

1. Introduction

1. The purpose of this study is threefold. The first is to put together a micro and macro levels data base on public sector employment and pay in Yemen following its unification. Second, to analyze the potential impact of public sector employment and wage policies on the government budget and on the economy's overall employment, wages and productivity. In Yemen as in many developing countries, the state plays a pervasive role in the economy. This role is exercised through the activities of the central government, public enterprises, local government, in addition to security and defense. Recent multiple economic and political shocks have brought the government's pervasive role and deficit to the spotlight. The third is to discuss schemes of public sector retrenchment and highlight their fiscal ramifications in the case of Yemen.

2. The goal of the stabilization program in Yemen is to reduce the budget deficit over the medium term by about 3.5 percent of GDP in 1996 and a further 2-% over the next 3-5 years. To accommodate falling fiscal expenditures with minimal effect on economic efficiency and poverty, it will be important to implement in parallel a host of reforms. In particular, while cuts in public sector wage bill are inevitable, the quality of government services will deteriorate unless lay offs are accompanied by measures to raise labor productivity and public sector wages, and with plans for the integration of the two bureaucracies into one effective body.

3. The rapid increase in the budgetary wage bill has been an important factor in worsening the government's budget deficit. In the face of reduced demand for Yemeni workers in the Gulf, the public sector played for a few years the role of employer of the last resort, and this behavior was exacerbated by the political competition that took place until the 1994 civil war. Government employment rose appreciably as shown below. In the meanwhile, inflation has seriously eroded real public sector wages and has compressed the wage structure so much that the salaries of higher level officials are now grossly inadequate.

4. The reform of the civil service is articulated as a central objective of Yemen's restructuring program. A crucial aspect of the reform pertains to wage setting and removing labor market rigidities by applying new policies for hiring and retiring of civil service employees. Current practices heavily influence worker productivity and wage determination in the whole economy. Government wage and employment policies, under fiscal constraints, have led to wage compression which increases wages at the lower end above their competitive level and distorts the utilization of labor by the private sector across a wide spectrum of skills. At the same time, wages for skilled employees are held below their competitive level. Some of these policies have been historical accidents, others were sensible policies when they were adopted, and many reflect political goals.

1.1 Population and Employment

5. According to the latest population census which the Central Statistical Organization carried out in 1994, the total resident population was 14,587,807 persons, nearly 50.3% of whom are under the age of 15. The total number of economically active Yemenis was 3,311,989 persons. Government administration absorbed 558,653 or nearly 16.87% of the total. Employing

2629262 workers the local domestic private sector had by far the largest share, 78.85%. The rest were employed by public enterprises 73735 or 2.23%, foreign private sector 0.34%, mixed sector 0.20% while cooperatives accounted for 0.16% and the residual of 1.36% were not stated (CSO, 1996). Census findings also show the following:

6. First, illiteracy is widespread at 56 percent of the total population. Its incidence is highest in rural areas 64% (34% in urban), and among females 74%, double its rate among men (37%). Accordingly the majority of the labor force do not have any education. Males constitute about 80 percent of the employed. Females work predominantly in rural areas mostly as unpaid family agricultural workers. In cities women tend to be more educated than in rural areas and many work for the government in clerical and professional jobs. Tables (1) and (2) show the economic and occupational distribution of the economically active members of the labor force and by urban and rural areas.

7. Second, a high proportion of Yemen's educated workers cluster in the public sector and particularly in central government. This is shown in table (3) which reveals that nearly 15.5% of public sector workers have obtained at least their first university degree. This is in sharp contrast with the private sector where only 0.05% of workers have completed university education. Within central government, about 16.5% of civil servants have a university degree. Among workers engaged in public sector establishments the corresponding proportion is still higher than that for the private sector --9.1%-- but noticeably lower for civil servants. These figures indicate that the government dominates the market for educated Yemenis. At the margin, the fraction of job market entrants with a university education hired in the government is greater than 90 percent which is the reverse of its size in total employment. It appears therefore that the government is the employer of the first resort for the great majority of educated Yemenis. Once employed, it is not clear how long do these workers keep their employment in the public sector. Some may decide to migrate to the private sector. However, given the prestige, lax work conditions and the high likelihood for moon-lighting, it is quite possible that the great majority lingers on and take advantage of the lifetime job security and benefits associated with public employment.

8. This lopsided pattern of allocation by education receives impetus from existing employment guarantee schemes. Employment offers are universal for university and high school graduates. "Education for Public Employment" is therefore a right that many Yemenis continue to exercise. This poses two potentially serious problems. The first is the long-term sustainability of these employment guarantee schemes given the government's budgetary deficits. The second is the inter-sectoral efficiency implications of the education for public employment policies. The spill-over effect of government employment policies adversely affect private sector by bidding-up wages and benefits particularly by large establishments in the formal sector. The policies appear to deprive the private sector from the opportunity to compete for educated Yemenis; and reduce its acquisition of human capital critical for productivity growth.

9. Third, while workers in the public sector are markedly younger and more educated than private sector workers, the latter workers have more labor market experience. The average number of years of service for public sector employees is 8.75 years compared with 13.28 for

private sector workers. There is also a difference in experience between central government workers and workers in public sector establishments. The average number of years of experience is 8.51 and 10.4 for central government and public enterprises respectively. As noted above, most of the educated do work for central government where a typical worker has completed on average 8.25 years of schooling. By contrast private sector workers have a very low educational average, 2.6 years. These differences are shown in table (3).

2.0 Excessive Public Sector Wage Bill

10.. Wage and salary bill of public sector employees is excessive. Excessiveness is a subjective quality, one for which no clear measurement methodology exists. Operationally, the bill is conventionally measured against GDP, government revenue or recurrent government expenditure. Whether measured against the overall government budget; overall government revenues; GDP; or total recurrent expenditures the wage bill takes up an increasingly rising share of national resources. For instance, in 1994 the bill absorbed more than the entire government revenue--107%; by far much higher than the 75% figure of 1990. This figure does not take into account the calculation of the salaries of the non-Yemeni employees; nor does it take into account the wage component in the development budget (Khalid, et.al, 1995). Against recurrent government expenditure, the bill represented 55% in 1990 and 74% in 1995. In 1995, the share of wages in government expenditure was about 55% which is markedly higher than corresponding shares for other countries of the region that are known for their large public sector. In Egypt for instance, the share of wages in government budget is about 26% and in Jordan it is 41% (Assaad, 1994; Statistical Yearbook of Yemen, 1995; World Bank, 1995).

11. The nominal rate of growth of the wage bill has been high. In 1995 the bill was nearly 3.5 folds its corresponding size in 1990. Over the five-year period (1990-1995), the average growth was about 27 percent which is substantially higher than the growth in GDP, government revenue or expenditure.

2.1 Surplus Public Employment

12. The size of public workers is obviously related to the size of the wage bill. Anecdotal evidence and casual observation suggest that Yemen's public sector is over-staffed. We do not have a robust measure of the extent of labor surplus in the public sector. The appropriate number of civil servants is often derived ad hoc from the proportion of public servants to the overall population, to the modern sector labor force, or from somewhat casual observations of "too many people sitting around doing nothing". In Yemen's case, the political events that lead to the merging of two distinct public sectors (North and South) have inflated the size of the sector. This is obvious from the rate of expansion of public employment following unification in 1990, table (4). On the eve of their unification, the combined size of the work force in the central government of the two Yemen's stood at 166208. By 1995, the work force of the central government leaped to 322073.

