984	59.8	38.3	83.5
1985	60.6	39.6	83.6
1986	62.0	42.8	84.4
1987	62.6	43.4	84.3
1988	62.8	43.8	83.8
1989	64.0	45.5	84.3
1990	63.8	45.0	84.1
1991	63.2	44.4	83.2
1992	64.4	45.9	84.5
1993	66.5	49.7	84.8
1994	65.9	48.8	84.2
1995	68.5	53.0	85.1

Note: Numbers are the average of May and October each year.  
Source: INDEC-EPH Surveys.

Table 1

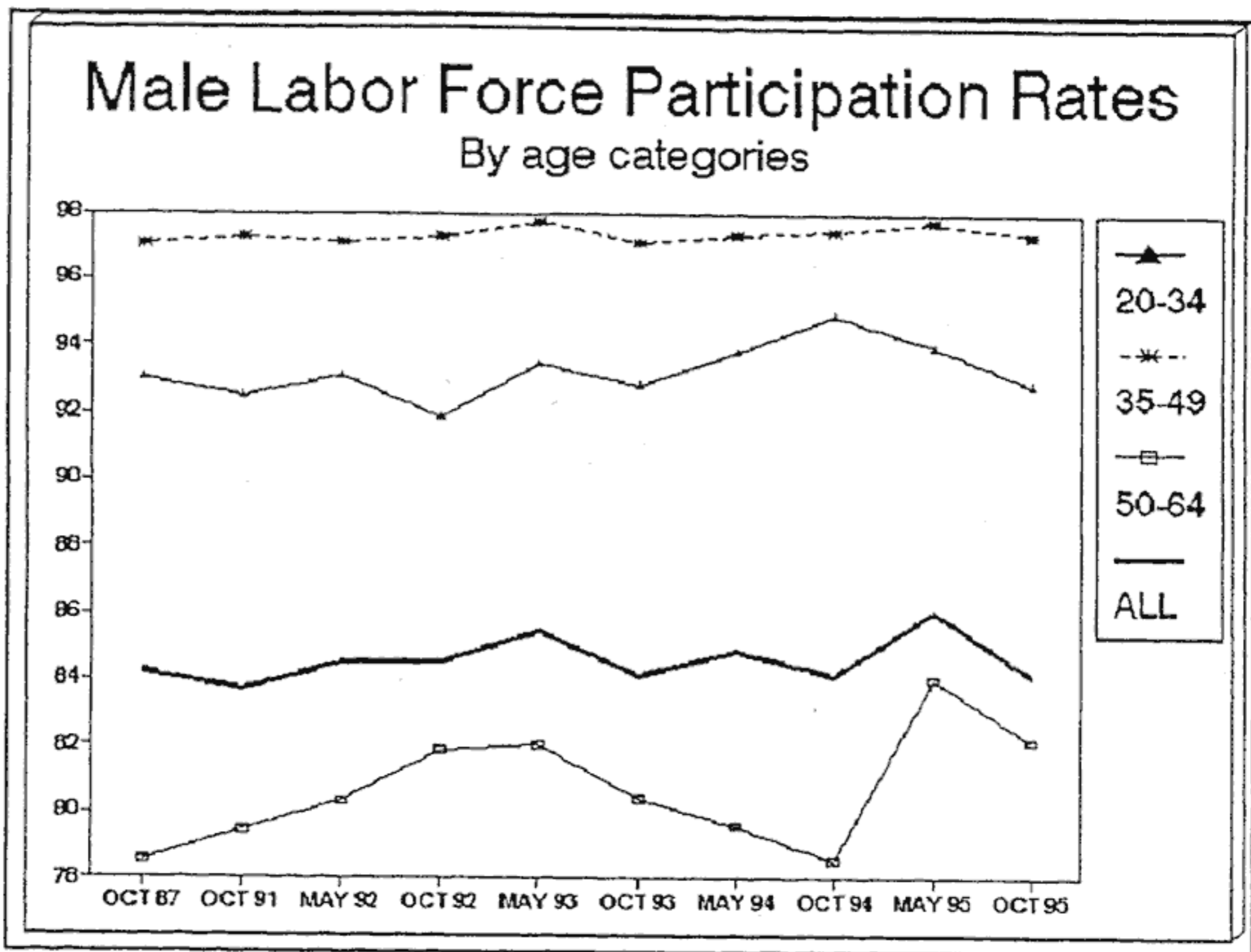


Figure 1

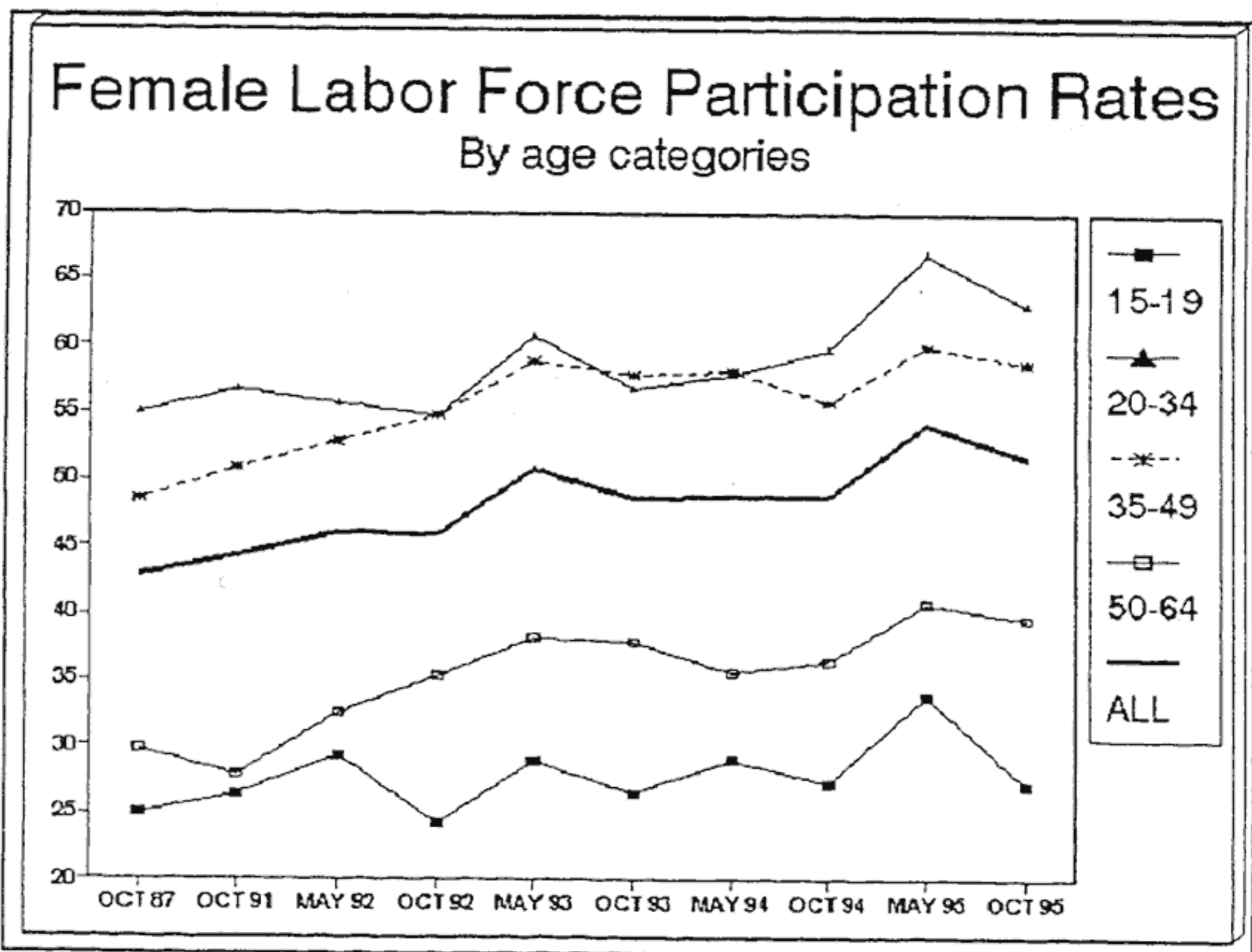


Figure 2

B. Employment Growth

*International comparisons.* Employment growth in Argentina has fluctuated considerably since 1974. According to household data, employment grew at a rate of 1.1% annually between May 1974 and October 1995 (using data from the Ministerio de Economía). Figure 3 compares employment growth in GBA to that in North America, Oceania, Japan, EFTA and European Community (EC). Employment growth has been strongest in North America (1.7 per cent annually since 1974) and weakest in the EC (0.2 per cent) and EFTA (0.2 per cent), with Argentina (1.1 per cent), Oceania (1.2 per cent) and Japan (1.1 per cent) falling in the middle.

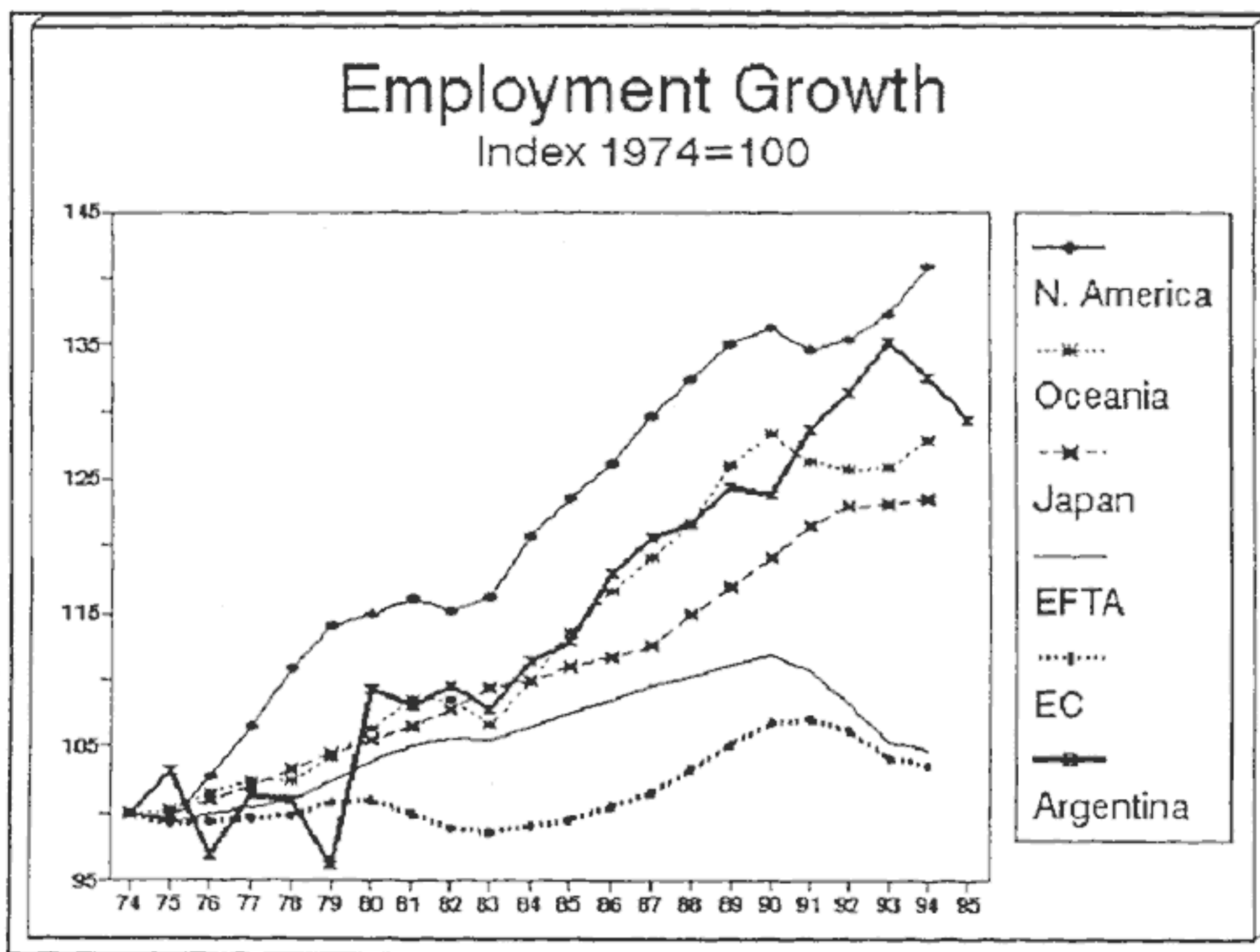


Figure 3

Like employment growth, population and labor force growth also show wide variation among regions. Table 2 shows the different experiences of these areas. According to the first column of Table 2, Argentina fared moderately well relative to other countries in terms of employment growth. However, when taking into account population growth, Argentina fares the worst with an annualized rate of growth in population of 1.3 percent (in GBA), employment growth minus population growth averages a 0.16 percent *decrease* per year. In this respect, Argentina is much closer to the EFTA and EC countries than when considering absolute changes in employment. North America and Japan fared the best using this index, generating the highest employment growth relative to population growth. In Argentina there was also an increase in the overall labor force participation rate, implying that the LFP growth was higher than population growth. As mentioned before, this growth was largely due to the increase in female LFP. Labor force grew at a 1.95 percent annualized rate during the period, higher than the 1.3 percent annual population growth.



However, a comparison of columns (2) and (4) of Table 2, highlights that women's LFP (and hence overall LFP) during this period was smaller than OECD countries.<sup>4</sup> Note that the increase in LFP in Argentina is very similar to that of North America and Oceania, despite having much higher population growth. Other countries have a higher trend growth in female LFP. In some sense, therefore, Argentina is "lucky" in having slower growth in LFP, since it would have generated a much higher rate of unemployment, if one assumes that LFP is inelastic with respect to wages and income and that relative wages do not adjust to increased supply of women. The last column of Table 2 shows the difference between employment and labor force growth; in all the countries being this difference negative since unemployment rates grew in all the areas. The countries that fare the best (in the sense that unemployment grew less) were again the US and Japan, followed by the rest of the areas with much higher indexes (in absolute value); Argentina with a 0.8 percent decrease per year in employment less labor force growth.

**GROWTH IN EMPLOYMENT, WORKING-AGE POPULATION,  
AND LABOR SUPPLY, 1974-1994**

	Employment	Population	Employment - Population	Labor Force	Employ. - LF
Argentina (GBA)	1.14	1.30 (2)	-0.16	1.95	-0.81
North America	1.73	1.05 (1)	0.68	1.80	-0.07
Oceania	1.25	1.20 (1)	0.04	1.75	-0.50
Japan	1.06	0.70 (1)	0.36	1.10	-0.04
EFTA	0.23	0.35 (1)	-0.12	0.70	-0.47
EC	0.17	0.35 (1)	-0.18	0.55	-0.38

Notes (1) 1975-92; (2) 1970-91 using census data.

Data for employment and labor force is for people between 15-64 years of age.

Note that since population growth refers to people in all age categories, it may not reflect the potential labor force growth of people aged 15-64. For GBA, according to EPH, the population aged 15-64 years in GBA grew at an annualized rate of 1.2 per cent in the period 1974-1994.

Sources For OECD countries, the source is *Employment Outlook*, several issues.

For Argentina, the data refers to GBA, taken from INDEC; population growth is estimated from Census data and covers the larger period May 1974-Oct 1995.

Table 2

<sup>4</sup> In fact, one of the major consequences of development during this century has been the incorporation of women in high numbers into the labor force. As Argentina has lagged in development with respect to OECD countries, it is not surprising to find that female LFP rates are lower in Argentina than in OECD countries, and have been growing at a slower pace.

In sum, although Argentina did generate a relatively large amount of jobs, this was not enough to keep up with the increase in population since 1974. And on the labor supply side, contrary to the belief that the rise in unemployment in Argentina was due to the increase in LFP of women, it is the increase in the population base, not the LFP rate alone, that is more important in explaining the growing deficit between jobs and people.

**C. Unemployment**

*Most unemployed were previously employed.* Notice that although there was a large increase in labor supply during the period, in May 1995, as seen in Table 3, most of the unemployed were those that were previously employed. Of the 1 million unemployed in May 1995, 21 percent were re-entrants, 14 percent new entrants and 65 percent previously employed individuals.

*Sex distribution.* We also see in Table 4, that most of the unemployed that are re-entrants and new entrants are females (70 percent), and that unemployed new entrants, as expected, are mostly young. In contrast, males between 20 and 49 years form the bulk of the unemployed with previous employment. While these findings do not provide conclusive evidence that increased labor force participation of women is not responsible for increased unemployment, they do provide reasons to be skeptical of such claims.

**DISTRIBUTION OF THE UNEMPLOYED**  
**Greater Buenos Aires Only, May 1995**

	<b>Total</b>	<b>Reentrants</b>	<b>New Entrants</b>	<b>Previously Employed</b>
Number (millions)	1.012	0.213	0.142	0.657
Percent of total unemployment	100.0	21.1	14.0	64.9
Percent of labor force	20.2	4.3	2.8	13.1

Source: INDEC-EPH survey.

Table 3

**DISTRIBUTION AND DURATION OF UNEMPLOYMENT,  
BY AGE, SEX, AND PREVIOUS LABOR MARKET STATUS, MAY 1995**

		Re-entrants to LF	New entrants	Previously employed	All
<u>Distribution of the Unemployed (Percent)</u>					
<i>Males</i>					
	15-19 years	17.0	77.1	19.4	-
	20-34 years	33.8	22.9	33.9	-
	35-49 years	24.7	0.0	26.3	-
	50-64 years	24.5	0.0	20.4	-
<i>Females</i>					
	15-19 years	9.9	54.2	15.5	-
	20-34 years	43.9	33.8	41.8	-
	35-49 years	30.4	9.0	30.3	-
	50-64 years	15.8	3.0	12.4	-
<i>All</i>					
	15-19 years	12.0	61.4	17.9	-
	20-34 years	40.9	30.4	37.0	-
	35-49 years	28.6	6.2	27.8	-
	50-64 years	18.5	2.1	17.3	-
	Males	30.1	31.1	61.0	-
	Females	69.9	68.9	39.0	-

Duration of Unemployment (Months)

<i>Males</i>					
	15-19	5.4	7.3	4.2	5.2
	20-34	5.0	10.9	3.9	4.5
	35-49	5.0	-	4.0	4.1
	50-64	3.2	-	8.8	7.9
	All	4.6	8.1	5.0	5.2
<i>Females</i>					
	15-19	3.6	6.5	4.7	5.4
	20-34	5.1	9.8	6.1	6.4
	35-49	8.3	8.2	7.7	7.9
	50-64	8.9	12.4	7.3	8.2
	All	6.5	7.9	6.5	6.8
<i>All</i>					
		6.0	8.0	5.6	6.0

Source: INDEC-EPH survey.

Table 4

### III. DETERMINANTS OF LABOR FORCE PARTICIPATION

#### A. Methodology

*Income and substitution effects.* Changes in labor force participation rates can be attributed to an *income effect* - the change in work force participation of some members of a household due to a change in family income - or a *substitution effect* - the change in participation rates due to a change in the price of labor. These effects are also referred to as the "added worker effect" and the "discouraged worker effect" respectively. A fall in household income because of, say, the family head becoming unemployed, may lead to other members (e.g., spouse, school-aged children) entering the labor force, thus resulting in added workers. Similarly, a fall in the wages of workers may lead them to drop out of the labor force entirely if they become discouraged.<sup>5</sup>

*Participation decision.* The labor force participation decision can be characterized as:

$$L_i = L(Y, w_i) \tag{2.1}$$

where  $L_i$  is the labor force participation rate of group  $i$ ,  $Y$  is the household income, and  $w_i$  is the real wage for group  $i$ . The flow from outside the labor force to unemployment or employment ( $P_{nu}$  or  $P_{ne}$ ) has mainly to do with participation decisions of different demographic groups. In particular, with higher participation of the young, women and the old, usually showing more erratic labor supply behavior than prime-age males, we might observe higher rates of unemployment.

Labor force participation is also subject to longer-term (slowly changing) socioeconomic influences, which for our purposes are captured by a time trend. Hence, an augmented version of equation 2.1 results:

$$L_i = L(Y, w_i, t) \tag{2.2}$$

where  $t$  is the time trend.

*Estimation methodology.* As an initial estimation for labor force participation rates we follow the methodology used by Pencavel (1986), Killingsworth and Heckman (1986), Clark and Summers (1981) and others, and update the estimates for Greater Buenos Aires found in Pessino and Giacchino (1994) for the period 1974-1995. We postulate that participation rates are functions of the "cycle" and time trend for each demographic group. The time trend is included to reflect the impact of slowly changing social factors and other gradually moving variables omitted from the equation. We first introduce the "cycle" measure used by the above authors, namely, the prime-age male rate of unemployment,  $U^p$ . Later, we introduce other proxies of the business cycle. If we find that the labor

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<sup>5</sup>For any single group of workers (e.g., distinguished by age or sex), the only way we can observe both at the same time is if (a) income and substitution effects differ significantly among households, and/or (b) the size of the change in real income of primary workers and the change in real wages for secondary workers have moved differently for different type of households.

force participation of a group moves in the same direction as that of  $U^p$ , this is evidence of the predominance of the "added worker" effect. If it moves inversely, that is, if the higher rate of unemployment of males drives or discourages workers out of the labor force, it is evidence of a "discouraged worker" effect.

## B. Main Results

Table 5 presents the results on the regressions of labor force participation on trend and  $U^p$ :

$$L_{it} = \alpha_i + \beta_i U_t^p + \gamma t + \epsilon_{it} \quad 2.3$$

where,  $L_{it}$  is the labor force participation of group  $i$  in year  $t$ , expressed as a percentage of total population in group  $j$ ,  $U_t^p$  is the unemployment rate of males aged 35-49 years in year  $t$ . The superscript "p" on  $U$  designates this as the "prime-aged" reference group. The responsiveness of the participation rate to the business cycle is measured by  $\beta$ , while  $\gamma$  is the coefficient for the linear time trend. The equation error is represented by  $\epsilon_i$  and the index  $j$  runs over eight sex-age groups. The results of estimating those equations by Maximum Likelihood methods with an AR(1) specification are shown in Table 5.<sup>6</sup>

*Participation of males.* According to these estimates, over the past two decades, there has been a declining trend in the participation rate for all males and an increasing trend in the participation rate for all females. With respect to males, the trend decline occurred mainly because of teenage males' decrease of about 0.4 percentage points per year and a decline in the participation rate for males aged 20-34 years by 0.15 percentage points. The estimates of  $\beta$  (the trend coefficient) for males show positive values for all age groups; however, only the positive values for the groups 20-34 years and 35-49 years are statistically significant at the 5 percent level. This means that the behavior of these groups is countercyclical: the higher the unemployment rate for prime age-males, the higher the participation rate for these groups.<sup>7</sup>

*Participation of females.* We gain more insight into the participation behavior by looking at female participation rates during the period. Except for teenagers, all the other age categories show a strong positive trend during this period. Prime-aged women (aged 35-49 years) increase their labor force participation each year by 0.9 percent a year, followed by older women (0.7 percent annually) and those aged 20-34 years (0.2 percent a year). Teenage labor force participation by women decreases by 0.8 percent per year. Table 5 also suggests that female participation rates are strongly countercyclical, at

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<sup>6</sup> We control for autocorrelation since the Durbin-Watson statistic reveals serially correlated errors. Higher order serial correlation was rejected by our data.

<sup>7</sup> Note that for men aged 35-49 years we can have spurious correlation between LFP and  $U^p$  and, given the correlation between  $U^p$  and unemployment for males aged 20-34 years, that result should be interpreted carefully.

least if one measures the cycle by the unemployment rate of prime aged-males<sup>8</sup>. Notice that the younger the group, the higher the response to the cycle. For teenaged women, a 1 percentage point increase in  $U^p$  increases their participation by about 1.25 percentage points. For older women the response is about 0.5 percentage points and is only significant at the 10 percent level<sup>9</sup>.

*International comparisons.* Contrasting these results with similar estimations for the US [see Pencavel (1986) and Killingsworth and Heckman (1986)], we find that our results differ mainly in that while we find countercyclical labor force participation for both men and women, US data indicate no cyclical effects for men, but procyclical labor force participation for some of the female cohorts. That is, it appears that in the US and Britain, there is in the analyzed period a prevalence of "discouraged women workers" during a recession, while in Argentina the phenomenon of "added women workers" prevails. In other words, the income effect (of lower expected income for males) tended to predominate in Argentina, making women (and non-prime aged males) enter the labor force to augment family incomes.

*Reasons for the predominance of the added-worker effect.* We should not be surprised by the difference in cyclical patterns in labor force participation (especially of women) between Argentina and more developed countries such as US and Britain. First, women have on average lower participation rates in Argentina than in those countries, so there is a larger pool that can enter the labor market on the face of higher unemployment rates for males. Second, Argentina does not yet have a widely available capital market to which families can turn to maintain consumption in the face of a recession. It is not surprising that they turn to secondary earners - women and non-prime aged men - of the household to support the family if the primary earner encounters unemployment.<sup>10</sup> Third, since the reforms leading to reduced inflation, there is evidence that real wage rates are rigid downwards, so that employment bears the brunt of the adjustment during a downturn. Thus wages - for those who still have jobs - remain high, prompting a "queuing" for jobs which is reflected in both higher labor force participation and unemployment. This last factor may be quite important in explaining the increase in observed labor force participation between October 1994 and May 1995, and if confirmed, has important policy implications.

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<sup>8</sup> We will later confront this results with a more elaborate setting for the Argentine case, where the cycle as measured by changes in industrial production is not always accompanied by inverse changes in prime-aged unemployment rates .

<sup>9</sup> Excluding the observations from 1993 onwards, as expected, the estimates of  $\beta$  lose significance but do not switch signs. This evidently shows that the latter period is influencing the results and that it was a period of strong countercyclicity in women's labor force participation. In the Annex, we provide estimates where we interact  $U^p$  with a dummy that equals one from 1991 until 1995 for women. Since in most cases this interaction term is positive and significant, the added-worker effect is evidently stronger during this period.

<sup>10</sup>In fact, Lundberg (1985) found that using employment transition probabilities from household data there is a small but significant added worker effect for the US, and attributes this finding mainly to the existence of credit constraints for some households.

## LABOR FORCE PARTICIPATION: CYCLICAL AND TREND FACTORS

	$\alpha$ Constant	$\beta$ Cycle	$\gamma$ Trend	$\rho$ Autocorr.
<i>Females</i>				
15 to 19 years	34.445* (0.995)	1.257* (0.272)	-0.407* (0.061)	0.372* (0.145)
20 to 34 years	46.947* (0.950)	1.067* (0.262)	0.117* (0.058)	0.365* (0.145)
35 to 49 years	33.548* (1.146)	0.745* (0.251)	0.441* (0.064)	0.517* (0.134)
50 to 64 years	18.050* (1.165)	0.544** (0.294)	0.341* (0.069)	0.430* (0.141)
All females	33.892* (0.943)	0.821* (0.170)	0.226* (0.049)	0.615* (0.123)
<i>Males</i>				
15 to 19 years	49.343* (1.452)	0.453 (0.324)	-0.220* (0.081)	0.508* (0.135)
20 to 34 years	95.580* (0.289)	0.310* (0.109)	-0.064* (0.021)	0.044 (0.156)
35 to 49 years	97.097* (0.314)	0.154* (0.076)	-0.028 (0.018)	0.460* (0.139)
50 to 64 years	75.857* (1.176)	0.407 (0.292)	0.039 (0.069)	0.441* (0.140)
All males	85.001* (0.365)	0.274* (0.110)	-0.068* (0.023)	0.290** (0.149)

Notes: \* Significant at 5% level; \*\* significant at 10% level.

Regression of LFP on unemployment rate of prime-age males and time trend<sup>1</sup>. Data is biannual for the period 1974/1-1995/1 (usually measured in April/May and September/October), yielding 42 observations. Data for April 1986 are missing. Maximum Likelihood methods were used for correcting for autocorrelation.

<sup>1</sup> We tried other specifications where we introduced a seasonality dummy, since May and October are presumably different in terms of labor force participation. Only the participation rate for teenage women showed less entrance in the labor force during October, without altering significantly the other coefficients.

Table 5

C. Further refinements

*Sub-period results.* Since the period 1991-1995 is the Convertibility-structural reform period, we expect differences in structural parameters in the regressions. In particular, the atypical behavior in Argentina is that this period was a boom in terms of GDP and Industrial Production growth, while at the same time of increasing unemployment. So, first of all, we tested if the "added worker effect" is a phenomenon of the latest part of the period and by how much. Annex 1 presents the regressions of women LFP on  $U^p$ , trend, a dummy equaling 1 if the period is 1991-95 and 0 otherwise (dummy95), and the interaction of dummy95 and  $U^p$ . As expected, we find that except for women aged 35-49 years, there is a significant effect of this interaction. That is the "added worker effect" grew stronger since 1991 for the "less stable" part of the female labor force. For instance, for teenagers, in Table 6 we found that a 1% increase in  $U^p$  increases their LFP rate by 1.2 percentage points; until 1990 (inclusive), it increased their participation by only 0.7 percentage points, the remaining 0.5 percentage point was added after 1991.

*Direct measures of cycle.* Second, we introduced a direct measure of the cycle, the evolution of an index of industrial production (IPI), to test if the effects on LFP of increases in male unemployment rates differ from IPI. Tables 6 and 7 show the estimates for both females and males ( $\delta$  is the coefficient of the log of industrial production  $\log(IPI)$ ). When  $U^p$  is excluded from the regression, adding  $\log(IPI)$ , results when significant in a negative effect; that is, the LFP of women continues to be countercyclical. But when we include both  $U^p$  and  $\log(IPI)$ , teenagers responded countercyclically to both. Prime-age and older women continue to respond as added workers to  $U^p$ , but procyclically to  $\log(IPI)$ . This is also the result we obtain for all females together.

Male LFP, however, is always procyclical with regard to  $\log(IPI)$ . Notice that when both  $U^p$  and  $\log(IPI)$  are used, there is an "added worker" response for males that is very small when only  $U^p$  is used. These results indicate that it should not be concluded that in Argentina LFP is countercyclical for all measures of the cycle, but that the cycle should be differentiated and explained before making predictions for policy purposes.



## DETERMINANTS OF LABOR FORCE PARTICIPATION, FEMALES

Age	$\alpha$ Constant	$\beta$ Prime-age Unemplt.	$\gamma$ Trend	$\delta$ Industrial Production	$\rho$ AR Correction
15 to 19	88.328* (16.750)		-0.117 (0.085)	-12.180* (3.687)	0.701* (0.111)
	45.702* (17.100)	1.185* (0.299)	-0.385* (0.072)	-2.510 (3.802)	0.429* (0.141)
20 to 34	61.562* (17.730)		0.313* (0.058)	-3.345 (3.924)	0.510* (0.134)
	23.903 (15.820)	1.171* (0.267)	0.085 (0.059)	5.108 (3.517)	0.250** (0.151)
35 to 49	28.417** (15.710)		0.569* (0.049)	1.040 (3.479)	0.486* (0.136)
	7.235 (15.130)	0.932* (0.268)	0.389* (0.067)	5.859** (3.366)	0.482* (0.137)
50 to 64	-2.705 (17.080)		0.420* (0.052)	4.543 (3.781)	0.478* (0.137)
	-23.425 (17.060)	0.841* (0.293)	0.258* (0.068)	9.241* (3.794)	0.348* (0.146)
All Females	42.896* (11.330)		0.389* (0.058)	-2.112 (2.494)	0.705* (0.111)
	14.443 (10.220)	0.986* (0.184)	0.183* (0.049)	4.328** (2.272)	0.551* (0.130)

Notes: Regression of LFP on unemployment, industrial production and trend, 1974/1-1995/1. Data is biannual (usually measured in April/May and September/October. 42 observations, April 1986 missing.

Maximum Likelihood method for correcting for autocorrelation.

Standard Error in parentheses; \* significant at 5% level, \*\* significant at 10% level.

Table 6

## DETERMINANTS OF LABOR FORCE PARTICIPATION, MALES

Age	$\alpha$ Constant	$\beta$ Prime-age Unemplt.	$\gamma$ Trend	$\delta$ Industrial Production	$\rho$ AR Correction
15 to 19	48.719* (18.470)		-0.138* (0.066)	0.084 (4.086)	0.553* (0.130)
	10.070 (19.430)	0.765* (0.330)	-0.302* (0.074)	8.734* (4.319)	0.284** (0.150)
20 to 34	91.827* (7.283)		-0.015 (0.015)	0.362 (1.616)	0.109 (0.155)
	86.491* (6.491)	0.334* (0.109)	-0.073* (0.022)	1.572 (1.459)	-0.001 (0.156)
35 to 49	96.626* (4.523)		-0.002 (0.014)	0.086 (1.002)	0.474* (0.137)
	92.099* (4.664)	0.188* (0.081)	-0.038** (0.020)	1.113 (1.037)	0.425* (0.141)
50 to 64	46.373* (16.270)		0.093** (0.052)	6.471** (3.601)	0.499* (0.135)
	28.714** (16.760)	0.744* (0.301)	-0.050 (0.078)	10.472* (3.728)	0.532* (0.132)
All Males	76.424* (6.821)		-0.028 (0.017)	1.873 (1.512)	0.341* (0.147)
	68.598* (6.262)	0.364* (0.105)	-0.096* (0.023)	3.655* (1.392)	0.190 (0.153)

Notes: Regression of LFP on unemployment, industrial production and trend, 1974/1-1995/1. Data is biannual (usually measured in April/May and September/October. 42 observations, April 1986 missing.

Maximum Likelihood method for correcting for autocorrelation.

Standard Error in parentheses; \* significant at 5% level, \*\* significant at 10% level.

Table 7

Further evidence on the existence of an added worker effect can be shown in Table 8. We show the  $\Pr(\text{Working Status of Wife} | \text{Working Status of Husband})$  and see if the difference between  $P(\text{Wife is Employed} | \text{Husband is Unemployed})$  differs from  $P(\text{Wife is Employed} | \text{Husband is Employed})$  over time and if the difference peaks with unemployment. We see that in most years the difference between columns (3) and (6) is positive, the exception being 1986 and 1987, which were years of relatively low male unemployment.

WOMEN'S LABOR FORCE STATUS, BY HUSBAND'S EMPLOYMENT STATUS						
Husband:	<i>Unemployed</i>			<i>Employed</i>		
Wife:	<i>Employed</i>	<i>Unempl.</i>	<i>In LF</i>	<i>Employed</i>	<i>Unempl.</i>	<i>In LF</i>
	(1)	(2)	(3)	(4)	(5)	(6)
Oct 1985	37.6	6.4	44.0	32.6	0.9	42.5
Oct 1986	34.2	1.2	35.4	34.3	1.3	35.6
Oct 1987	31.7	2.3	34.0	33.2	1.8	35.0
Oct 1988	38.1	6.0	44.1	36.2	2.3	38.5
Oct 1989	40.7	5.2	45.9	36.2	1.7	37.9
Oct 1990	51.1	1.5	52.6	37.8	1.1	38.9
Oct 1991	54.1	0.0	54.1	36.8	1.3	38.1
Oct 1992	41.8	3.8	45.6	38.0	1.9	39.9
Oct 1993	45.5	5.4	50.9	39.1	4.1	43.2
Oct 1994	42.4	9.8	52.2	37.6	5.5	43.1
May 1995	37.7	15.6	53.3	37.4	10.2	47.6

Table 8

Except in 1991, when we expected to have a small difference between these probabilities, these data show signs of a strong added worker effect for married women in the peak unemployment years of 1989 and 1993-95.<sup>11</sup> It appears that wives respond to higher unemployment of husbands by increasing their labor force participation (both employment and unemployment) and this trend tends to increase even more the overall unemployment rate. In other words, if there is an exogenous increase in overall unemployment (caused, for example, by sectoral variability in the demand for labor), the effect will be magnified by the accompanying rising unemployment of women that "added" to the labor force to help overcome this fluctuation in family income.

<sup>11</sup>We have a large drop in the absolute number of husbands unemployed - from 68,800 to 42,700 - and the relatively lower number of unemployed may have strong reasons to be unemployed, such as general disadvantages or sickness that make the wife the sole provider.