13. The above figure does not include workers employed by public sector establishments. Central government work force nearly doubled over a span of five years and its annual average rate of growth exceeded 14%. This is phenomenal given the country's growth rates of basic aggregates. For instance, real GDP growth was 0% between 1990 and 1991, ranged between 4

and 6% during 1991 and 1993, plunged to 0% again in 1994 and recovered to 3.6% for 1995. Such growth in central government's work force, especially when disproportionate to GNP or overall labor force growth rates, must be taken as a warning signal of surplus numbers in government. Clearly, the definition of what constitutes "too many" in the public sector must consider the relative role of the state in the economy, the level of a Yemen's development, and the relative importance of the state as a primary source of political patronage and social welfare. But it is obvious that recent rates of growth in public staffing are not sustainable in the long run given the modest growth of endogenous government financial resources and the insufficient operating budgets for supplies and maintenance.

14. Expansion of public sector employment has three important effects on the economy. First, it reallocates public resources from expenditure on capital (a major determinant of productivity) to wages and salaries of public employees. Second, it reduces the size of the national economy strictly because conventional national income accounts measure public sector output by input costs. Third, expansion of public employment increases the grip on the private sector through increased regulatory functions which multiply transactions costs and impede private initiatives and growth potential.

15. Economy wide the proportion of public servants to population is about 4.3%. There are wide variations in the share of public employment by governorate with Aden topping the list at over 17%. That is, for approximately every five persons of the population there is one public servant. Haggah and Hudeidah on the other hand are characterized by a low public employment to population ratio, 1.3 and 1.7 percent respectively. These differences are recorded in table (5).

16. The composition of central government's labor force in terms of skills is an important dimension of the staffing problem. Civil service data suggests that during the past five years growth in public sector employment has been concentrated in grades "Three" and "Four" which are typically staffed by junior college and high school graduates. In 1989, workers classified in these two grades constituted 58% of the total central government work force. By 1995, their proportion had jumped to nearly 66%; i.e. by an eight solid percentage points. The rise in their proportion results from an amalgam of factors. First, is the slow growth in private sector demand for labor relative to the rapid supply of high school graduates? Large cohort size and the rapid flow of secondary school graduates reflect the high historical population growth rates and their inherent population momentum. Second, recent graduates may chose the public sector as the gate of entry into the labor market because they can gain experience and develop specific skills (including skills pertinent to regulating the private sector). Public job security and other non-wage benefits may provide added incentives. Third, graduates may find it easier to be placed in the public than the private sector; i.e. the search cost is smaller. Fourth, the public sector itself is committed to hiring graduates of the education system. In Yemen, substantial weight is given to non-merit criteria in recruitment and personnel decisions. Finally, job seekers may be attracted by the prospects of public sector rent-seeking activities including moon-lighting. The latter behavior is likely induced by civil servants' desire to augment their "low" wage level. It may also influenced by the "thin" supply of effort in public sector given the apparent inadequate job specification, organizational structure, job performance and monitoring criteria.

16. In addition to central government, the public sector of Yemen comprises workers involved in public sector enterprises and military personnel. The size of each of these is substantial. Workers involved in public sector establishments number about 74000. Average wage of these workers is higher than that of central government workers. Currently, many public sector establishments are either producing at low capacity rate or have been completely stopped producing while their cadre continues to collect salaries from the public purse. Similarly, defense allotments constitute a sizable portion of government's public expenditure. For example, in 1993 while defense expenditure absorbed 28% of government expenditure in Jordan, 20% in Egypt, 26% in Morocco, it represented 45% in Yemen (Arab Economic Report, 1994). An earlier World Bank report estimated that military salaries are 42% of total public sector salaries and that when adding salaries for the Interior ministry, defense and security account together for well over half of the total central government wage bill (World Bank: Report No 14029 YEM, May 1995).

2.2 Determinants of Sectoral Employment

18. This section provides a statistical analysis of the micro-level determinants of sectoral choice in three sectors: the civil services, public enterprises and the private sector. Private sector includes local, foreign, mixed and cooperative enterprises. Local enterprises constitute 99 percent of private sector employment. The analysis will provide an assessment of the likelihood of sectoral choice conditional on demographic, education, occupation, location and social status variables. We apply a multinomial logit model to the 2 in 100 population sample drawn from the 1994 census.

19. Table (6) contains estimates of the multinomial logit model. They reveal that there is a strong association between education and employment choice in the civil service sector; the positive coefficient of education categories rise in absolute value with successive levels of education. This is also gleaned from expected probability of civil service sector employment, predicted from the model estimates. Persons with no or little education are decidedly less likely to be civil servants in comparison with persons who completed post-secondary education-- the respective probability is 7.9% and 83.5% . By contrast, the expected probability of private sector employment is highest for least educated individuals, 90%, and smallest for college and university educated persons, 6.9 and 14.7% respectively. For public enterprises, a rise in education leads to an increase in the probability of employment; these probabilities are small however. For instance, the probability of employment in public enterprises is 1.4% for persons with no education, rises to about 8% for college educated persons. Second, persons in their middle age--39 to 49 years--have highest probability of being civil servants, *ceteris paribus*. In terms of occupations, persons in scientific and administrative jobs are more likely to be civil servants. In contrast, production workers, transport operators and unskilled workers have a much higher probability of joining the private sector (relative to civil service and public sectors). Urban residence carries higher prospects of employment in the two branches of government than rural residence. Similarly, there are noteworthy differences in the prospects of civil employment according to governorate. Residents in Aden, Abyan, Sana'a and Laheg are more likely to be civil service workers than residents of Sa'adah, Al-Jawf and Hajjah.

20. The above model is used to derive estimates of the expected probability of employment in the civil service sector. Table 7 below shows the probabilities according to age groups and education and years of job tenure.

3.0 Public Sector Wages

21. The historical evolution of wage structure in Yemen and the institutional forces that influence increase the compression of the **ratio of** top to bottom salaries. Wage compression is partially a function of expansive employment policies as discussed above, but it also derives from regime preferences for egalitarian salary structures. This, in turn, may hinge on the ideological character of the regime or the degree to which its political support is drawn from the lower socioeconomic strata.

22. The salary of Yemenis in the civil service is composed of a "basic salary" and an "allowance" component. In 1995 the Ministry of Civil Service and Administrative Reform proposed a cost-of living allowance: To give those in the "leadership" jobs and in the five grades of the "general" job category a representation allowance as a way of mitigating the rising cost of living and reducing salary compression.

23. Public sector pay is closely tied to education, but the effect of education is small because of wage compression. New university graduates are hired on classification category C of the second grade, table (8), fresh secondary school graduates enter in the third grade of the general job classification. Persons who have intermediate education (between 8 and 10 years of schooling) are placed in the fourth grade while uneducated, unskilled laborers are placed in the fifth grade. Moving up the grade within a group classification is effectively a function of years of experience, and bears little relation to expected actual productivity or job performance. Years of experience or public service carry a premium of about 4% annually. This implies that after five years of public service, a person with intermediate education can earn the equivalent salary of a fresh university graduate. As revised in 1995 the salary scale of civil servants, shown in table (8), consists of the following:

24. The "allowance" component of the salaries, however, has been adjusted several times, leading to continued increase in the total compensation of Yemeni workers. In 1993 civil servants received allowance equivalent to 40 percent of their basic salary--column 5 of the preceding table 8--. The last adjustment to the allowances was proposed and approved in 1995 and is scheduled to take effect shortly. Wage compression is deduced from comparing existing salary range--top to bottom grades--with the proposed system that has been recently approved. Under the pay scale that has been in effect since 1990, the salary ratio of top grade category A to the corresponding category of the fifth grade is 3.12. However, wage increases proposed in 1995 reduce the salary ratio of top to bottom to 2.1.

25. Data on civil servant's salary, education, and years of service are shown in tables (9) and (10). They are based on a sample of 40,000 public servants. The information is derived from the files of the Ministry of Civil Service and Administrative Reform who is currently computerizing information on public servants as part of a broad project aiming at civil service reform.

26. Older cohorts of public servants have very little education and have been in service for a lengthy period of time and represent a logical target group for voluntary retirement schemes, discussed below. Table (5) illustrates that many workers with little or no education have been employed as civil servants for more than 22 years, some for more than 30. The table displays that for the more educated in the cohorts 55 +, the average number of accumulated years of service is shorter.