During the period of study, Argentina had cycles of high inflation that tended to be followed by stabilization plans that opened the economy both to international capital movements and trade in goods. The result was not only lower inflation rates but lower real exchange rates as well. The real exchange rate being the relative price of traded goods with respect to non-traded goods, such changes cause sectoral reallocations of resources and people<sup>12</sup>. In particular, low real exchange rates correspond to a relative rise in wages where women work more intensively, that is, the service sector. At the same time, the change in this important relative price while creating sectoral reallocation of workers, might in itself increase unemployment. As a result of these forces, periods of stabilization with "opening of the economy" (what might be called a competitive shock through lower real exchange rates) might coincide with an increase in male unemployment, which through the added worker effect is followed by an increase in women labor force and unemployment. To make matters worse, the increase in women's relative wage causes a substitution effect (a discouraged worker effect in reverse) that also works to increase labor force participation of women.

While this analysis is revealing, it is incomplete in that it does not explain why real wages did not adjust to prevent increasing unemployment. Cox Edwards (1996) and Grignon (1996) analyze Argentina's labor market institutions to examine if obvious rigidities exist that may be preventing wage adjustments, especially since the latest reforms.

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<sup>12</sup>A lower real exchange rate also means that imported goods are cheaper. Argentina imports, among other things, capital goods. A lower price of capital goods with respect to the higher price of labor, implies a strong substitution effect towards capital and against labor if production processes allow such adjustments (Pessino and Gill, 1996, find evidence of moderate elasticities of substitution between labor and capital). The term "labor" should be qualified in the sense of skills or human capital to capture the full effects of this substitution. Pessino (1994b) shows that since 1991 there has been a substitution of new human capital for the old. This cannot all be attributed to the lower real exchange rate, since the country initiated in this period a process of privatization, deregulation, and opening of the economy that is changing the structure of production.

**D. Decomposition of Recent Unemployment Increases**

Recent discussions of labor market trends in Argentina often involve decomposition of the increase in unemployment into the component due to abnormally high labor supply and that due to abnormally low labor demand. We join this debate here, but with the qualification that we view such discussions largely an accounting exercise, with few direct policy implications. The first step in determining the extent to which labor supply has been unusually high is, naturally, to determine what is meant by the "normal" labor supply level.

*Using trend LFP as "normal".* One way to define "normal" or "expected" labor supply is to use its trend level. Then all deviations from this level are abnormal. We focus here on the labor force participation rate, since this is acknowledged to be the primary source of short-run variations in labor supply in Argentina. Figures 4 and 5 show male and female participation rates (for the group aged 15 to 64 years) and their predicted or "normal" values using only a linear time trend (actual estimates are not reported). While female LFP shows a strong upward trend, male LFP rates have a small downward trend within a much narrower band between 82 and 88 percent. Notice that the estimate fails to capture the cyclical increases in LFP for both males and females in 1989, 1993, and 1995, what we identified earlier as the "added worker effect".

*Using trend and cycle measures as normal.* To incorporate this, we estimate LFP rates using both the trend and cycle components, with the latter being predicted using  $U^p$  (unemployment of prime-aged males). Figures 6 and 7 show the estimated LFP rates using this as the predictor of the cyclical component. The predictions are better for May 1995, but they do not capture well the peaks of 1989 and 1993.<sup>13</sup> Figures 8 and 9 show the estimated LFP using trend and cycle, the latter measured in turn by  $U^p$  and log of the industrial production index,  $\log(IPI)$ . The predictions improve considerably. For example, the below trend LFP of the period 1980-1986 - years of stagnation in GDP and IPI - is better captured because of the procyclical nature of LFP with respect to the IPI measure of the cycle. In the Annex, figures A1 and A2 show the estimated LFP using trend and cycle measures, the latter represented by the male unemployment rate interacted with a dummy for 1991-1995, the reform-convertibility period. But while the predictive power is statistically improved by this innovation, it adds little to our understanding of why the reforms should affect labor force participation rates.

The relatively poor explanatory power of these models may in part be because of the aggregative nature of the LFP series used. Annex figures A3 onwards report the results of estimations by age group, which may be more meaningful since different age groups behave quite differently to changes in the economy.

*A test of the model's predictive power.* A handy test of the predictive power of the regressions reported in tables 6, 7, and A1 is available since we now have the results of the October 1995 wave of the EPH. Using the four alternative models, we predicted LFP for October 1995. The results are presented in Table 9. For women, models II and III are best, while for men models I, II and III do

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<sup>13</sup>In October 1983, the sample size of the EPH became much smaller, and the actual values of LFP are less precise. Note the large increase in LFP that is not captured by the estimates.

equally well. The average predictive power of the models appears to be good, indicating that the theoretical foundations and econometric formulation are consistent with the data.

<b>THE PREDICTIVE POWER OF ALTERNATIVE MODELS OF LABOR FORCE PARTICIPATION</b>						
Group	Actual LFP (percent)	Predicted LFP of Model:				
		I	II	III	IV	Average
<u>Females:</u>						
15-19 years	27.1	25.6	29.8	29.4	30.8	28.9
20-34 years	63.1	59.3	62.9	63.5	64.2	62.5
35-49 years	58.7	57.7	60.1	61.0	60.6	59.9
50-64 years	39.7	36.6	38.2	39.7	39.9	38.6
All	51.7	49.7	52.0	52.7	52.7	51.8
<u>Males:</u>						
15-19 years	44.3	43.2	44.5	46.0	46.7	45.1
20-34 years	92.8	92.9	94.0	94.2	93.8	93.7
35-49 years	97.3	97.0	97.5	97.6	97.5	97.4
50-64 years	82.1	80.4	81.7	83.4	82.9	82.1
All	84.1	84.0	84.9	85.4	85.3	84.9

Note: The four models are: (I) trend only; (II) trend and cycle represented by unemployment of prime-aged males,  $U^P$ ; (III) trend,  $U^P$ , and industrial production index (IPI); and (d) trend,  $U^P$  and period dummy for 1991-1995 interacted with cycle measure.

Table 9

*Decomposition of the unemployment increase in 1995.* Using these estimates, we can examine the extent to which "abnormally" large increases in labor force participation are responsible for the observed increase in unemployment levels in 1995. Interpreting departures from a linear trend as "abnormal", actual May 1995 participation levels for both women and men appear to be about 5 and 2 percentage points above their normal levels: i.e., 54.5 percent versus a trend of about 49.5 percent for women, and 86 percent versus a trend of about 84 percent for men (see Figures 4 and 5). But well-established theory suggests, and our empirical analysis for Argentina shows, that cyclical factors are important as well. When cyclical factors are incorporated, the "surprise" component of the recent increase in labor supply diminishes significantly. May 1995 participation rates are still abnormally high, but by much smaller margins: less than 1 percentage point for both men and women.

Figure D.1

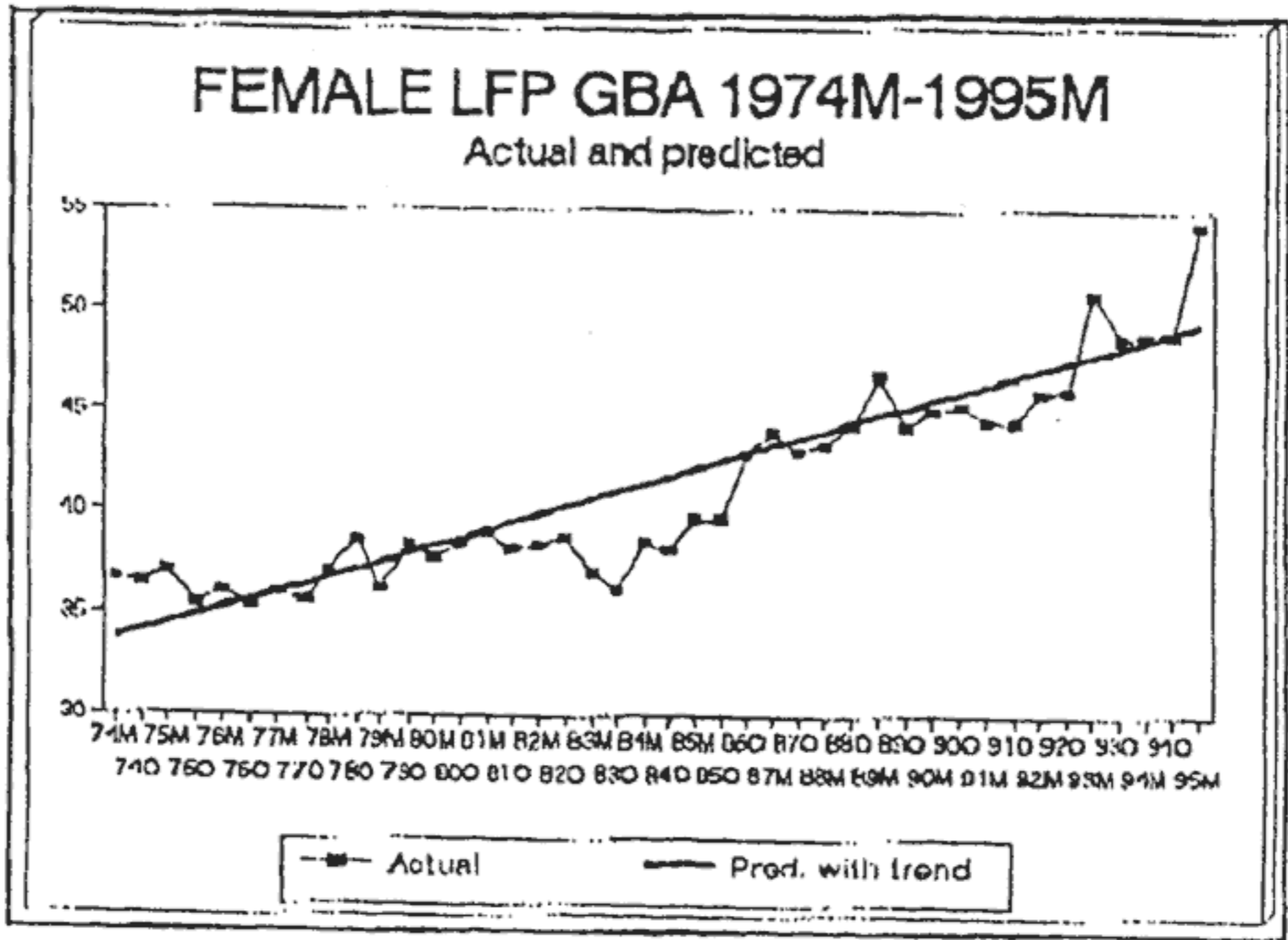


Figure D.2

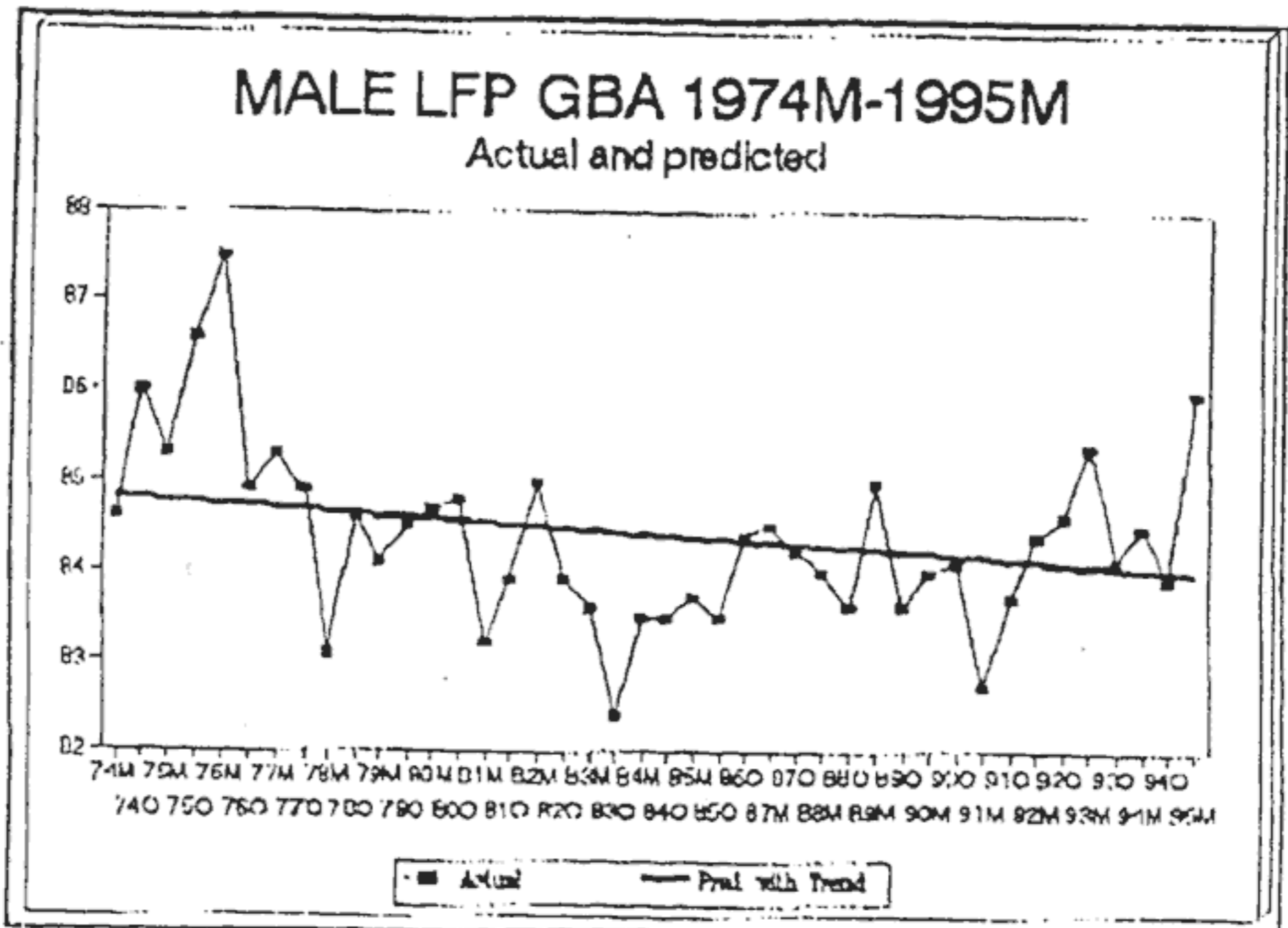


Figure D.3

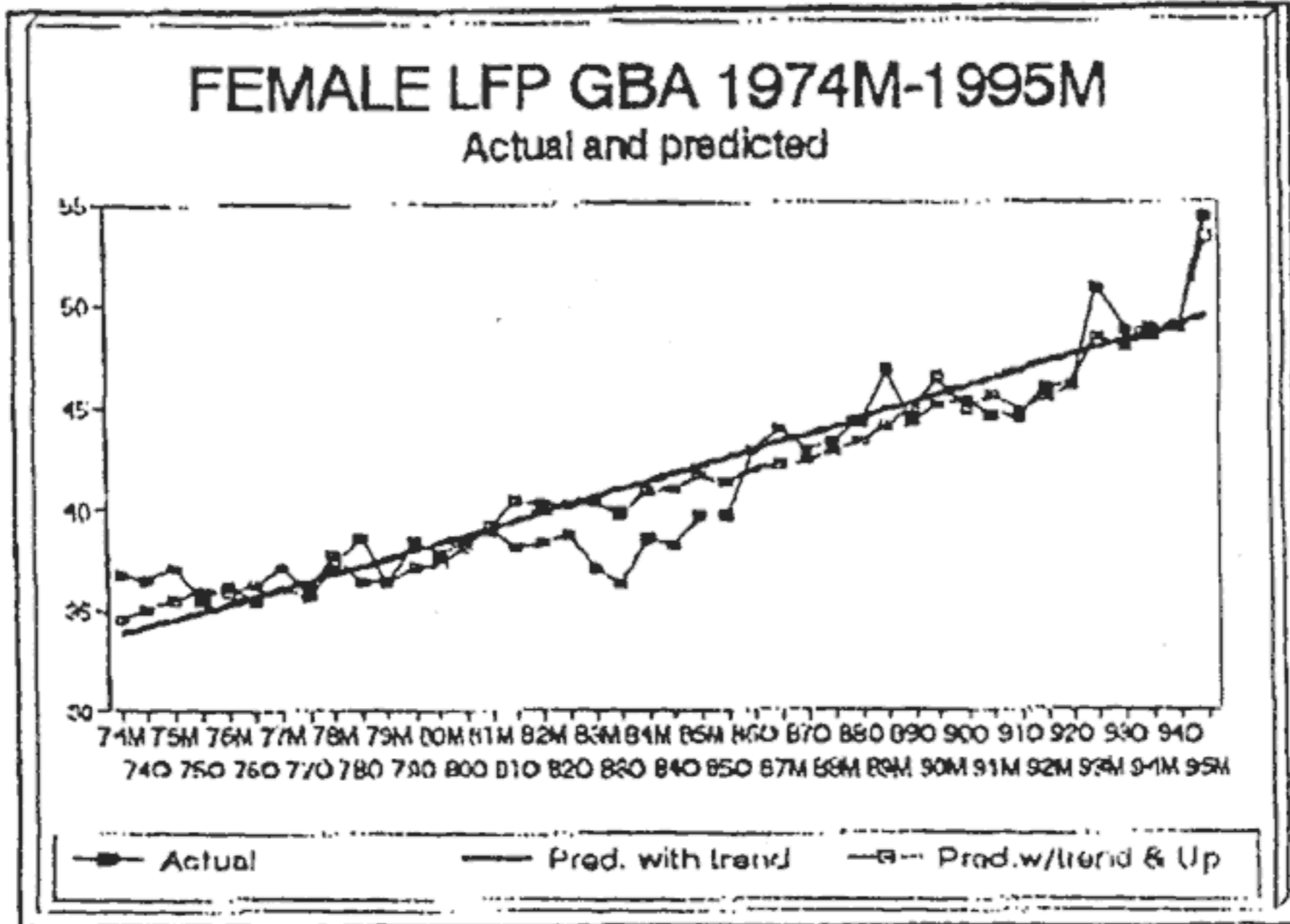
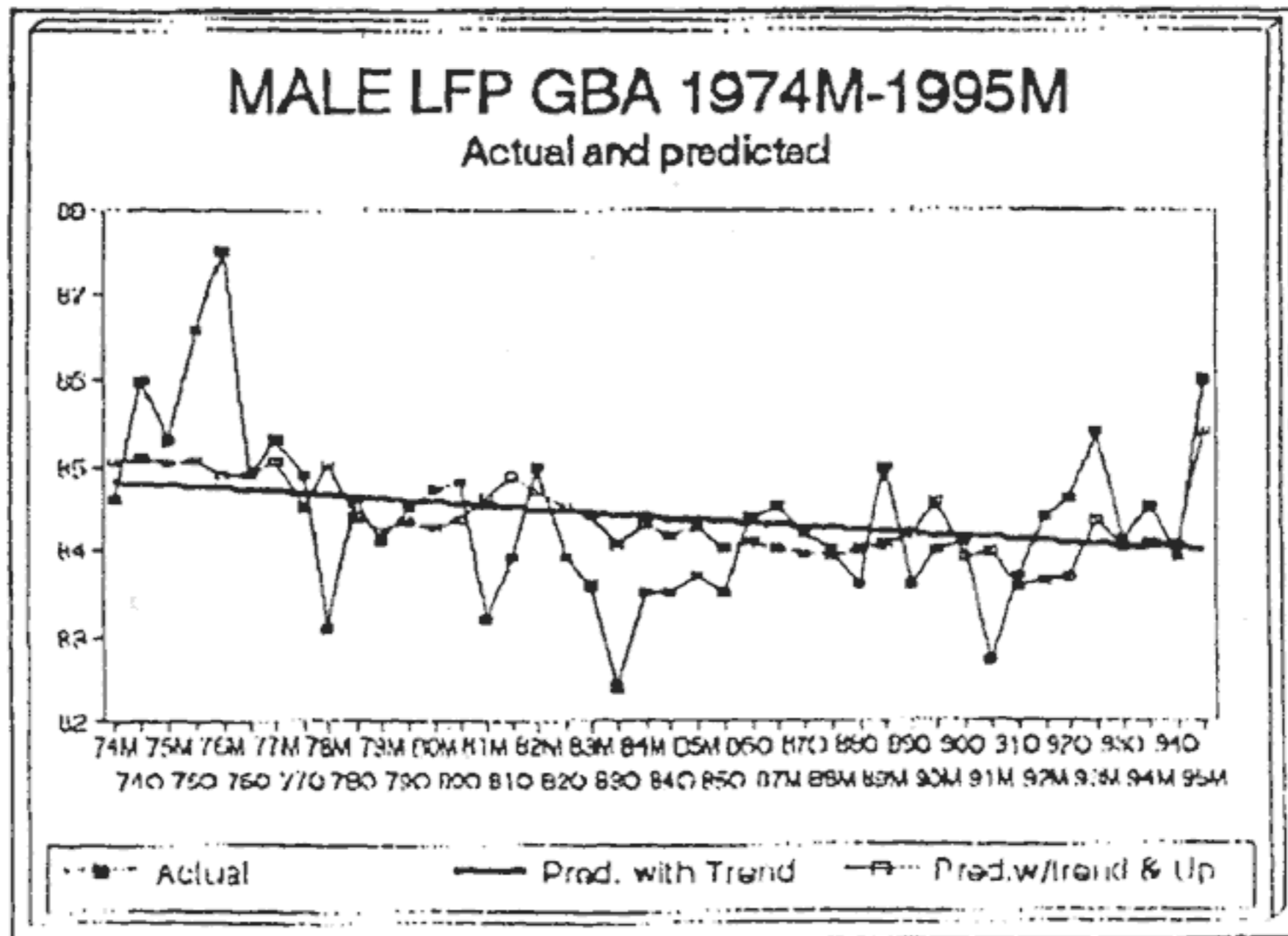


Figure D.4





#### IV. SUMMARY AND POLICY IMPLICATIONS

##### A. Main Findings

*Long-term (trend) changes.* First, between 1974 and 1995, aggregate labor force participation rose by almost 18 percentage points, fuelled entirely by increases in female participation rates, which were especially large since 1990. Participation rates for non-prime aged males and females increased (or did not decrease) during the last decade, registering a sharp rise during 1994-95. This is contradictory to worldwide patterns, since higher income usually brings about a shorter lifetime career through more schooling - delaying the entry into the labor force - and earlier exit (retirement) from the labor force.

*Short-term (cyclical) changes.* Second, for the period 1987-1993 - during which per capita income increased significantly - this does not seem the case, implying that either lower wealth or higher real wage rates drove more of the old and very young into the labor force. The 40 percent increase in real wages between 1990 and 1993 is consistent with an "encouraged worker effect" - that is, a substitution effect of higher wages that operates to increase LFP. The small decrease in real wages (of about 10 percent) between 1993 to May 1995, along with a sharp slowing down of income growth since October 1994 - is consistent with a scenario where a weak "discouraged worker effect" is dwarfed by a large "added worker effect" of a fall in household incomes due to worsened labor market prospects of prime-aged males. This is in marked contrast to findings for the US and Britain, where the discouraged worker dominates, resulting in procyclical behavior of labor supply. In Argentina, cyclical changes exacerbate the unemployment problem.

*Responsibility for increased unemployment since 1987.* Third, despite seemingly rapid growth of the female labor supply from 1974 levels, increased female labor force participation can at best account for less than 6 percentage points of the increase in unemployment between 1987 (6.1 percent) and May 1995 (20.2 percent). This is largely because of the low initial rates of female participation (relative to countries with similar income and education levels), so that *absolute* increases in female workers are not sufficiently large to confirm conjectures that increased supply, not slowing demand, is responsible for the rapid rise in unemployment. Additional evidence indicates that re-entrants (including retirees) and new entrants to the labor force account for only about one-third of the total unemployed in the GBA area in October 1995: almost two-thirds of the unemployed were previously employed, and while about two-thirds of re-entrants and new entrants were women, almost two-thirds of the unemployed who were previously employed were men. While these findings do not prove that unexpected increases in labor force participation are not mainly responsible for the high levels of unemployment since 1987, they do provide another reason to be cautious in making such claims. In October 1995, unemployment dropped to 17 percent, almost entirely due to a drop in labor force participation: labor supply increases thus account for an even smaller proportion of the increase in unemployment between 1987 and 1995.

*Decomposition of the unemployment increase in 1995.* Finally, we find that analyses of current labor market trends that attribute recent unemployment increases largely to unexpected or "abnormally" large labor supply increases - inadvertently understate the importance of policy reform to stabilize and

increase labor demand.<sup>14</sup> Interpreting departures from a *linear trend* as "abnormal", actual May 1995 participation levels for both women and men appear to be about 5 and 2 percentage points above their normal levels. But established theory suggests, and empirical analysis shows, that using only trend values as "expected" labor force participation ignores an important attribute of the Argentine labor market: labor force participation is systematically influenced by cyclical factors, as measured by the unemployment rate of prime-aged males and the industrial production index. We correct this by using simple econometric techniques. We confirm the reliability of our technique by contrasting its predictions with actual labor force participation rates from the October 1995 INDEC household survey. When *cyclical factors* are incorporated, the "surprise" component of the recent increase in labor supply diminishes significantly: May 1995 participation rates are still abnormally high but by much smaller margins, viz., less than 1 percentage point for both men and women.

## B. Policy Implications

*Stressing trend increases in labor demand.* Figure 8 summarizes a simple exercise conducted to illustrate the importance - for policy purposes - of measures to raise the trend rate of employment growth. Data on employment and labor force growth clearly show that employment is growing slower than the labor force by a widening margin; the result, naturally, is higher unemployment. While analysis of long-term labor supply patterns is interesting for accounting purposes, it is less useful from a policy standpoint. The government would be better advised to concentrate on policies to increase labor demand and employment, such as making wage and employment-setting practices more flexible, reducing payroll taxes, and minimizing interventions that raise the reservation wage of workers. Cox Edwards (1996) and a companion paper by Pessino and Gill (1996) estimate benefits of labor policy reform, and prioritize measures to increase employment.

*Reducing cyclical fluctuations in labor supply through appropriate labor reform.* Reforms to encourage efficient employment and wage-setting practices - while promoting sustainable growth of labor demand - are likely to influence short-term labor supply patterns favorably as well. The dominance of the wealth effect (i.e., the added worker effect) over the substitution effect (i.e., the discouraged worker effect) in times of high unemployment is at least in part due to rigidities in labor market functioning. Since the economic reforms, smooth wage adjustments are hampered by individual and collective bargaining laws and practices that evolved during a period of high inflation. Thus quantity adjustments, viz., reductions in employment levels or growth rates, bear the brunt of bad times. In countries with relatively flexible labor markets such as the US, the discouraged and added worker effects work in opposite directions during a recession as wages fall significantly during recessions. Empirical studies indicate that LFP is *anticyclical* in these countries. In Argentina, high real wages tend to be maintained during recessions, thus weakening the discouraged worker effect on labor force participation. But with higher unemployment rates resulting in lower expected household income, the LFP of secondary workers tends to be *procyclical* because of the wealth or added worker effect, leading to exaggerated fluctuations

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<sup>14</sup>A companion paper (Pessino and Gill, 1996) addresses labor demand issues, measuring the output and wage elasticities of labor demand during the same period as this paper, and imputing the benefits to labor reform in contrast to a policy of simply relying on economic growth to increase employment and reduce unemployment rates.

in measured unemployment rates. Labor reforms that encourage wage flexibility will result in reduced cyclical volatility of unemployment rates, not just because employment fluctuations will be moderated by wage adjustments but also because labor supply fluctuations will be less exaggerated. The substitution (or discouraged worker) effect will be strengthened, countering the significant added worker effect that leads to increased labor supply when the economy is weak. This in turn will allow the government to concentrate on the task of instituting policies for raising long-term employment growth, instead of being distracted by temporary but sharp increases in unemployment which are politically difficult to ignore.

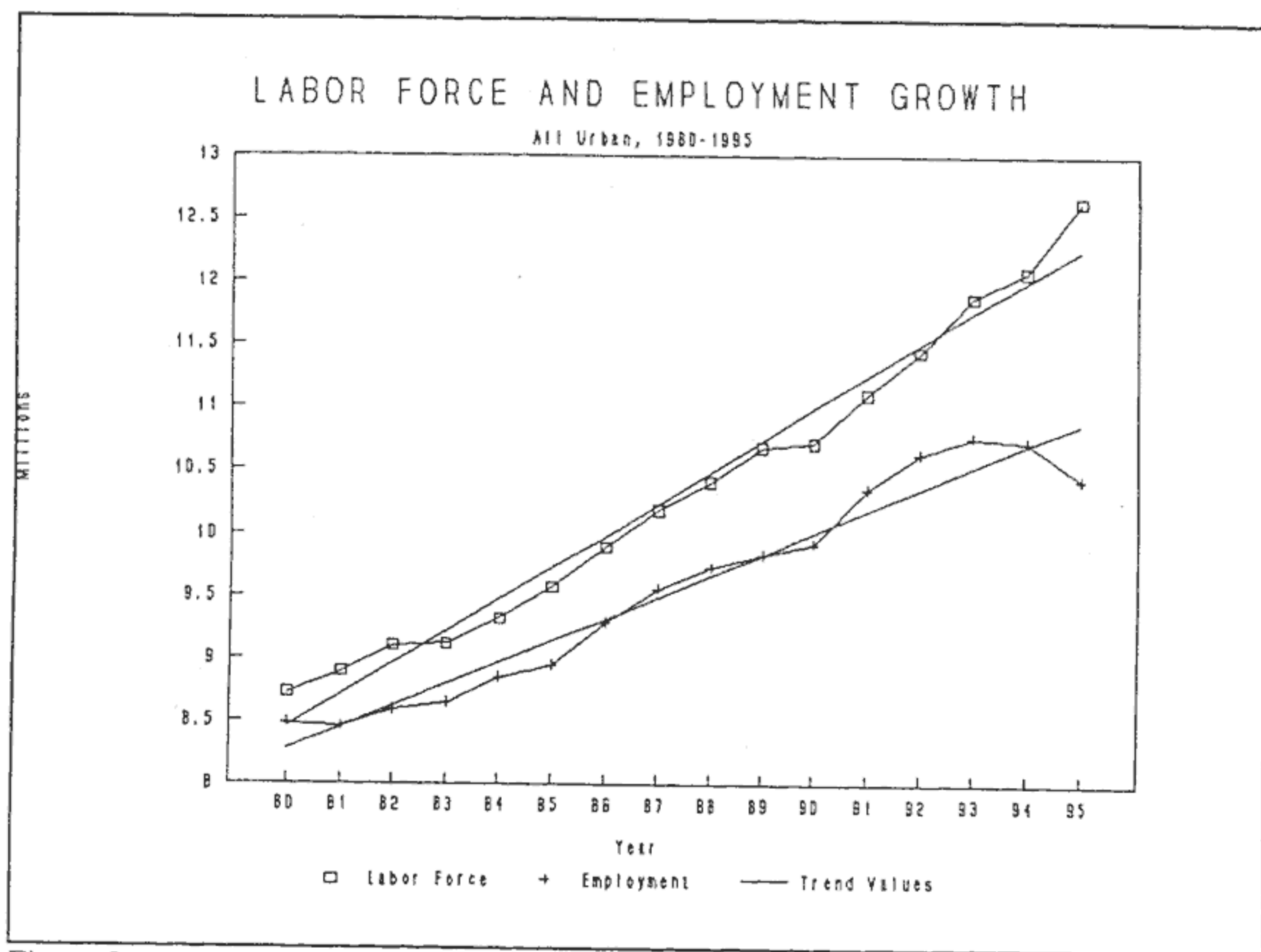


Figure 8

*Decomposition exercises have few policy-relevant lessons.* While informative in a pure accounting sense, exercises to decompose the recent unemployment increases into the component "due" to labor supply increases and that "due" to labor demand slowdown have few policy lessons, and may even divert attention from critical policy issues. Thus, for example, using LFP rates from May 1995 - which were above trend levels - to illustrate that unemployment rates would have been higher in previous years if these rates had prevailed (see, for example, *Informe Economico*, 2nd quarter, 1995) obscures one of our important findings: that LFP rates in Argentina are determined simultaneously with (and are positively correlated to) unemployment rates. Besides, there are few policy instruments that the government could - or *should* - use to influence long-term increases in labor supply.

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ANNEX

ANALYSIS OF FEMALE LFP AS A FUNCTION OF  
REAL WAGES, EMPLOYMENT, AND UNEMPLOYMENT

We are also working with cross-section data to do a more complete analysis of LFP (since we do not have time series data on wages for both men and women). Preliminary results for May 1995 show, on the basis of 1697 observations on married women between 15-64 years of age, the following linear probability model describes the LFP decision well:

$$\begin{aligned} \text{LFP} = & -0.500 + 0.024 \text{ Education} + 0.049 \text{ AGE} - 0.00065 \text{ AGE}^2 - 0.04 \text{ KIDS} \\ & (-3.3) \quad (7.9) \quad (6.5) \quad (-7.4) \quad (-3.7) \\ & - 0.00006 \text{ WAGE}_H \\ & (-4.7) \end{aligned}$$

where KIDS is the number of children less than fourteen years of age, and WAGE<sub>H</sub> is the log wage of the husband. t-statistics are reported in parentheses.

We also used the husband's employment status and education instead of husband's wage, and obtained the following results:

$$\begin{aligned} \text{LFP} = & -0.40 + 0.028 \text{ Education} + 0.048 \text{ AGE} - 0.00065 \text{ AGE}^2 - 0.04 \text{ KIDS} \\ & (-2.6) \quad (7.3) \quad (6.5) \quad (-7.3) \quad (-4.2) \\ & - 0.061184 \text{ EMPL}_H - 0.0109 \text{ EDUC}_H \\ & (-1.9) \quad (-2.9) \end{aligned}$$

EMPL<sub>H</sub> equals one if husband is employed, and zero otherwise, and EDUC<sub>H</sub> is Education of husband.

These results confirm that women - a subset of secondary workers - do respond to the wages and employment prospects of their husbands by changing their labor supply.

Box 1

**DETERMINANTS OF FEMALE LABOR FORCE PARTICIPATION**  
Taking Structural Effects of Reforms into Account

Age	$\alpha$	$\beta$	$\gamma$	int <sup>1</sup>	D <sup>1</sup>	$\rho$
5 to 19	35.331* (0.821)	0.724* (0.329)	-0.405* (0.534)	0.534* (0.220)	0.158 (0.154)	
	35.312* (0.828)	0.611 (0.445)	-0.388* (0.069)	0.701 (0.497)	-1.043 (2.812)	0.154 (0.154)
20 to 34	47.572* (1.065)	0.761* (0.342)	0.110** (0.059)	0.357 (0.258)	0.388* (0.144)	
	47.442* (1.045)	0.370 (0.437)	0.175* (0.074)	0.965** (0.502)	-4.122 (2.922)	0.382* (0.144)
35 to 49	33.861* (1.194)	0.583** (0.333)	0.436* (0.063)	0.197 (0.268)	0.491* (0.136)	
	33.862* (1.212)	0.586 (0.428)	0.436* (0.078)	0.192 (0.501)	0.035 (2.964)	0.491* (0.136)
50 to 64	18.929* (1.177)	0.125 (0.375)	0.326* (0.065)	0.516** (0.284)	0.395* (0.143)	
	18.747* (1.273)	-0.456 (0.467)	0.424* (0.084)	1.390* (0.544)	-6.043** (3.212)	0.467* (0.138)
All Females	34.357* (0.924)	0.610* (0.221)	0.215* (0.046)	0.283 (0.189)	0.579* (0.127)	
	34.295* (1.059)	0.305 (0.258)	0.270* (0.058)	0.800* (0.314)	-4.010* (1.906)	0.663* (0.117)

Note: Regression of women LFP on U, Trend differentiating the effect of U before and after 1991. Data is biannual (usually measured in April/May and September/October) for the period 1974/1-1995/1. 42 observations; April 1986 missing. Maximum Likelihood method used to correct for autocorrelation.

<sup>1</sup>int is the coefficient of the interaction term  $U^p \cdot \text{Dummy91}$ , where Dummy91 equals 1 if the period is 1991 or after, and equals zero between 1974 and 1990. D is the coefficient of Dummy91.

Standard error in parentheses; \* significant at 5% level; \*\* significant at 10% level.