3.1 Erosion of Public Service Salaries.

27. The level of real public sector wages has eroded substantially over time. Wage data for the years 1990-1995 are shown in table (11). When adjusted for the sharp rise in consumer price index, real wages have in fact declined during the past five years.

28. Another way of viewing the problem is to consider wages of civil servants in relation to per capita income. Civil Service data suggest real temporal erosion in public sector wages. Average civil service salary was 15.5 times per capita GDP in 1990; dropped to 13.2 in 1993 and to 11.6 in 1995 as shown in the table below.

29. While the pattern of wage erosion in civil service noted in the table above is significant, wages in Yemen are still not badly out of line with local private salaries and with Yemen's current economic conditions. The ratio of wages to per capita income in Yemen compares well with other countries of the region. In Jordan for instance, the corresponding ratio is six and in Egypt it is 2.7 (Handoussa, 1991; World Bank, 1995).

30. The result is remuneration that is too low either to sustain lower echelon workers above the poverty level or to attract and retain skilled manpower. These circumstances lead to the deterioration in the quality of public services; many civil servants are unqualified or demoralized-confined to inactivity or hampered by lack of basic structures and resources. Over time, real remuneration is significantly affected by the rate of inflation and the regularity and nature of salary adjustments. Declines in real wages are somewhat cushioned by allowances or non-wage benefit structures represent an important part of the overall compensation package. Therefore, it appears that while the overall salary bill is high in Yemen, average civil servant wages are low.

31. Comparative data on private versus public sector wage levels are scarce; what is available is gleaned from findings of the National Employment Survey which the Central statistical Organization conducted in 1991 and from the MCS&AR, 1995. These cross-section sources reveal that private sector wage level is generally higher than public sector wages. This is especially true for higher education levels, e.g. post secondary schooling.

32. Therefore, one can argue that the high and rising wage bill in Yemen is to a large extent the product of trade-offs, given fiscal constraints, in favor of hiring a growing number of employees at diminishing salaries. Wage erosion in Yemen's public sector is particularly a problem in view of the existence of an alternative market for public servants, through a domestic private sector with higher salaries and benefits or an international market to which highly skilled public servants may migrate. Casual observation and preliminary Civil Service data also suggest

that the low pay in public sector encourages shirking, absenteeism and the holding of multiple jobs.

3.2 Wage Levels in Public and Private Sectors

33. This section draws on the 1991 Labor Force Survey. At the outset we must note that data on sectoral wage levels are scanty and not compatible. Reasons for incompatibility stem from substantial differences in institutional arrangements between public and private sectors. A large proportion of private sector workers are employed either in domestic activities (e.g. self employed, unpaid family workers). Others are employed in the informal sector where payment methods and contractual arrangements deviate sharply from public sector standards. Some are employed as seasonal workers in agriculture, and as craftsmen and service workers. Differences are clear for workers in private relative to public workers. For instance, whereas nearly 100% of public sector workers are employed as waged workers only 67% of private sector workers belong to the category of waged workers. Another 15.5% of private sector workers are paid by the piece or unit; that is their total wage is based on the number of units of output they produce. About 8.5% receive in-kind wages and about 9% work according to a combination of in-kind, by the unit and monetary remuneration arrangements (Labor Survey, 1991).

34. There are differences in the distribution of wages, employment, education, and hours of work according to geographic location (urban/rural). For instance, while the wage ratio of civil servants to private sector workers is 75% in urban areas, the corresponding ratio is 93% for rural workers. Therefore, sectoral wage differential is more pronounced in urban areas. The majority of urban waged workers (60%) are employed as civil servants as compared with 36% for rural workers. The overall salary differential (urban/rural) is not high, about 6% in favor of urban residents. "Effective" higher wage is probably smaller than the observed or "measured" wage differential observed in the sample because of the higher expected urban unemployment rate and higher urban cost of living. Public sector workers exert less effort, measured by weekly hours of work, relative to private sector workers. The ratio is 87%, (35 versus 41 hours/week in the public and private sectors respectively). Thus while private sector workers are more educated than their private counterparts, they tend to work less hours and presumably generate less output per hour than private sector workers.

35. According to the 1991 Labor force, average salary for organized workers is higher in the private sector of the economy. The overall ratio of private to public sector wages is 116%. Most private sector workers (94%) have little education (0-6 years of schooling) while 60% of public sector workers fall into that education category. The survey indicated that on average, public sector workers have more than twice the education level of private sector workers. The mean years of schooling in the private and public sectors respectively is 2.3 and 5.7.

36. The overall wage differential masks differences by educational level. For workers who do not have any education the ratio of public to private wages is 84%. It is 54% for workers with elementary education (7-9 years of schooling) and dips to 44% for workers with preparatory education (10-12 years of schooling). In the case of workers who completed post-secondary education, the ratio is 74%.

37. Workers in the private sector have an edge over public sector workers in terms of years of job tenure (i.e. years of job-specific experience). On average private sector workers have accumulated about 10.5 years of job seniority compared with 9.2 years for public workers. This suggests that productivity in the private sector is higher than public sector productivity, particularly since public sector workers put longer work hours (41) than private sector workers (35).

38. Sectoral differences in average wage levels, hours of work, years of job-tenure imply that labor re-allocation between public and private sectors would lead to increased overall efficiency. The menu options should include voluntary retirement, cash offers, annuities, retraining programs, and guaranteed wages backed by subsidies to new employers. In order to minimize on the possibility of adverse selection a combination of these policies should be employed to effectively address the target groups (Diwan, 1994). In particular, older, less educated public servants who have served for many years should be given a menu of options to allow them to exit from the sector to retire or seek employment in private activities. The existing high wage differential in favor of private workers who have only a small amount of education (0-6 years) and who have better wage alternatives outside the public sector may provide an attractive inducement to exit. Comparative economic analysis suggests that retrenchment would initially lead to a downward pressure on private sector wages and upward pressure on unemployment. A companion set of policies should contemporaneously be activated to retrain laid-off workers. In the public sector, efficiency gains generated by retrenchment are partially captured by workers who remain employed in the public sector, although it is desirable to prevent wages from escalating.

3.3 Public and Private Sector Returns to Human Capital

39. In this section we employ a simple human capital model in order to estimate the sectoral returns to human capital variables including education, age and on the job-seniority. The data base comes from two source. the first is the 1991 Labor Force Survey. The second is the micro-data files of the Ministry of Civil Service and Reform.

40. Table (12) presents the results of fitting a standard human capital model to the Yemeni data. Returns to education in the public sector were in 1991 about .039, discernibly smaller than private sector returns of .056. Returns to age and job tenure were higher in the private sector of the economy. The earnings function peak at 46 in the public sector and 43 in the private sector of the economy.

41. Findings from the 1995 MCS&AR data base are in agreement with those obtained from the 1991 labor survey. Returns to education of civil servants are .0378; slightly smaller than returns obtained from the earlier period. Age seniority gives public servants an increment of .0153 (Earnings/age= .0153). The earnings function attains maximum at the age of 48. At the mean values of the variables, tenure on the job produces an increment of .0155. Finally, the larger intercept estimate of the civil service data suggests that a discernible increase in wages during 1991-1995 in order to compensate for inflation and possibly redress wage compression. While tentative, these estimates suggest that returns to human capital are higher in the private sector and that overtime public sector returns become compressed.

3.4 Income Distribution and Sources of Inequality

42. This section focuses on the distribution profile and inequality in Yemen. The issue is important because reform must be based on a proper knowledge of the existing distribution and adequate assessment of its potential impact on the status quo. More specifically, stabilization and structural adjustment policies, regardless of their medium and long-term beneficial effects for the economy as a whole, entail the imposition of short-term social, political, and distributional implications.

43. Public sector retrenchment policy and privatization of public enterprises entail loss of jobs and rent-seeking positions at times when Yemeni unemployment rate is high and prices are rising. Without a proper understanding of the distributional consequences of structural reform, the potential alienation of important constituencies may jeopardize the adjustment process at its inception and lead to a return to the status quo. Labor market outcomes bear on the overall level of inequality and degree of poverty in the economy. An analysis of the overall inequality of income distribution in Yemen, utilizing the 1992 Expenditure Survey, reveals the following.

44. First, there is a marked degree of inequality in the distribution of income from all sources in Yemen. The overall Gini coefficient is 0.467. This reflects a high concentration of income in the Yemeni society. The top ten percent of the population receive <<>>% of the total income. While high, the degree of inequality in Yemen is not out of line relative to the "norm" in other countries of the region. For instance, the share of the top ten percent of the population in Algeria Egypt, Kuwait, Jordan, Sudan and Morocco range between 29 and 35 percent of total income. In contrast the poorest 20 percent receive between 6-7 percent of the income (Al-Qudsi, 1994).

45. Second, the degree of inequality in the distribution of wage and salary income among households is nearly as skewed as the overall income distribution itself. Inequality of wage and salary income has a Gini coefficient of 0.478. The Gini coefficient of inequality of business income (ownership of agricultural/industrial establishments; service professions including taxi/barber shops, legal/medical facilities) was 0.448. Income arising from property, financial deposits and bonds and share--rent/interest and dividends--had a Gini coefficient of 0.647. This high inequality is mitigated somewhat by income which households receive in the form of remittances, pension, and other transfers whose Gini coefficient was 0.3697.

46. The decomposition of the Gini coefficient is used to estimate the contribution of income sources to total income inequality (Pyatt, Chen and Fei, 1980). The Gini decomposition analysis summarized in Table (13) below reveals that wages and salaries contribute about 61.4 percent of the overall measured inequality in Yemen. Income from business enterprises contributes about 36.3 percent. While property income has a large Gini coefficient (0.647), its contribution to overall inequality is only 1.13 percent because it has a small share of the total income (1.8%). Income from remittances, transfers and pension has a marginal contribution of 1.11% because of its relatively small Gini coefficient (0.367 and modest share in total income, (5.7%).

47. Inequality analysis can be utilized to draw conclusions pertinent to public sector wage compression. Table (14) employs the 1991 and 1995 data files respectively in order to estimate private and public sector wage inequality. For the overall economy, the 1991 data base indicates a wage earnings Gini coefficient of 0.4831 which is nearly identical to the estimate obtained from the 1992 expenditure survey at the household level. There is a marked difference at the sectoral level of inequality. In the private sector of the economy, the Gini coefficient is 0.58, much higher than the public sector Gini of 0.41.

48. This conclusion is also corroborated by the variance of the logarithm of wage earnings in each sector of the economy. In 1991 the variance of the logarithm of wage earnings is 0.533 for the public sector; 1.049 for the private sector and 0.751 for the overall economy. The interesting observation is that for 1995, the MCS&AR data indicate a Gini coefficient for civil servants of 0.22 and a variance of earnings of 0.16. This implies that there is more compression in the public sector of the economy and that wage compression increased after unification during the 5 year period 1991-1995. One should be prudent however by caveating this finding. The quality of the conclusions drawn from such a comparison rests critically on the comprehensives of the compensation information and the thoroughness of the distinction maintained between public, civil, private employee in each data base and the degree of sample representation.

4.0 Unemployment and Poverty

49. Unemployment as an outcome of the labor market entails lower living standards for the affected segments of the population and a waste of some of the economy's human resources. Who in Yemen is at a more risk of becoming unemployed? How does unemployment vary by education and governorate? What is the link between unemployment and poverty? These questions are addressed in this section.

50. Analysis of the 1994 census reveals that by and large, less educated are more likely to be unemployed than more educated individuals. For instance, the expected probability of unemployment is 13.3 percent for persons with elementary education but only 4.0 percent for persons holding a post-secondary education diploma. Thus education pays-off from the perspective of job-placement. Women are less likely to be unemployed than men, (4.5.3 vs. 11.5%), and younger persons are at a higher risk of becoming unemployed than older individuals. Unemployment is more widespread in urban areas (15.3%) than in rural areas, 10.4%,--data not shown. The incidence of unemployment varies by governorate. Table (15) provides information on the variations in "expected" unemployment rates by education and governorate.

51. Earlier research has identified lower and upper bounds for poverty in Yemen (Sattar, 1995). Her findings indicate the lower poverty line is around 11,500 Yemeni Riyals per capita per year using 1992 as a base. The upper bound estimate is about 16,500 Yemeni Riyals per capita per year. In the analysis below we utilize those threshold levels in order to examine the interdependence between labor market characteristics of households and the poverty condition. Labor market attributes that are emphasized include the employment status of household heads (employed or unemployed), sector of employment (public vs. private), educational attainment, number of bread-winning members in the household, household size in addition to a set of

dummy variables connoting geographic location by governorate and rural/urban areas. Those attributes are linked to the levels of living that are established as lower and upper poverty lines.

52. We sort households according to their annual per-capita income. Households whose annual pre capita income is at or below the established threshold level are deemed poor and those above it are considered non-poor. This allows us to create a new dichotomous variable (P_{v1}) according to Which households are designated as poor ($P_A = 1$) or non-poor ($P_{v1} = 0$). Next, we employ a probit model to estimate the direction and relative impact of a set of regressors on the state (or condition) of poverty.

53. Empirical findings, shown in table (16), reveal that the incidence of poverty is widespread among Yemeni households, 25% according to the lower threshold level and nearly 48% according to the upper threshold level. Further, poverty does not appear to vary with age, since the coefficient of the age variable is only marginally significant. The highest incidence of poverty with respect to age occurs at the age of 36 and 43 in the case of upper poverty threshold regression estimates (pov/age=3⁶ for lower and upper poverty regression estimates respectively).

54. Unemployment and poverty are assertively linked; unemployed individuals encounter a higher risk of becoming poor than productively employed persons. The causality is stronger in the case of the lower poverty threshold than for the upper level estimates. Persons with little education are both at higher risk of being unemployed and concurrently falling in the poverty trap. All other things remain equal, the expected probability of belonging to the poor income strata is 0.43 for unemployed persons and 0.25 for actively employed individuals (data not shown).

55. Education enables households to escape poverty, as concluded from the strongly negative sign of the education coefficient. Results of the education and unemployment variables suggest that reform can proceed by helping the unemployed acquire adequate training and education to help enhance skills and productivity of laid-off workers.

56. There is weak statistical evidence suggesting that public sector employment is a marginal poverty hedge. The incremental impact is more conspicuous for the upper poverty threshold regression, suggesting that the protection against poverty which the public sector provides is minute. The expected probability level, derived from the probit estimates, indicate that when one controls for age, education and location (rural/urban) employment in public sector is only a mild shield against poverty trap. For instance, for persons in the age group 20 to 44, there is a small sectoral variation of falling within the upper poverty threshold. However, the expected probability of being poor is substantially lower for public sector employees who have completed university education as shown in table (17). In itself, this finding validates the role of education as an instrument for poverty eradication than for public sector employment per se. It is possible that public sector employees who are highly educated have a higher tendency to moonlight and earn additional income than less educated public servants. Demand for their part-time services by private sector employers may be high, because of their relative scarcity in the economy and over-representation in the public sector. This possibility finds support from the experience of other countries of the region (Sirageldin and Khorshid; 1995, Tansel, 1995).

57. Demographically, the size of the household is inversely related to poverty. Large households are more likely to become poor than households that are smaller in size. Households that have pre-school aged children (less than 6 years of age) encounter a higher poverty risk.