Table Annex 1

**LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT**  
**All Urban Areas, 1980-1995**

Year	Total Population	Economically Active Pop.	Employed	Unemployed	Unemploy. Rate (%)
1980	23.00	8.73	8.48	0.25	2.81
1981	23.50	8.89	8.45	0.44	4.95
1982	24.00	9.10	8.59	0.51	5.60
1983	24.45	9.12	8.64	0.47	5.21
1984	24.90	9.32	8.84	0.47	5.10
1985	25.45	9.57	8.95	0.63	6.53
1986	26.95	9.89	9.29	0.60	6.12
1987	26.40	10.19	9.56	0.63	6.19
1988	26.90	10.41	9.73	0.68	6.54
1989	27.50	10.68	9.83	0.85	7.96
1990	28.00	10.72	9.92	0.79	7.42
1991	28.60	11.10	10.35	0.75	6.76
1992	29.10	11.44	10.63	0.82	7.12
1993	29.75	11.88	10.77	1.11	9.35
1994	30.35	12.08	10.73	1.34	11.14
1995	30.70	12.64	10.43	2.21	17.48

Note: Numbers are averages of April/May and October; estimates for 1995 are for May only.  
 Source: Secretaria de Programacion Economica, printed in *Informe Economico*, 1st Qtr., 1995.