58. The location variables turn out to be generally significant and indicate that rural households are at a higher **risk of** becoming poor than their urban counterparts. But the difference is not large for the lower poverty threshold estimates. This is shown by the expected probability of urban and rural poverty: for the lower threshold level it is 0.299 and 0.233 for rural and urban households respectively. The corresponding probabilities estimated from the upper threshold level are respectively 0.524 and 0.410. Since poverty is more widespread in rural areas, creating safety net and employment-enhancing skills and encouragement of private initiative may be effective tools in combating it.

59. Governorates differ also with respect to poverty. Households living in Sanaa encounter a smaller risk of becoming poor than households who live in Aden, Al Mahrah and Hudeidah. Finally, as would be expected, ownership of assets --televisions, videos, private cars and spacious homes-- is associated with lower poverty incidence.

5. Employment Reforms

60. The first step in implementing an employment reform is the execution of a civil service census and the computerization, mechanization and reconciliation of personnel management records with those of the payroll which are situated in the Ministry of Finance and CSO. Serious reform must start from an a reasonably accurate data base. Currently a simple count of the number of civil servants is yet to be arrived at. For instance, estimates provided by the Ministry of Civil Service and Administrative Reform put the total number of civil servants as of 1995 at 322073. Census results on the other hand reveal that the central government absorbs 558653 workers. The difference may arise from a combination of factors that include definition problems, census over-enumeration or civil service under-counting. Irrespective of its source, the difference points to the importance of conducting a serious effort to execute a comprehensive counting and analysis of the civil service employees and to regularly monitor and update those files. Currently the Ministry of Civil Service and Administrative Reform is in the process of computerizing its data files for this purpose. The process is still in its early stages of development but available rudimentary data shed some light on the characteristics of civil servants.

61. From the perspective of employment reform, Civil Service data reveal that Yemen's civil service sector suffers from the "syndrome of ghost" workers, those who have served for "too long" and whose presence in the sector is a source of the sector's "productivity anemia". Uneducated workers in the public sector are a heavy burden on sector efficiency. Data from the 1994 census show that the non-educated who served more than 20 and are over 54 years of age represent 22 percent of all sector workers in all age brackets with similar education and service years. They represent 7.2 percent of all non-educated workers with variable years of service. Table (18) provides a summary of census data along with estimates of predicted average wages.

The latter wages are estimates predicted from the 1995 MCS&SR and applied to the 2% sample of the population census.

62. Therefore, the great majority of ghost workers has very little education, low productivity and is 60 + years old. In the age groups 60-64 and 65-69, there are approximately 17500 civil service workers who have little or no education and who had served for more than 22 years in their current jobs. If one includes cohorts who are 50-59 years of age [whose mean education is 4 and had served for 20 + years] then the total number of servants that are eligible for retiring becomes 28559. This figure represents approximately 5 percent of the total cadre of civil servants. Moreover, there is a significant but undisclosed sum of workers who hold multiple jobs in several government agencies whose actions cause a leak in the public bucket. If shed, then their departure would relieve public purse by an amount of YR 47094933 per year in current Riyals which is nearly 7 percent of the contemporaneous wage bill. Such a relief would reduce budge deficit by approximately 2-3 percentage points. Table (19) presents a summary of the overall budgetary impact of retiring "ghost" workers.

63. Employment reform is not restricted to retiring unproductive workers. Concurrently other methods can be applied. These include freezing recruitment to prevent the guaranteed entry of recent university or public administration school graduates to the civil service. Entrance into the university itself may be blocked within an overall strategy aiming to improve the quality of education and better align the education system with labor market requirements..

64. A more difficult step, both politically and administratively, is the voluntary retirement of surplus workers. Because voluntary retirement schemes do not allow the government control over which employees leave or stay, they carry the risk of adverse selection, that is; the incompetent will remain and the more enterprising will leave.

5.1 Efficiency and Stability in Yemen's Large but Poor Public Sector

65. The weight of a relatively large but poor Yemeni public sector has become a heavy burden on the economy. There are two aspects to this: efficiency, and macro stability.

66. Although it is difficult to measure productivity in the public sector, the quality of service seems to have fallen dramatically. Preceding analysis reveals that over staffing has become prevalent while at the same time, investments as a share of the budget fell dramatically. As a result, public servants are underpriced and work in overcrowded conditions. at the same time. wages became more compressed, promoting absenteeism and low morale among the workers in professional occupations. In public enterprises, financial difficulties allied with the high capital intensity of the past have contributed to rapid technological regress. Improving the efficiency of the public sector is an important goal. But it cannot be done unless investments rises and the wage structure is corrected. It turn, this would put unsustainable stress on budgets unless the public sector simultaneously lay off **redundant** workers.

67. With large numbers of under priced public employees, macroeconomic stability is at the constant mercy of wage increases. Public sector wages now represent 75% of recurrent expenditures. The fiscal deficit would rise if public sector employees manage to regain the losses

they have sustained since 1991. The credibility of the reform program is undermined by this fiscal fragility.

68. On both the efficiency and macro stability fronts, national welfare would rise following civil service reforms. Adjustment should entail a simultaneous decompression of the wage schedule, a better use of existing employees, an increase in the required effort on the job, the lay off of redundant workers, and perhaps some hiring in the decimated occupations and skills.

69. But redundant public servants should not be just fired; they need to be compensated for some of the losses they will have to sustain because part of their wages were partly in the form of promises for future benefits such as job security and wages rising with seniority. Also compensation must balance the benefits in terms of reducing social dislocations and political unrest with the budgetary costs which will have to be financed by diversion from other socially beneficial uses.

70. During the past decade, more than fifty countries in the world used transfer schemes to assist in downswinging their public sector. Countries in Eastern Europe now devote as much as 1 percent of their GDP to such activities. The early involvement of unions is crucial for success, and for fairness reasons, the offer should be open to all, or most, public sector employees.

Architecture of Compensation Programs

71. Severance and redeployment arrangements for redundant employees are important aspect of retrenchment policies. The level of compensation should be high enough to make it desirable for workers to exit even when they can expect lengthy search periods before a new job is found, but not generous enough to allow the workers to exit to improve their current welfare appreciably. To tailor compensation to individual losses, it is generally useful to base the formulae on various individual characteristics (such as the current wage, the time needed to find a new job, the alternative wage, and years of denied service).

72. A special feature of a severance scheme that makes it better than an extension of unemployment benefits is that it administratively simpler. Ideally, redundancy packages are voluntary, and a menu of options is offered, with workers allowed to choose freely among them. Many of the severance schemes recently implemented in developed as well as developing countries are of the voluntary type. In some countries such as Sri Lanka, voluntaries are a state policy. A potential disadvantage of voluntary exit programs is the adverse selection they are prone to. The fear is that the public sector would lose its best workers as a result of the voluntaries of the exit mechanism. However, this type of problem can be partially resolved by a proper use of vetoes.

73. Offering a menu of exit options can help achieve better targeting at cheaper fiscal costs since each worker chooses the option he or she values most. These possible options available on the menu include early retirement, cash offers for small business start-ups, retraining programs guaranteed wages backed by subsidies to new employers and shifting to other occupations in the Republic of Yemen. Whether to pay redundant civil servants a lump sum or to defer payment over a phased period is also an open question. Deferred plans may benefit governments, because

they typically take advantage of currency erosion through inflation and earn interest on the yet-to-be-disbursed funds. Complicated options can be risky investments, the risk being that the cost of the specific program exceeds the benefits it brings to the worker (in other words, the worker would be better off if he was just handed the money). In particular, the options of retraining, support to small businesses, and wage subsidies must be carefully before including them on the menu.

74. **Retraining.** Most industrial and transition countries run public retraining programs. Evidence of their effectiveness is weak at best in terms of improved outcome for participants. If such programs are introduced it is preferable to start with experimental and small pilot project first. While government subsidies make sense in these circumstances, straightening the private sector as a provider of retraining can improve the effectiveness of retraining. As the Chilean experience demonstrates, systems based on distributing vouchers to targeted groups--allowing them to buy training services in a competitive market--can work particularly well. One area in which private provision and financing of retraining are likely to be adequate is the training of disadvantaged workers (women, older men with low levels of education). Financial returns to such training are low, but often, the externalities in terms of improved social cohesion can be high (as shown for example by the results of the Hungarian retraining measures that target the "best" among the disadvantaged groups).

75. **Supporting business start-ups.** Countries have often tried to assist job losers by providing support to those wishing to start their own businesses. Many countries have experimented with special credit schemes and other programs to encourage the development of micro-enterprises. But such schemes have rarely been evaluated in serious fashion. General experience with special credit programs in Sub-Saharan Africa and Latin America suggests that they have rarely brought benefits. In the industrial countries these schemes have shown to be of interest to a very small subgroup of the unemployed. But in the post-communist countries with underdeveloped financial sectors, they have tended to be more effective in generating new employment opportunities. In the region, such programs should be approached with great care: there are risks of displacing more traditional sources of finance and capture by well-to-do groups. Rather than concentrating on start-ups, focusing on easing difficulties experienced by informal firms in tapping the formal financial system may hold more promises.

76. **Wage subsidies** must be limited and very well controlled to play a positive role in periods of major change. In the industrial countries, they have proven ineffective in speeding up the adjustment process. There are substitution effects, whereby workers whose wages are subsidized replace those who are not covered by subsidies. Moreover, wage subsidies can easily undermine the reforms by keeping unprofitable firms afloat. Wage subsidies should be considered only in special cases where targeting is easy, such as in the case of depressed regions. When they are well controlled, they can be a less expensive alternative to transfers and yield a better outcome in terms of social cohesion in isolated areas.

5.2 Public enterprises

77. Often, privatization in reforming economies has remained restricted to "good" firms that do not suffer from massive labor redundancy. But for programs to address the real problem area,

an important choice will have to be made between laying-off redundant workers before privatization, or leaving this task to new owners. There is no accepted wisdom on this score: Spain laid-off redundant workers before privatization but the reverse was done in Central and Eastern Europe. When these firms have a negative value once the social liability of their workers is taken into account, there is no alternative but to deal with redundancy prior to privatization. More generally, excessive constraints on the new owners in terms of firing or the level of wages defeat the purpose of the whole exercise. This also gets reflected in lower sales price, so in effect, the government is implicitly paying the inefficiency costs of the firm so it retains redundant workers.

78. In sum, compensation to those hurt by change are necessary component of a reform program. They help maintain social cohesion in a period where the job disruption/job creation process intensifies, generating intense social dislocation. But these policies are not a panacea and they cannot be expected to smooth perfectly temporary losses. This means that policy must ensure that these losses remain indeed temporary and that the private sector supply response comes fast. The credibility of a vision of a better future will have to play a central role in this regard.

Table (1)
Sectoral Distribution of the Labor Force, 1994

Industry	Total			Urban			Rural		
	All	Male	Female	All	Male	Female	All	Male	Female
Agriculture	52.88	44.09	86.84	7.54	6.96	13.45	67.36	58.36	95.39
Fishing	0.71	0.89	0.04	0.98	1.06	0.14	0.62	0.82	0.02
Mining Quarrying	0.26	0.31	0.07	0.48	0.49	0.47	0.18	0.24	0.03
Manufacturing	3.86	4.18	2.64	8.98	8.81	10.74	2.23	2.4	1.7
Elec. gas. water	0.39	0.47	0.09	1.21	1.25	0.77	0.13	0.17	0.01
Construction	6.32	7.91	0.14	9.28	10.13	0.47	5.37	7.06	0.1
Wholesale retail sales	8.62	10.57	1.09	19.25	20.61	5.28	5.22	6.71	0.6
Restaurants and hotels	1.2	1.49	0.11	3.51	3.78	0.74	0.47	0.61	0.04
Trans & storage	4.36	5.41	0.31	8.5	9.11	2.21	3.04	3.99	0.09
Finance Brokerage	0.19	0.2	0.17	0.7	0.62	1.57	0.03	0.03	0
Real Estate Busin.	0.84	1.01	0.17	2.56	2.65	1.53	0.29	0.38	0.02
Admin. Commun. and	12.39	14.95	2.5	21.9	22.06	20.28	9.35	12.22	0.43
Education	4.22	4.41	3.47	7.09	5.11	27.39	3.3	4.14	0.69
Health & Social work	0.67	0.6	0.97	2	1.42	7.97	0.25	0.28	0.15
Comm. /Soc./ personal	0.85	1	0.28	2.15	2.15	2.08	0.43	0.55	0.07
Services for	0.27	0.26	0.34	0.85	0.66	2.82	0.09	0.1	0.05
International	0.04	0.04	0.03	0.14	0.13	0.26	0	0.01	0
Not stated	1.93	2.24	0.74	2.89	3	1.83	1.62	1.95	0.61
Total	100	100	100	100	100	100	100	100	100
Size	331198	26310	680935	80150	73043	71073	25104	1900	609862

Source. CSO 1996.

Table (2)
Occupational Distribution of the Economically Employed

Occup	Total			Urban			Rural		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
<i>Legislat.</i>	0.9	1.12	0.06	2.37	2.56	0.47	0.44	0.57	0.01
<i>Profess la</i>	7.13	7.8	4.53	14.52	12.3	36.52	4.77	6.04	0.8
<i>Tech.</i>	2.97	3.52	0.84	6.36	6.32	6.79	1.88	2.44	0.15
<i>Clerks</i>	1.78	1.87	1.45	5.75	5.04	12.98	0.52	0.65	0.1
<i>Serv. &</i>	7.74	9.39	1.37	17.52	18.4	7.78	4.62	5.89	0.63
<i>Agri.</i>	49.66	40.71	84.24	7.31	6.78	12.76	63.18	53.75	92.57
<i>Craft &</i>	10.28	12.3	2.47	19.33	20.3	8.46	7.39	9.19	1.77
<i>Plant &</i>	4.92	6.1	0.36	8.62	9.24	2.26	3.74	4.9	0.14
<i>Elementa</i>	12.77	15.05	3.97	15.49	16	10.3	11.9	14.68	3.23
<i>Not</i>	1.85	2.14	0.71	2.72	2.82	1.68	1.57	1.88	0.6
Total	100	100	100	100	100	100	100	100	100
<i>Size</i>	3311989	26310	68093	801507	7304	71073	2510482	19006	609863

Source: CSO, 1996, Population Census 1994.

Table (3)
Work force and Average Educational Level by Sector of Employment, Yemen 1994

AGE GROUP	CENTRAL GOVERNMENT		PUBLIC ENTERPRISES		LOCAL SECTOR	PRIVATE
	<i>Number</i>	<i>Av. Education</i>	<i>Number</i>	<i>Av. Education</i>	<i>Number</i>	<i>Av. Education</i>
10-14	1945	4.43	225	1.75	182541	1.87
15-19	40393	7.33	2165	4.71	244467	3.26
20-24	114466	9.37	8274	7.68	255853	4.25
25-29	122105	9.62	13600	6.97	306982	3.34
30-34	90321	9.16	13851	8.19	310601	2.73
35-39	68602	8.33	11488	7.45	327996	2.33
40-44	41309	7.00	7597	4.77	253773	2.03
45-49	30311	5.40	5900	4.10	198822	2.0
50-54	20642	4.93	4672	3.45	179575	1.68
55-59	11061	4.02	2544	2.95	93810	1.78
60-64	8596	3.21	1888	1.56	119280	1.56
65+	8902	2.97	1531	1.88	137762	1.54
Overall	558653	8.25	73735	6.13	2611462	2.60

Source: Computed from the micro files of the Population Census, CSO Yemen 1994.