Table Annex 2

Figure D.5

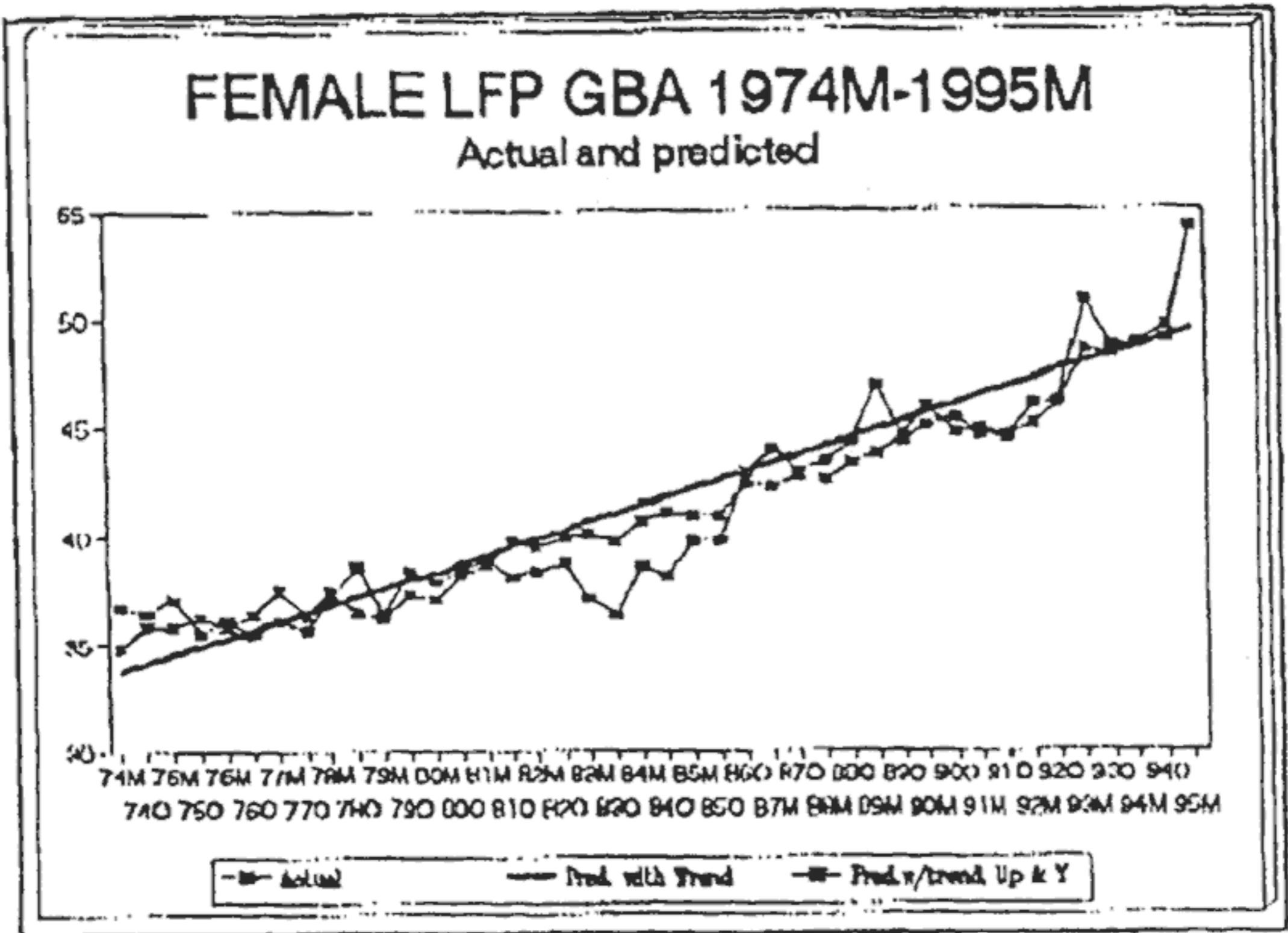


Figure D.6

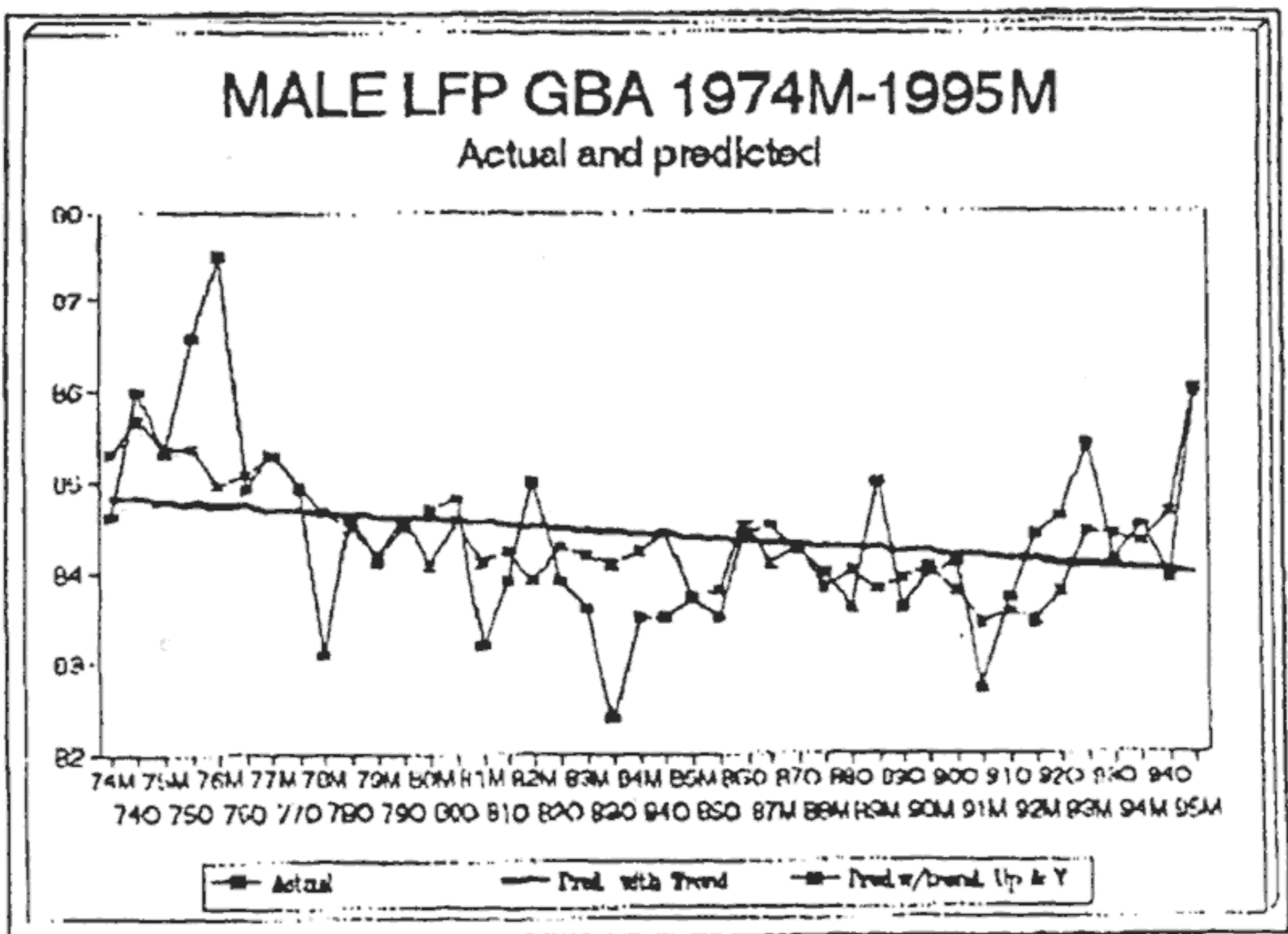




Figure D.7

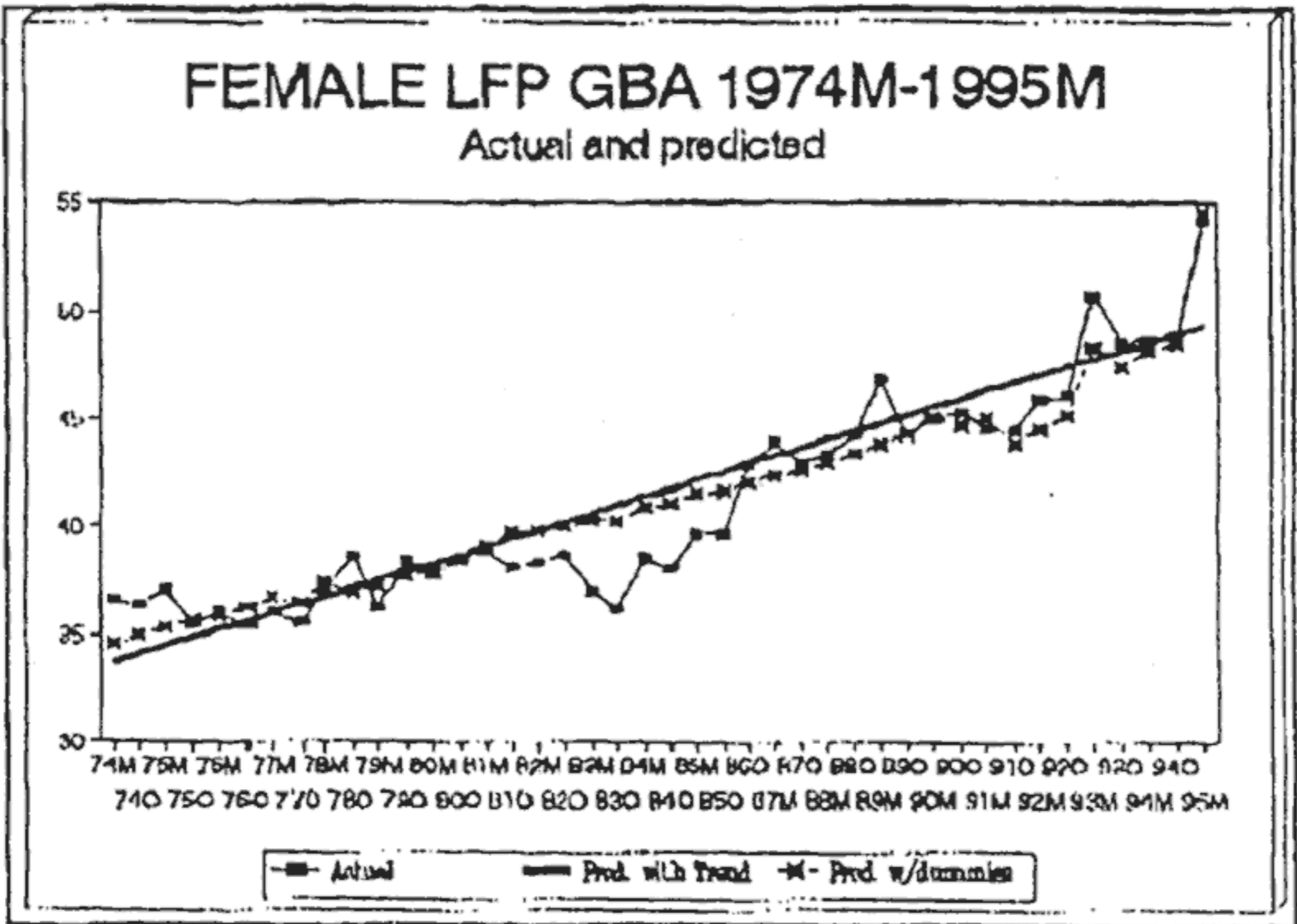


Figure D.8

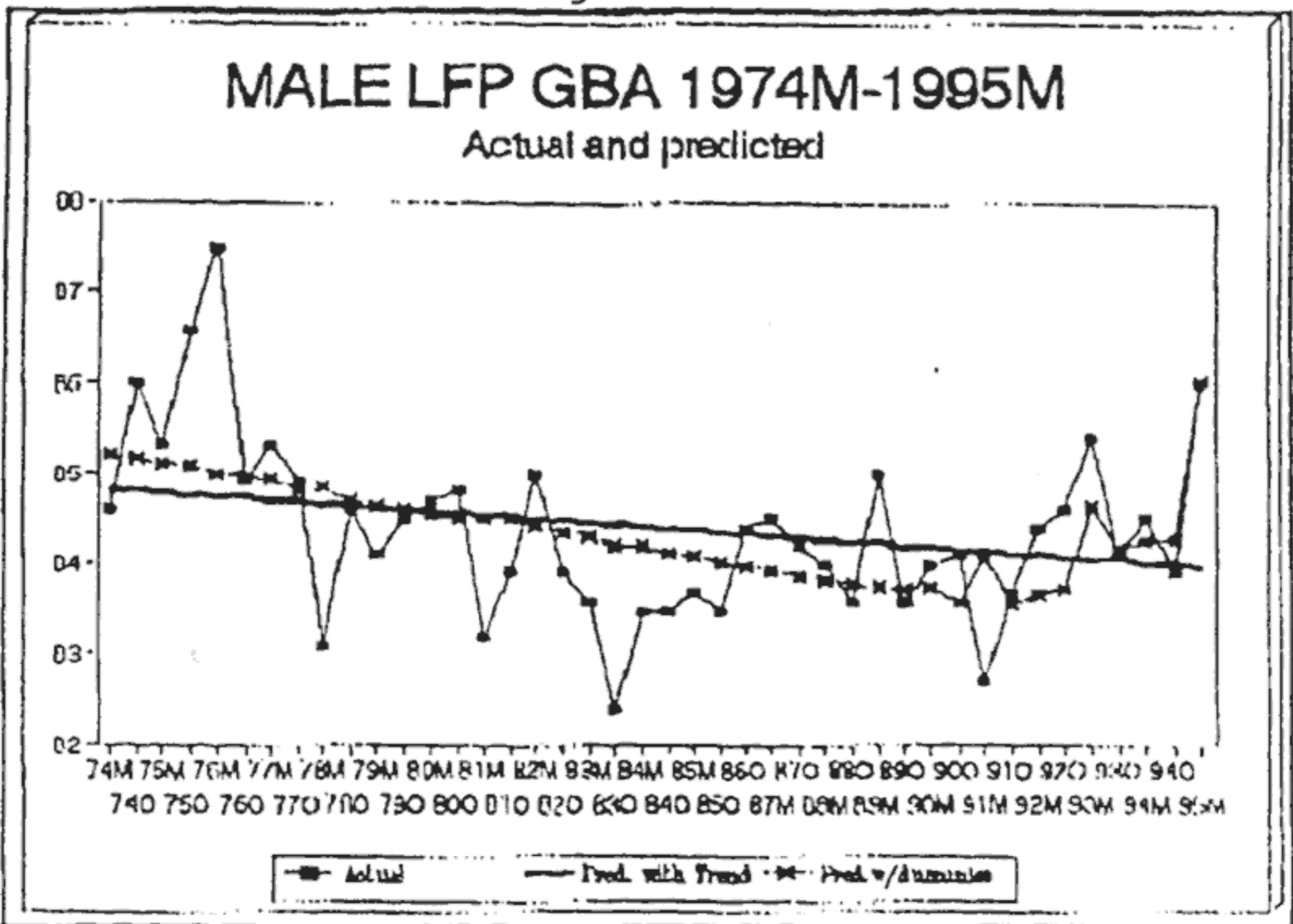


Figure D.3.1

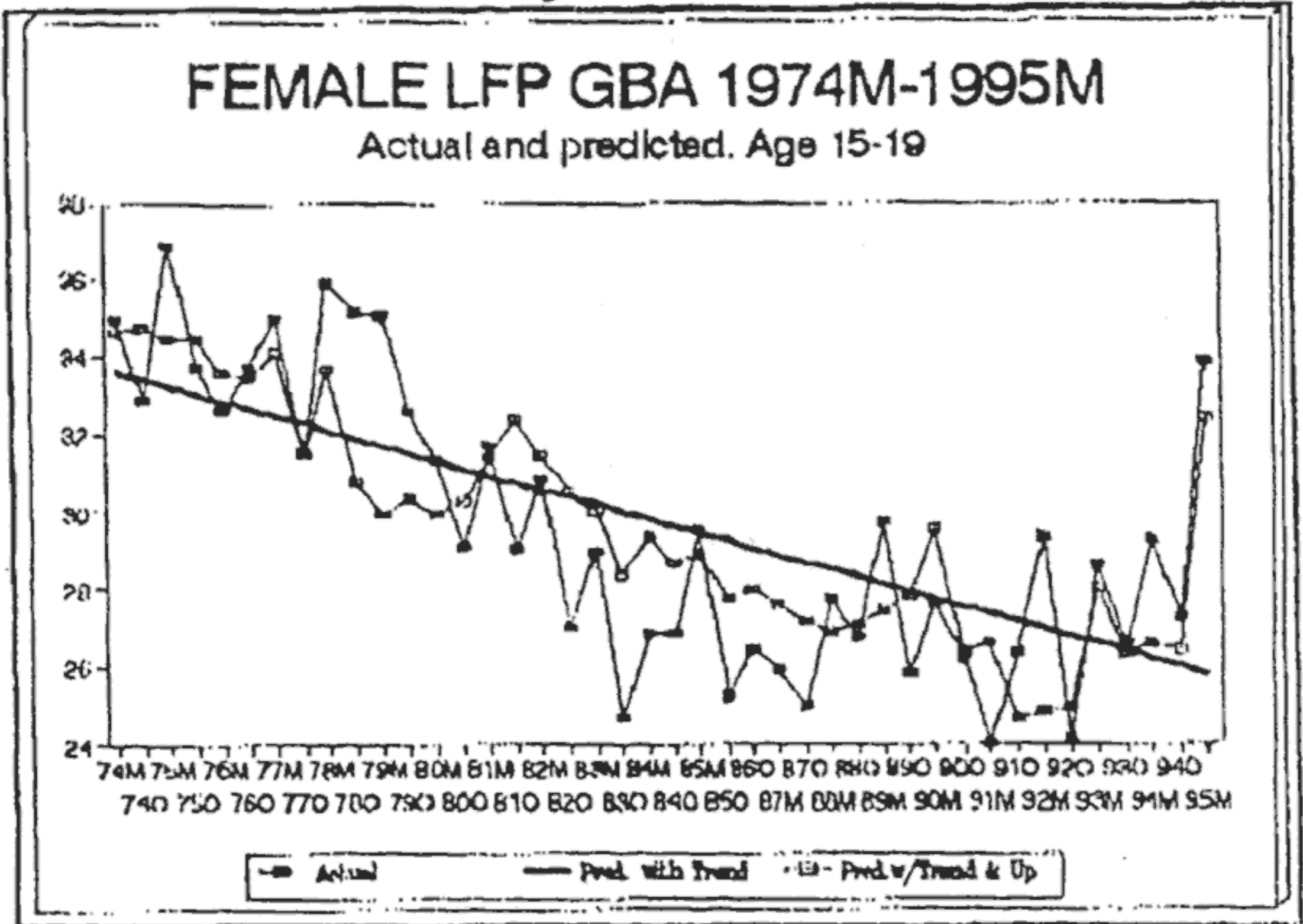


Figure D.4.1

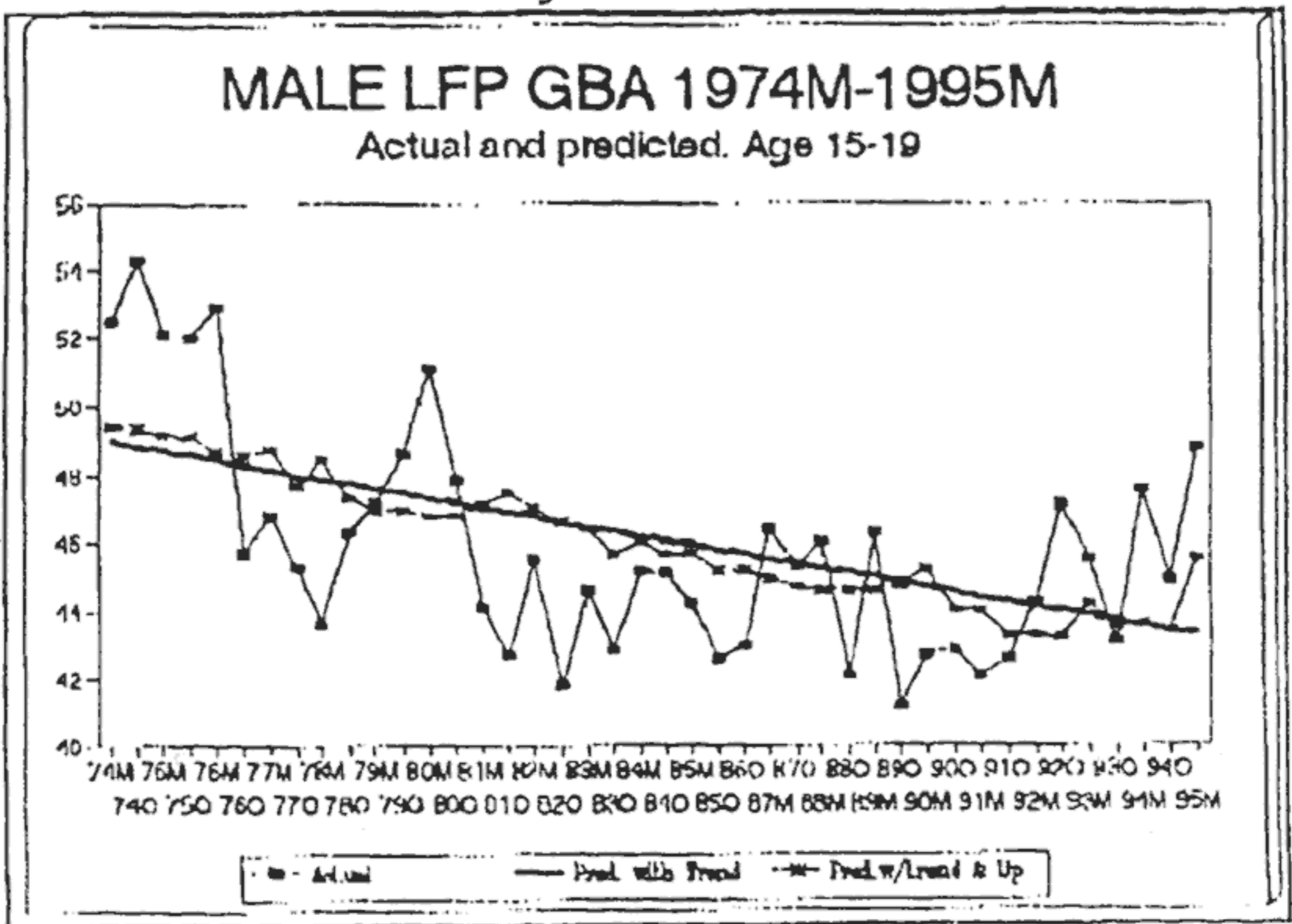


Figure D.5.1

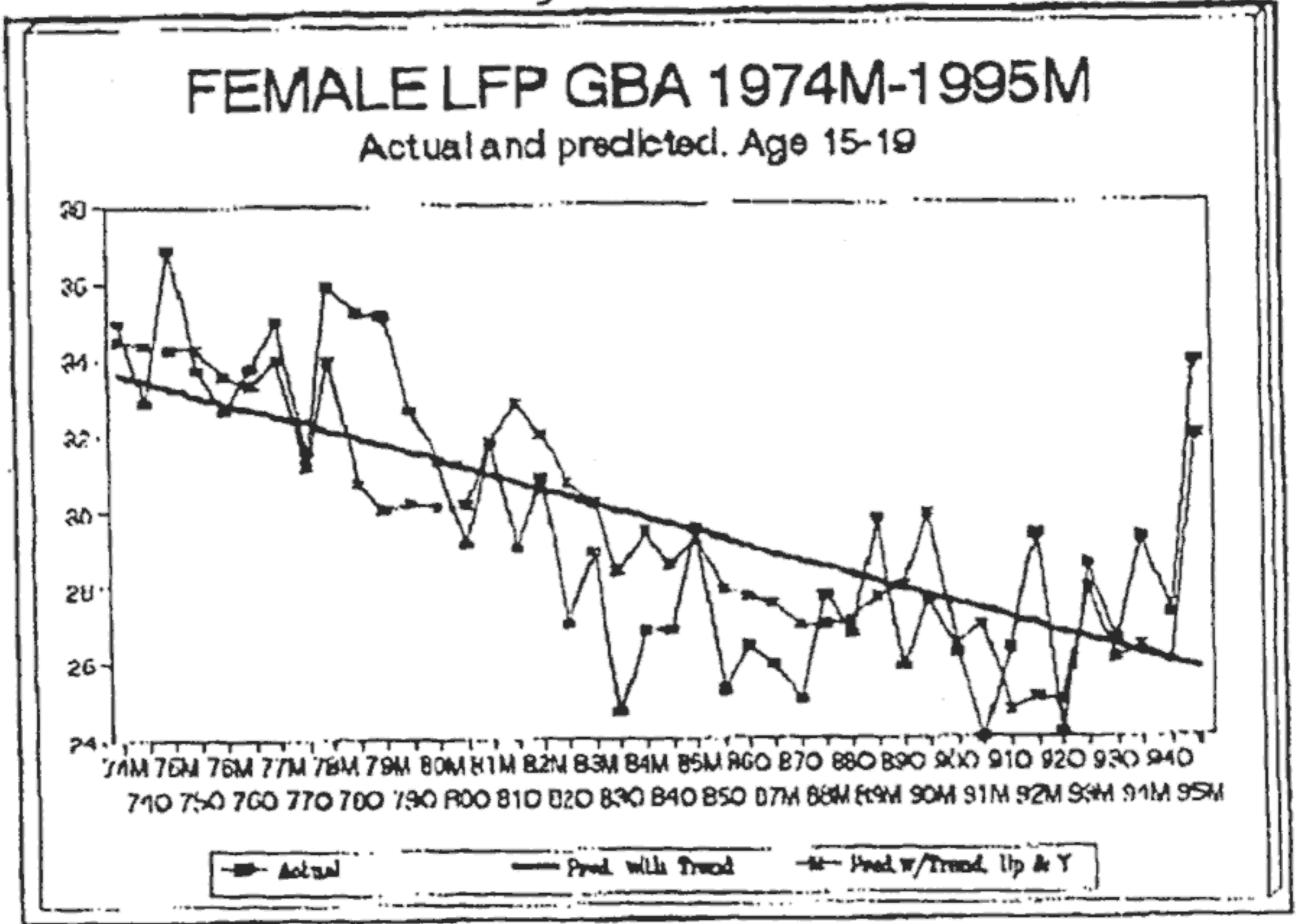


Figure D.6.1

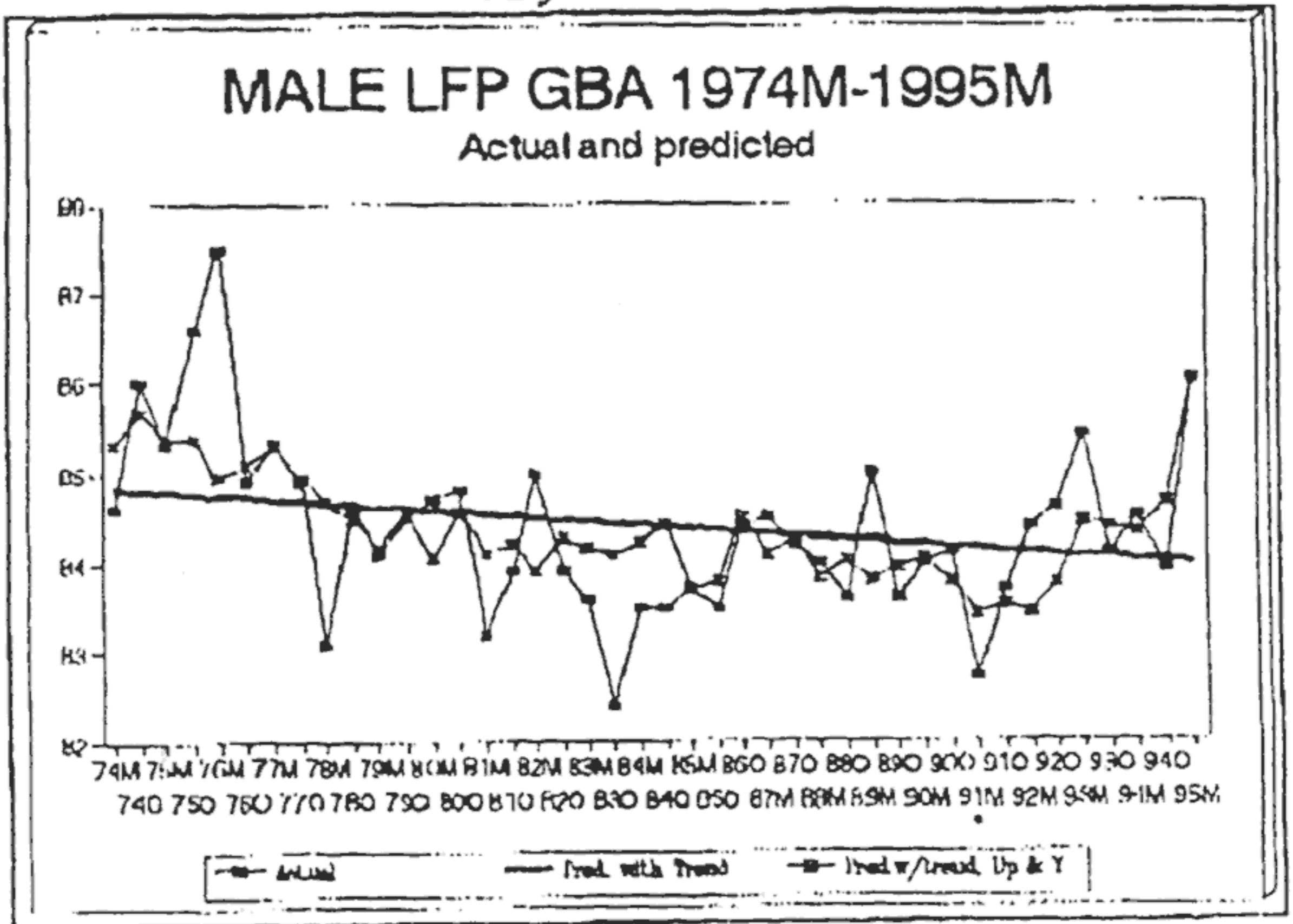


Figure D.3.2

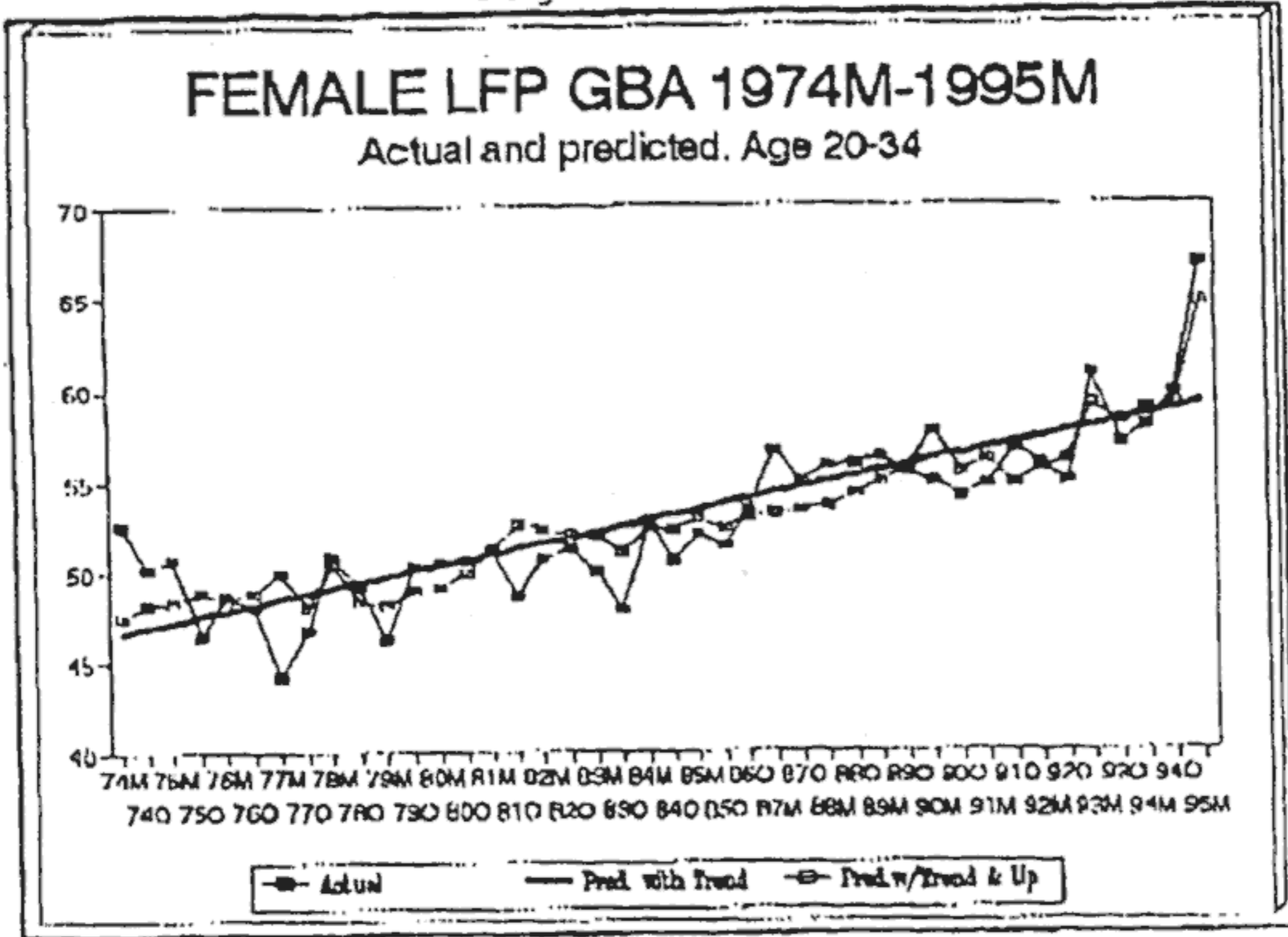


Figure D.4.2

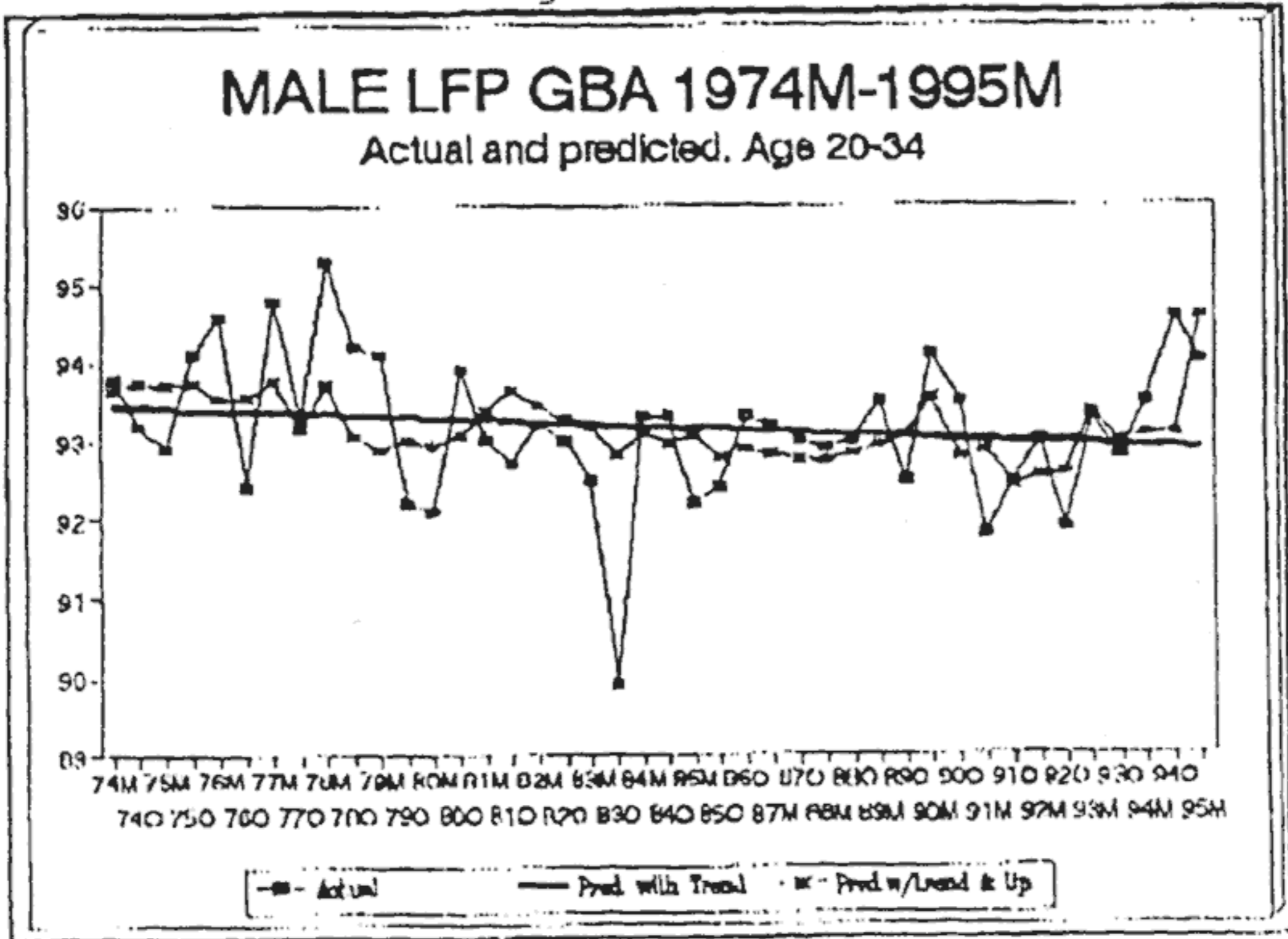


Figure D.5.2

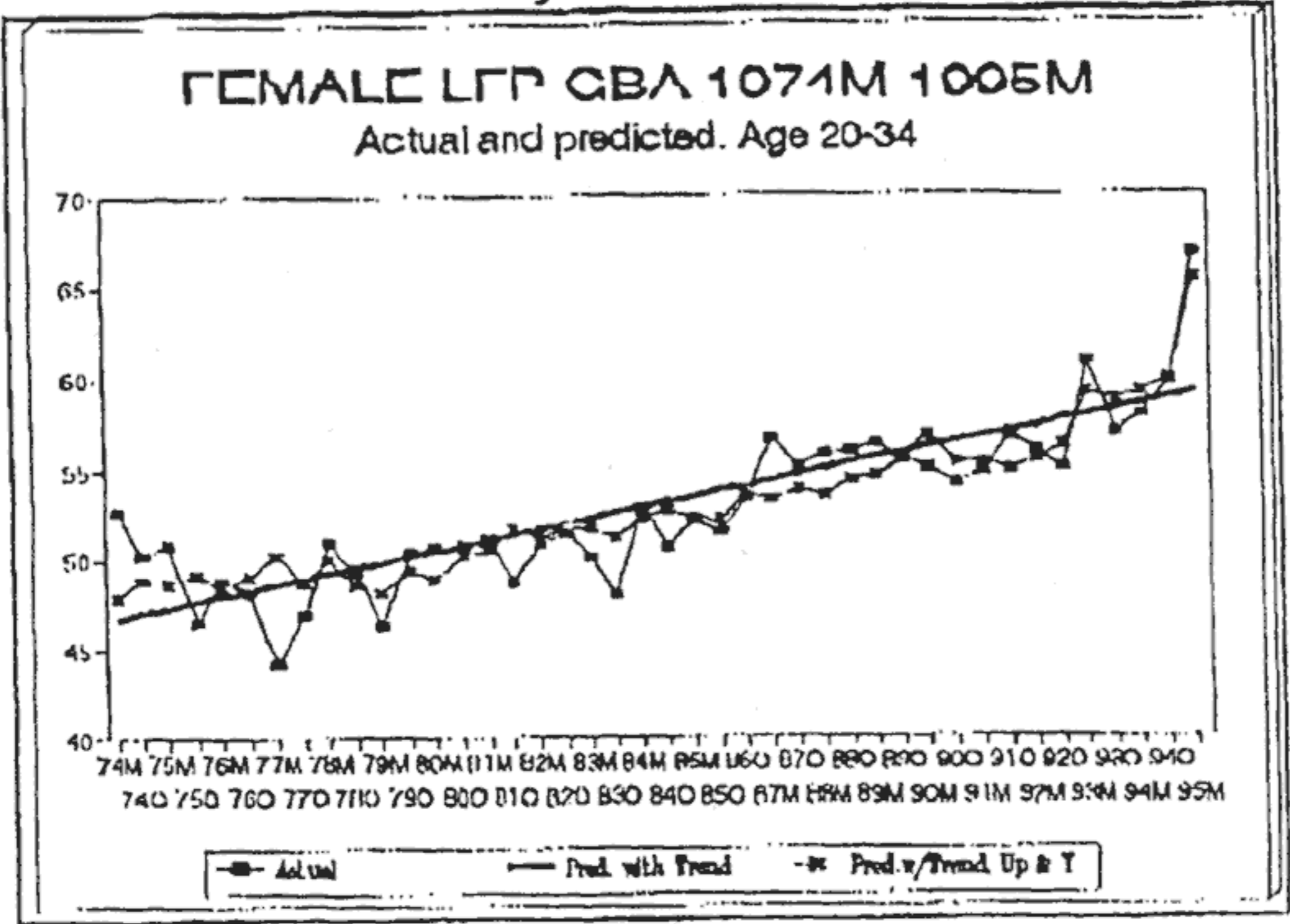


Figure D.6.2

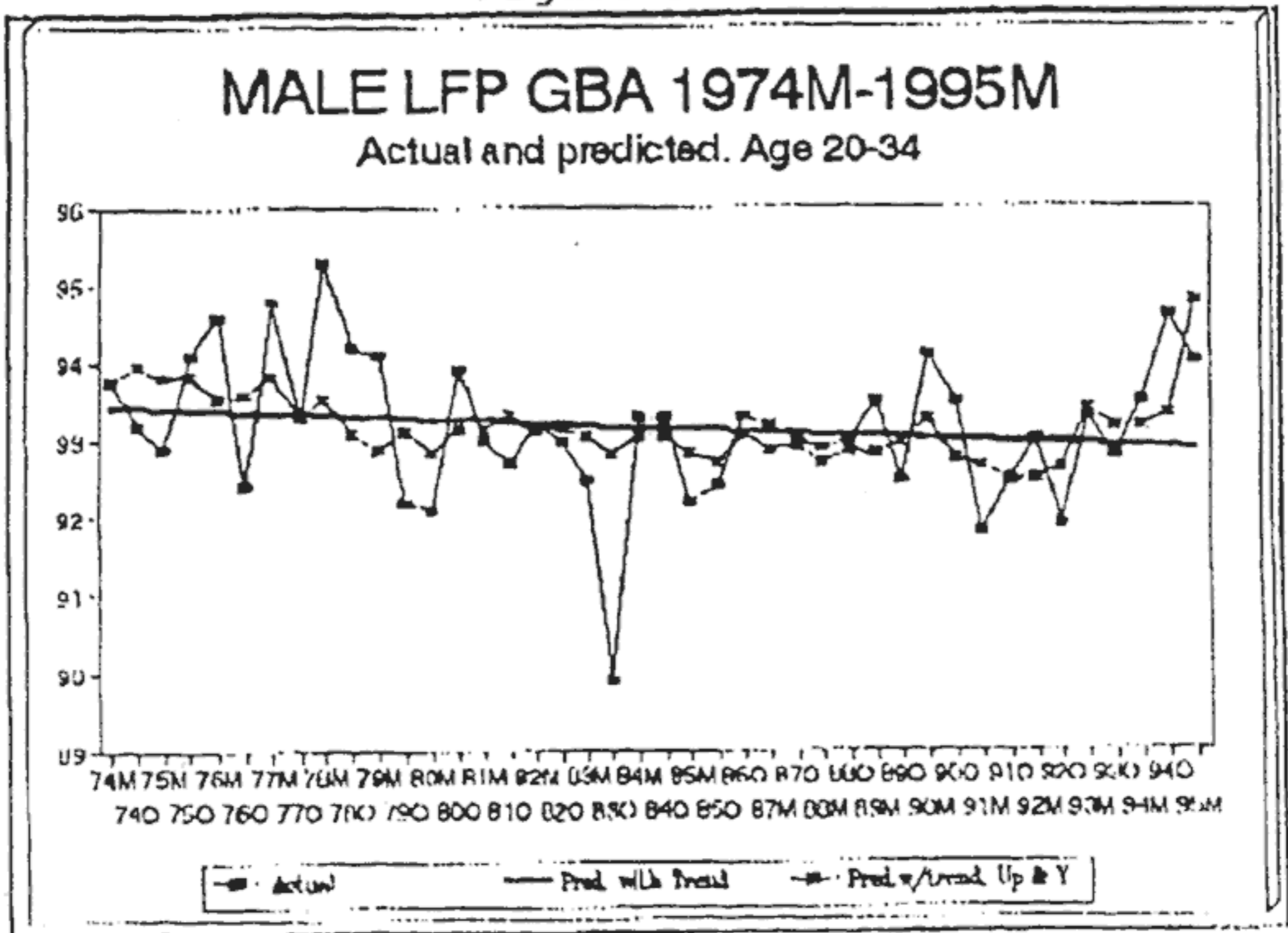


Figure D.3.3

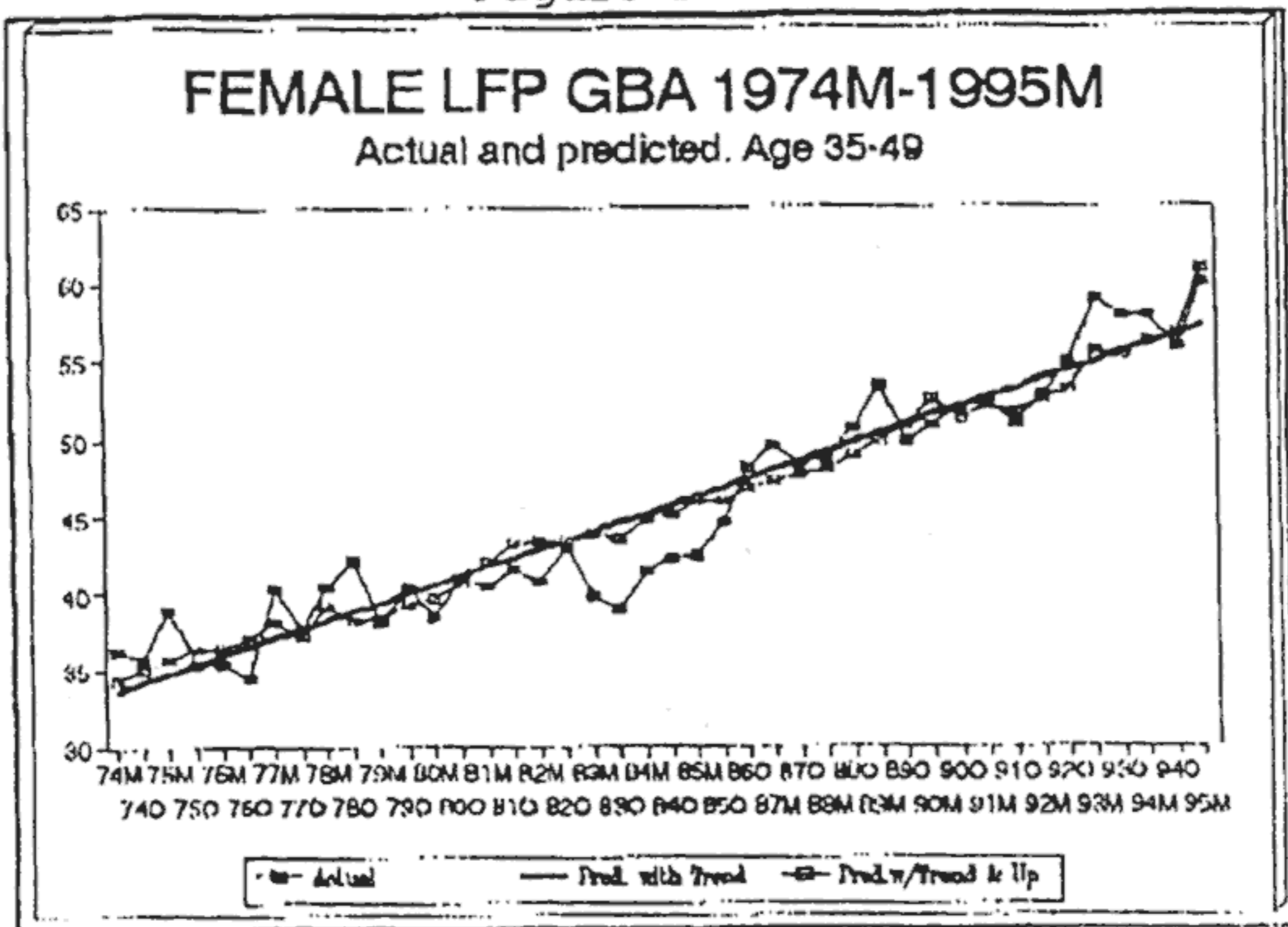