Note: Education refers to the average number of years of schooling completed by respective cohorts.

Table (4)
Civil Service Wage Bill and Average and Nominal Wage Growth Rate, 1990-1995

Year	Wage Bill `000	Employees	Av. Wage/yr Yemeni Riyal	Av. Monthly wage Yemeni Riyal	Wage Growth rate
1990	19598110	168079	116601	9717	
					6.6
1991	25170282	202519	1242860	10357	
					11.1
1992	32479542	235144	138126	11511	
					23.5
1993	40892946	267409	152923	12744	
					7.8
1994	48609300	294778	164901	13742	
					26.8
1995	67330700	322073	209054	17421	

Sources: Central Statistical Organization, MOP, 1996 and Ministry of Civil service and Administrative Reform, 1996.

* Note : Wage figures are in nominal terms and do not account for rising inflation.

Table (5)
 Civil and Public Servants per Capita by Governorate

Governorate	Civil Servants to Pop	Pub Employment to Pop	(Civil+ Pub)/Pop	Private/Pop
Ibb	3.1919%	0.1160%	3.308%	13.761%
Abyan	9.3333%	0.7660%	10.099%	9.702%
Sana'a City	9.0870%	1.1311%	10.218%	14.786%
Al-Beidha	1.9672%	0.1244%	2.092%	14.833%
Taiz	2.4926%	0.2921%	2.785%	14.208%
Al-Jawf	1.2314%	0.0760%	1.307%	21.085%
Hajjah	1.6626%	0.1235%	1.786%	16.749%
Al-Hudeidah	1.7088%	0.5662%	2.275%	20.001%
Hadramout	2.9711%	0.9184%	3.889%	16.970%
Dhamar	4.1033%	0.2389%	4.342%	20.677%
Shabwah	3.2607%	0.3480%	3.609%	15.015%
Sa'adah	1.0831%	0.1482%	1.231%	22.460%
Sana'a	3.7766%	0.1781%	3.955%	17.688%
Aden	11.7311%	5.4016%	17.133%	8.007%
Laheg	7.4350%	0.8232%	8.258%	10.815%
Mareb	3.8733%	0.3282%	4.202%	15.969%
Al-Mahweet	3.4931%	0.0707%	3.564%	16.348%
Al-Mahrah	5.5445%	0.7552%	6.300%	18.243%
Total	3.8048%	0.5158%	4.321%	16.177%

Source: estimated from the 2 per 100 Sample of the 1994 Population Census.

Table (6)
Maximum Likelihood estimates of Sectoral Choice
(Estimation: Multinomial Logit Model)

	COEFFICIENT	Z	COEFFICIENT	Z
	Civil service		Public enterprises	
Age groups*				
20-24	0.742	3.567	0.244	0.664
25-29	0.769	3.752	0.342	0.945
30-34	0.674	3.296	0.506	1.405
35-39	0.592	2.886	0.386	1.068
40-44	0.549	2.635	0.376	1.03
45-49	0.599	2.842	0.629	1.714
50-54	0.519	2.424	0.379	1.013
55-59	0.589	2.619	0.593	1.533
60-64	0.368	1.605	0.488	1.231
Education*				
R & W	1.217	15.759	0.799	5.833
Primary	0.823	6.15	0.556	3.104
8 Yr South	1.281	15.29	0.962	6.96
9 Yrs	2.613	13.747	2.255	10.074
Diploma	1.528	18.053	1.299	10.265
Secondary	2.078	9.358	1.985	7.382
University	1.109	10.183	0.938	5.679
Marital status*				
Single	0.354	1.043	0.248	0.38
Married	0.309	0.915	0.426	0.654
Divorced	0.508	1.34	0.758	1.089
Governorate*				
Ibb	-0.256	-1.919	-1.386	-5.538
Abyan	0.994	6.352	0.406	1.632
Sana'a City	-0.691	-5.309	-0.622	-3.097
Al-Beidha	-0.884	-4.947	-1.5	-4.17
Taiz	-1.025	-7.632	-0.936	-4.415
A1-Jawf	-0.277	-1.17	-1.01	-2.038
Hajjah	-1.073	-7.266	-1.403	-5.137
Al-Hudeiday	-1.909	-13.867	-0.754	-3.721
Hadramout	-1.363	-9.175	-0.542	-2.536
Shabwah	0.339	2.404	-0.316	-1.315
Sa'adah	-0.507	-3.105	-0.611	-2.233
Sana'a	-1.628	-8.012	-1.23	-3.585
Aden	0.248	1.862	-0.604	-2.657
Laheg	0.429	2.869	1.602	7.902
Mareb	0.781	5.316	0.749	3.421
Al-Mahweet	-0.081	-0.455	-0.27	-0.894
Al-Mal	-0.055	-0.317	-1.871	-3.474
Urban=1	0.439	8.703	0.722	9.792
Occupation*				
Prof. & Tech.	1.117	9.273	0.781	3.81

Admin.	1.934	22.758	1.316	9.714
Clerical Workers	1.087	14.487	1.091	8.717
Sales Workers	0.253	2.765	1.216	9.41
Services	-4.876	-30.803	-3.03	-15.437
Agric. Workers	-6.428	-32.929	-3.335	-19.327
Laborers N.E.C.	-3.362	-43.765	-1.442	-13.74
Cons.	-1.133	-2.765	-3.157	-4.138

Source: estimated from the 2% sample of the Population Census, 1994.

*Note: Private sector is the reference. Category reference groups are: age group "15-19"; education: Illiterates ", marital status: "widowed", occupation: "other unskilled laborers"

Table (7)
Expected Probability of Civil Service Employment
Education, Age and Years of Job Tenure, Yemen 1994

	NO EDUCATION			
<i>Age group</i>	<i>Tenure(0)</i>	<i>Tenure(3)</i>	<i>Tenure(6)</i>	<i>Tenure(9)</i>
15-19	0.0082	0.009		
20-24	0.132	0.04		
25-29	0.114	0.089	0.073	
30-34	0.102	0.094	0.059	
35-39	0.099	0.077	0.03	0.137
40-44	0.103	0.088	0.038	0.159
45-49	0.079	0.091	0.058	0.181
50-54	0.121	0.089	0.053	0.079
55-59	0.067	0.107	0.08	0.069
60-64	0.073	0.075	0.068	0.039
65-69	0.052	0.054	0.012	0.035
	Elementary education			
<i>Age group</i>	<i>Tenure(0)</i>	<i>Tenure(3)</i>	<i>Tenure(6)</i>	<i>Tenure(9)</i>
15-19	0.00137	0.0013		
20-24	0.208	0.122		
25-29	0.196	0.211		
30-34	0.212	0.237	0.253	0.254
35-39	0.168	0.18	0.137	0.323
40-44	0.188	0.201	0.112	0.284
45-49	0.223	0.206	0.172	0.239
50-54	0.145	0.16	0.169	0.126
55-59	0.149	0.211	0.25	0.126
60-64	0.176	0.15	0.217	0.07
65-69	0.113	0.197	0.173	0.117
	Preparatory education			
<i>Age group</i>	<i>Tenure(0)</i>	<i>Tenure(3)</i>	<i>Tenure(6)</i>	<i>Tenure(9)</i>
15-19	0.002	0.02		
20-24	0.03	0.18		
25-29	0.321	0.362		
30-34	0.228	0.329	0.005	0.382
35-39	0.326	0.302	0.26	0.429