Figure D.4.3

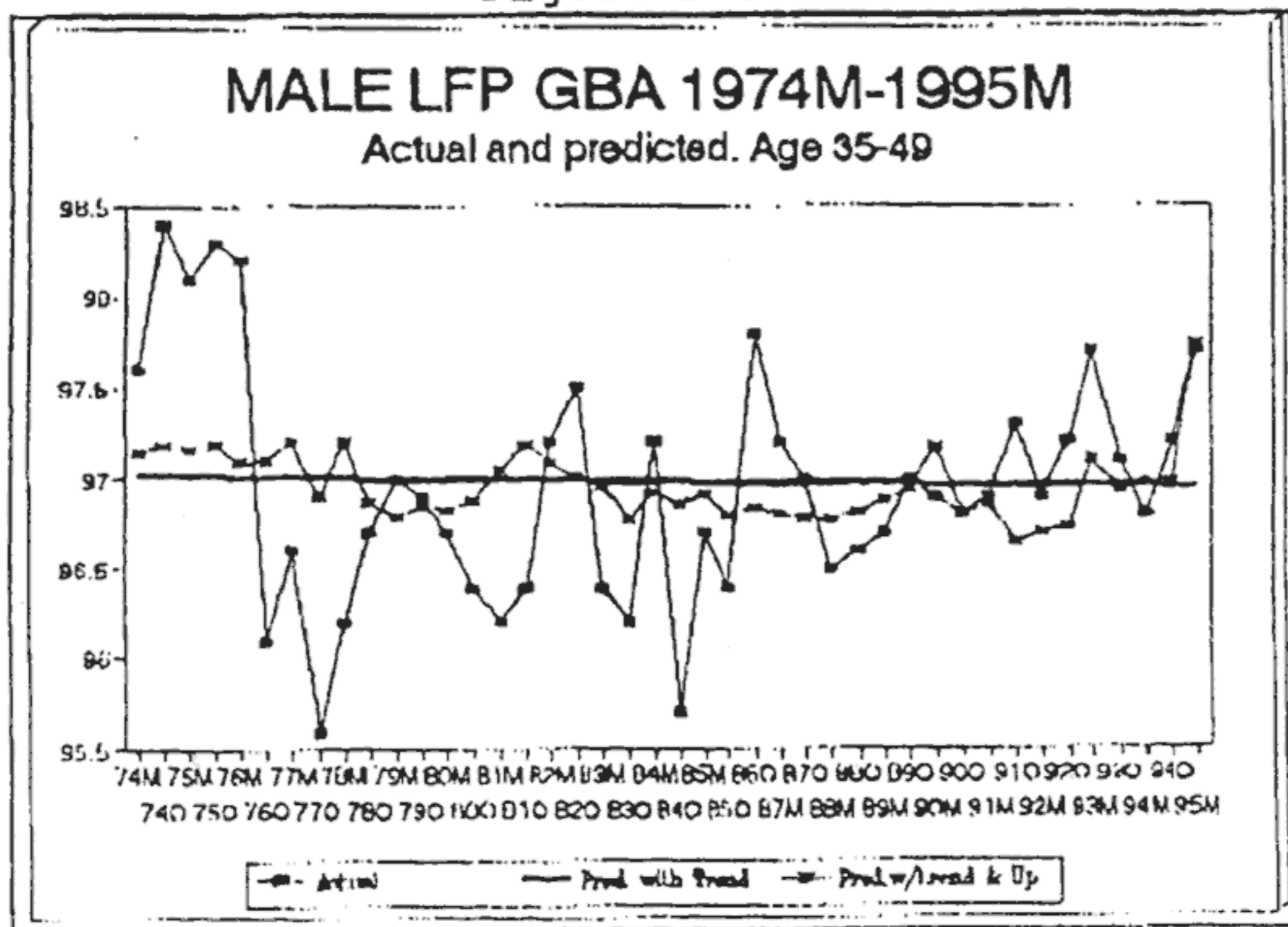


Figure D.5.3

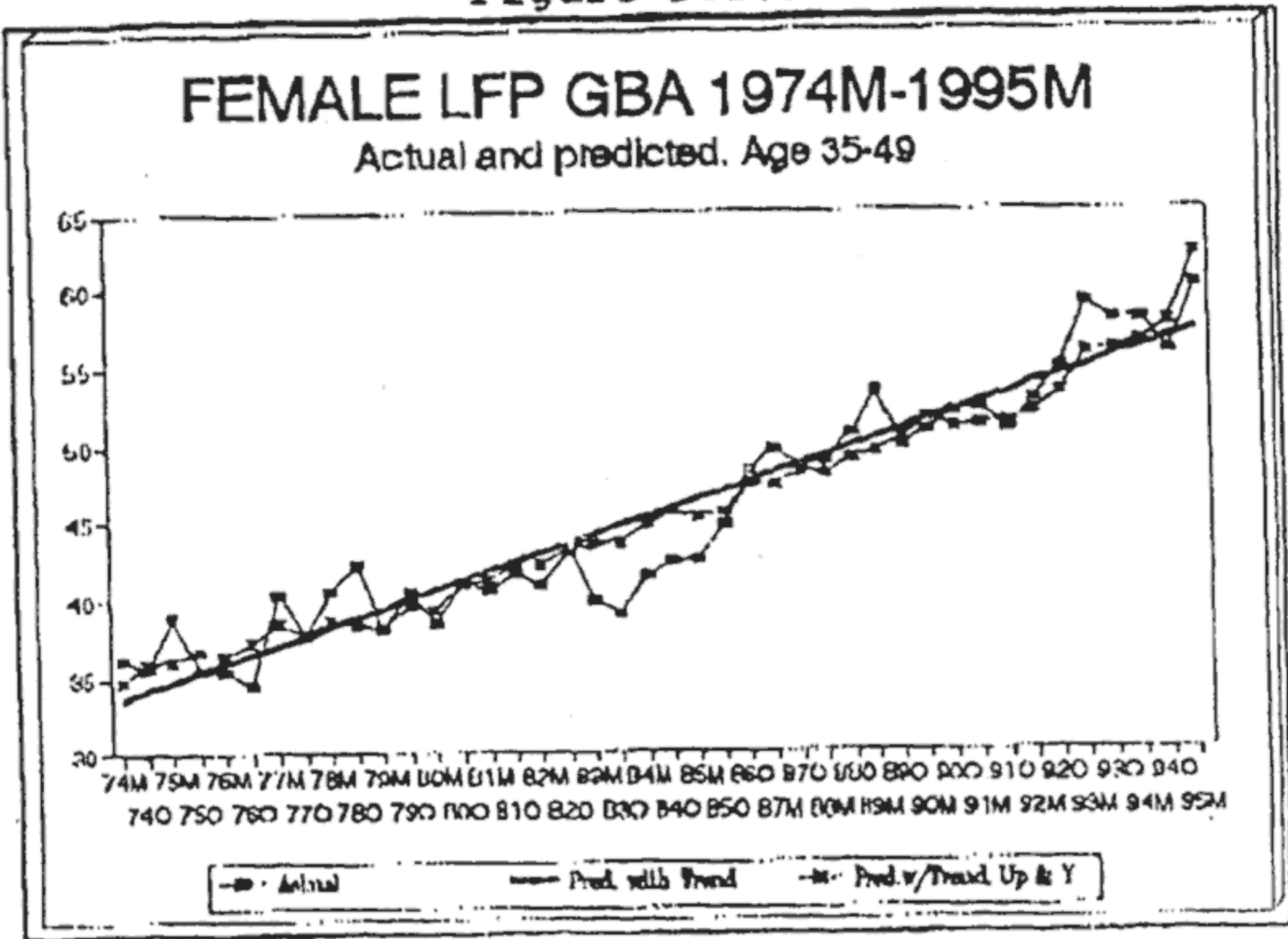


Figure D.6.3

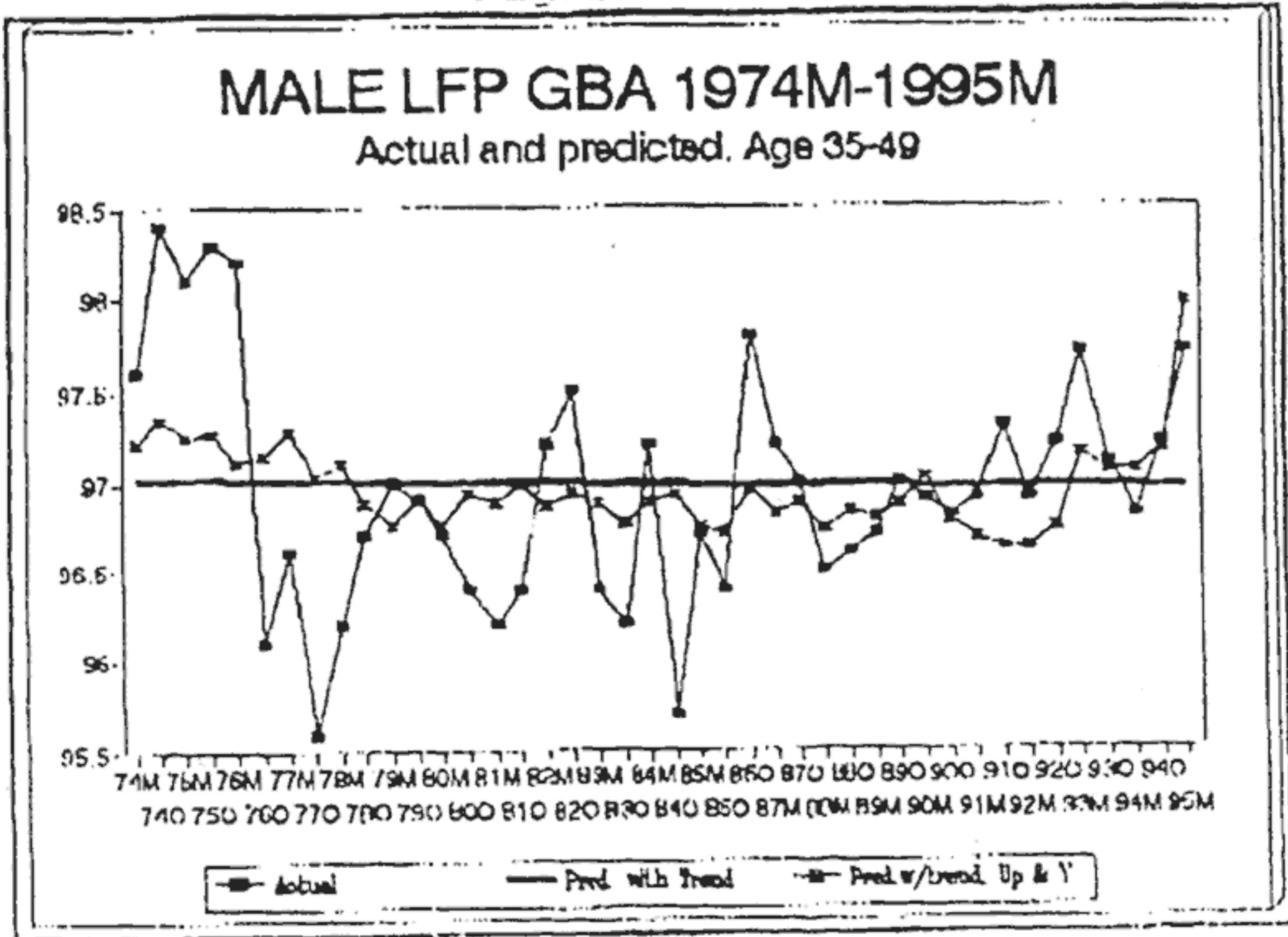


Figure D.3.4

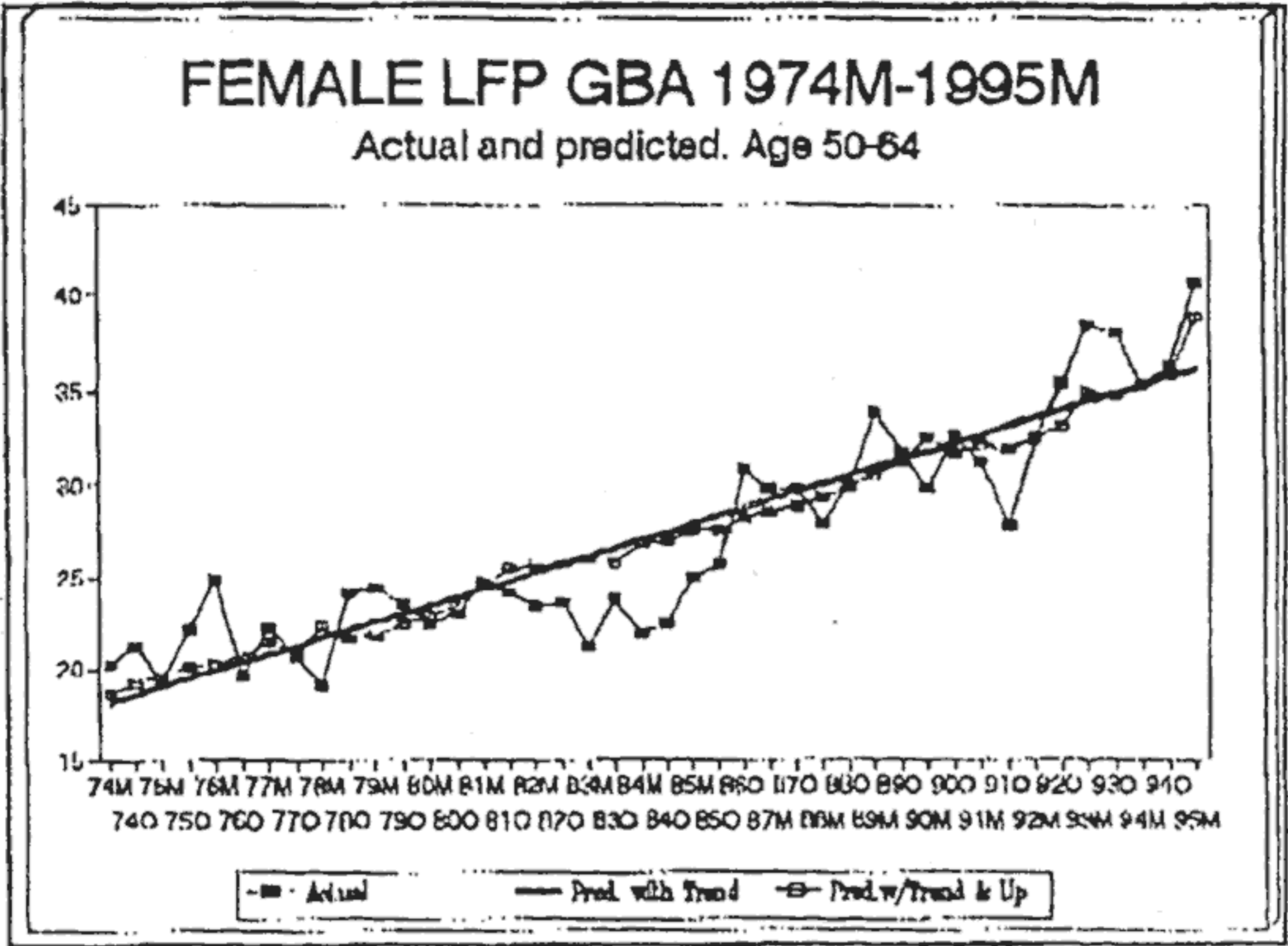


Figure D.4.4

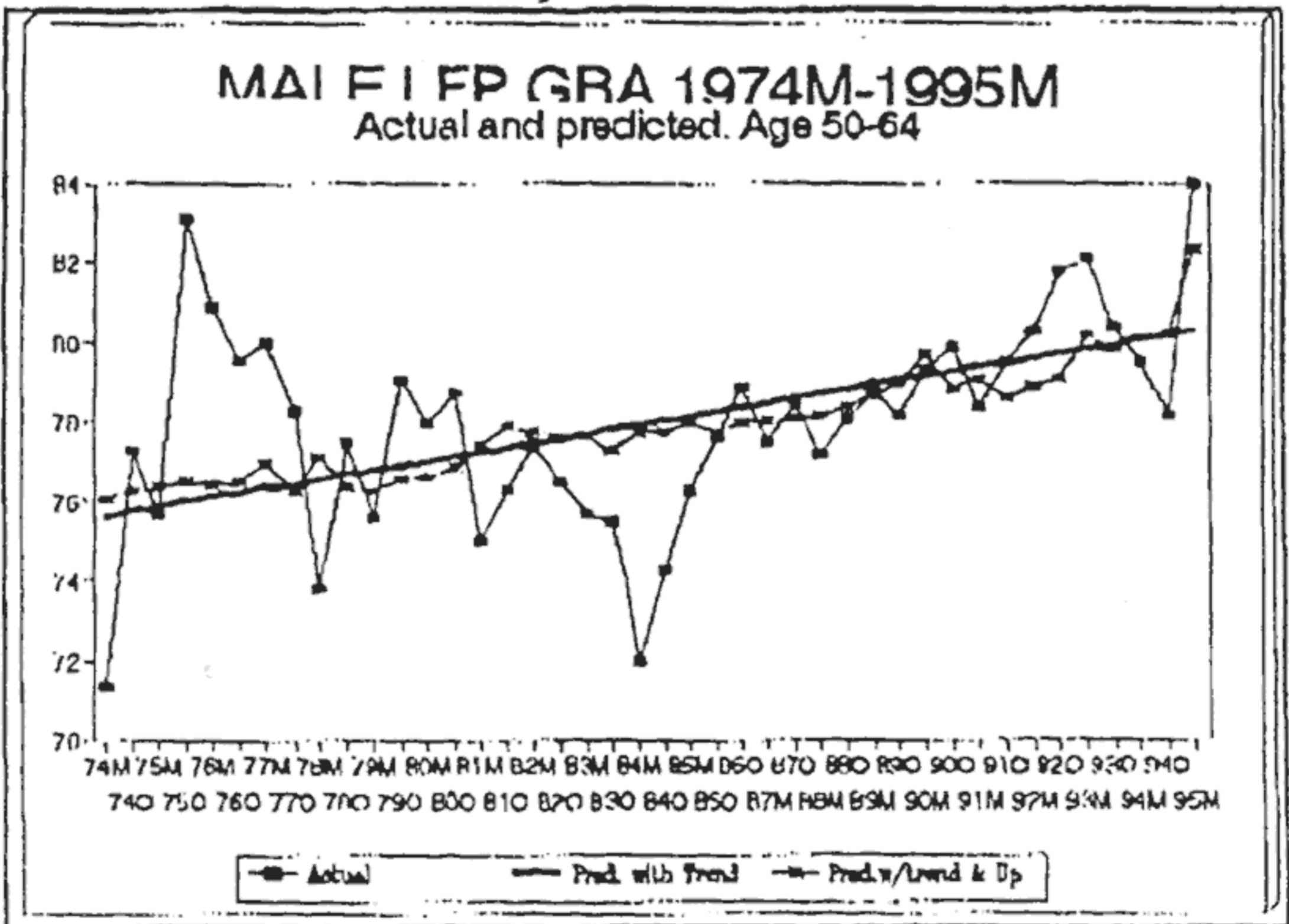




Figure D.5.4

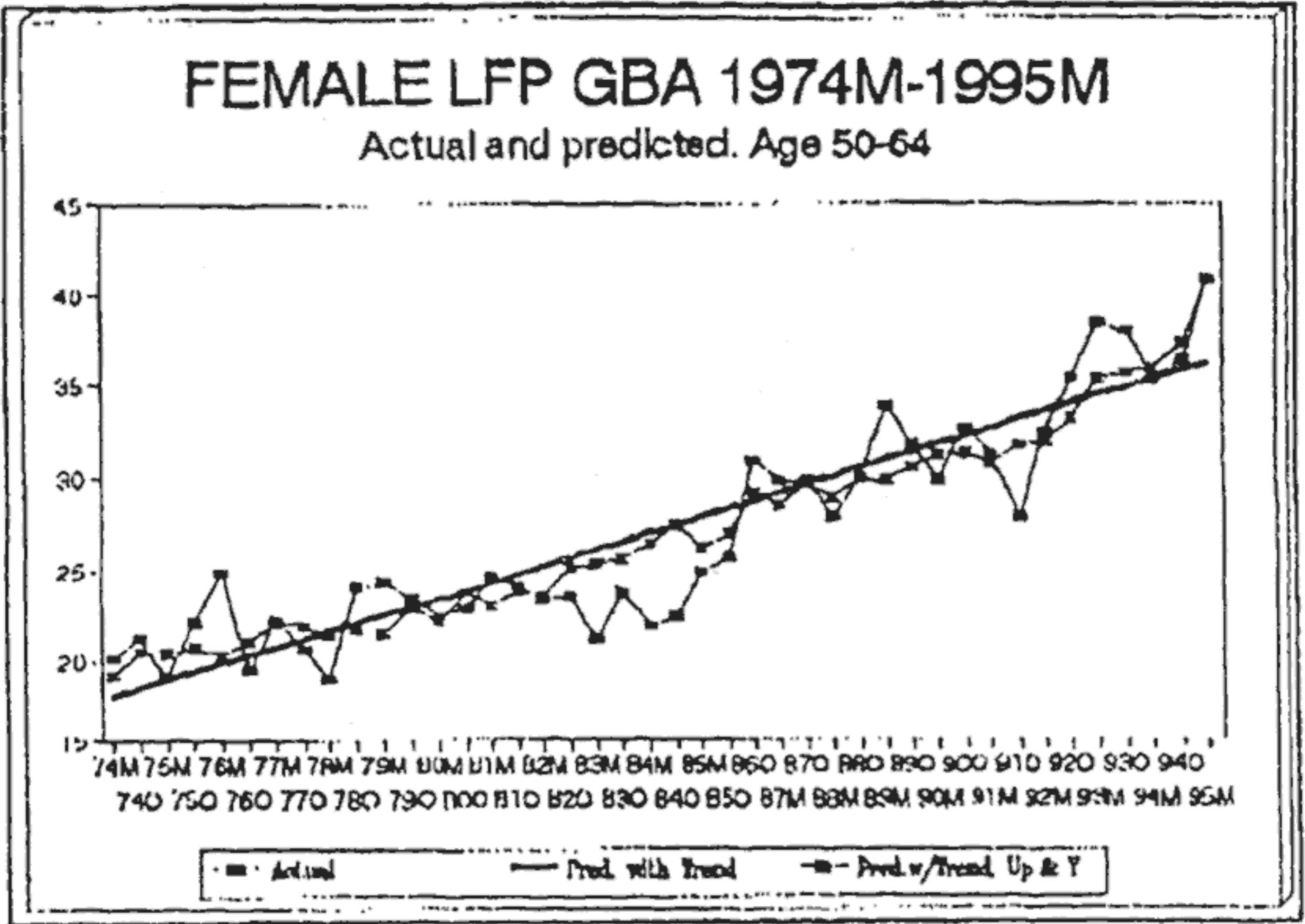


Figure D.6.4