40-44	0.42	0.431	0.388	0.444
45-49	0.345	0.426	0.336	0.517
50-54	0.52		0.3	0.395
55-59			0.677	0.854
60-64		0.735		0.029
65-69	0.712	.		
Secondary education				
Age group	Tenure (0)	Tenure (3)	Tenure (6)	Tenure (9)
15-19	0.738	0.006		0.817
20-24	0.734	0.527		0.614
25-29	0.721	0.629		0.592
30-34	0.666	0.671	0.528	0.656
35-39	0.676	0.627	0.378	0.334
40-44	0.621	0.448	0.7	0.805
45-49	0.561	0.519	0.632	0.334
50-54	0.65	0.812	0.785	0.474
55-59	0.413	0.952		0.528
60-64	0.276	0.694		0.656
65-69		-		
Post secondary education				
Age group	Tenure (0)	Tenure (3)	Tenure (6)	Tenure (9)
15-19	0.874	.		
20-24	0.91	0.894		0.943
25-29	0.871	0.725		0.791
30-34	0.816	0.764		0.788
35-39	0.809	0.7	0.931	0.93
40-44	0.585	0.898	0.788	
45-49	0.793	0.617	0.775	
50-54	0.813	0.776	0.768	
55-59				
60-64				
65-69				
University education				
Age group	Tenure (0)	Tenure (3)	Tenure (6)	Tenure (9)
15-19				
20-24	0.801	0.085		0.707
25-29	0.797	0.663		0.813
30-34	0.803	0.744		0.777
35-39	0.775	0.736	0.662	0.746
40-44	0.779	0.756	0.765	0.776
45-49	0.756	0.675	0.832	0.705
50-54	0.793	0.714	0.8	0.498
55-59	0.795		0.707	0.71
60-64		0.021	0.83	
65-69				0.915

Source: Micro data of the Population Census, 1994

Note: Tenure codes are 1<5 years of service, 2=5-9 years, 3=10-14 years, 4=15-19, 5=20-24, 6=25-29
 7=30/34, 8=35/39 years.

Table (8)

Grades & Salaries (YR/Month) for Civil Servants 1990-1995

GRADE	CLASSIFICATION	CURRENT BASIC SALARY	COST OF LIVING ALLOWANCE*		PROPOSED SALARY CHANGES FOR 1995		
			1992	1993	1995	Sum of allowances	1995
First	A	5600	600	2240	1120	3960	9600
	B	5000	600	2000	1100	3700	8700
	C	4500	600	1800	1080	3480	8000
Second	A	4000	600	1600	1000	3200	7200
	B	3600	600	1440	1000	3700	6600
	C	3200	600	1280	1000	3480	6100
Third	A	2900	700	1160	1000	2860	5760
	B	2600	700	1040	1000	2740	5340
	C	2400	700	960	1000	2660	5100
Fourth	A	2200	700	880	1000	2580	4800
	B	2000	700	800	1000	2500	4500
Fifth	A	1800	700	720	1000	2420	4200
	B	1600	700	540	1000	2340	3900

Source: Ministry of Civil Service and Administrative Reform, 1996.

**Notes: Grade categories roughly refer to the following. "First" grade is reserved for senior leadership positions; "Second" refers to university graduates, "Third" is for secondary, vocational/technical graduates. "Fourth" is applied to intermediate education graduates while the last category is typically staffed by unskilled, uneducated workers.*

**The third column represents current salary scale. The cost of living allowance column summarizes salary adjustments to be made in order to reflect erosion of wages because of inflationary pressures in 1992 and 1993. Total proposed adjustments are shown in column 7 and the last column is the salary scale which was approved last year and scheduled to take effect shortly.*

Table (9)
Average wage according to education and age of civil servants (YR/month)
Education (Years)

AGE GROUP	0	4	8	12	16	20
15--19	3630	3930	4467	4210	6940	NA
20--24	3819	3921	4497	5184	7727	NA
25--29	4494	4216	4945	5396	7647	NA
30--34	4788	4970	5700	6019	8315	8820
35-39	5258	5343	6611	7202	9118	10574
40--44	5302	5849	7458	8385	10433	13360
45--49	5239	6317	8078	9048	11981	1395
50--54	5648	6550	8023	9796	12677	14685
55-59	5986	7298	7552	9526	13297	14724
60--64	6012	6905	8463	8659	10470	8440
65--69	5012	8129	4200	7053	9256	NA
70	4471	4390	5122	5437	9032	NA

Source: MCS&AR, 1995.

Table (10)
Average Number of years of service According to Age and Education
Yemen's Public Servants, 1995

Age Groups	Years of Education					
	0	4	8	12	16	20
15--19	3	3.25	3.4	5.667	2	NA
20--24	3.831	3.946	4.019	4.156	7.231	NA
25--29	4.979	5.172	5.672	5.385	4.441	NA
30--34	7.356	9.508	10.197	8.701	7.399	3
35--39	9.504	13.454	14.724	13.31	10.568	11.944
40--44	10.734	15.258	19.023	17.488	14.604	14.071
45--49	11.8104	17.318	22.65	22.225	19.059	21.281
50--54	15.254	19.738	28.814	27.456	23.052	21.765
55--59	19.028	28.5	31.389	30.966	27.125	26
60--64	22.773	25.579	28.4	36.211	24.5	18
65--69	21.009	29.143	38	28.429	20.667	NA
70	6.905	5.441	7.063	3.649	7.001	NA

Source: Derived from the data base of CS&AR, 1995.

Table (11)
Civil Service Average Wage and Per Capita Income (Yrly)

YEAR	AVERAGE WAGE	PER CAPITA INCOME	WAGE/PER CAPITA INCOME
1990	116601	7530	15.5
1991	124284	8208	15.1
1992	138126	9490	14.6
1993	152923	11585	13.2
1994	164901	14529	11.3
1995	209054	18033	11.6

Sources: (a) Wage data are from Ministry of Civil Service and Administrative Reform. (b) Per capita income data are from Central Statistical Organization, Ministry of Planning, Annual Year-Book, 1995.

Table 12
Returns to Human Capital by sector and Gender, Yemen 1991

VARIABLE	PUBLIC 1991		CIVIL SERVICE 1995		PRIVATE 1991	
	Estimate	t-value	Estimate	t-value	Estimate	t-value
Education	.03938	22.663	.03789	96.822	.06585	7.757
Age	.02811	5.705	.052030	25.166	.005834	3.607
Age ^c	-.000309	-5.158	-.00054	-20.570	-.00066	-3.190
Job Tenure	.02473	8.032	.018289	16.206	.01938	2.091
Job Tenure ²	-.000445	-4.858	-.00014	-4.241	-.000328	-1.214
Constant	4.771717	57.179	7.08602	193.778	4.2392	14.867
Adjusted R ²		0.2249		0.5677	0.1550	
N		2909		14374	1567	

Source: Estimated from the 1991 Labor Force Survey and the 1995 MCS&SR data.

Table 13
Decomposing Gini Income Inequality, Yemen, 1992.

INCOME TYPE	GINI COEFF	INCOME SHARE*	Rs *	INEQUALITY CONTRIBUTION
Labor	0.4782	50.47	.7137	61.4
Business	0.4477	42.02	.5410	36.3
Property/interest/divid	0.6468	1.863	.2639	1.134
Remittances/pension/transfer	0.3697	5.561	.1498	1.112

S

*Income share (w) is defined as (Y_s/Y) where Y_s is income from the s source, and Y , is total income from all sources.

* R_s is the correlation of the s income source with total income.

^{II} The contribution to inequality is computed as $(R_s w_s G_s/G)$ where R_s is the correlation between the s source and total income. G_s is the Gini coefficient for the source of income and G is the overall Gini coefficient in the economy.

Table 14
Labor market wage inequality in Yemen
(Gini Coefficient and Variance of the logarithm of earnings)

SECTOR	1991		1995	
	Gini Coeff	Var of log earnings	Gini coeff	Variance of log earnings
Public	0.411	0.533	0.225	0.16
Private	0.581	1.049	na	na

Source: Estimated from the 1991 Labor Force Survey and the 1995 Civil Service data base.

Table 15
Expected Probability of Unemployment by Education and Governorate, Yemen 1994

(are groups 14-64)

Governorate	No Ed.	Read & Write	Primary	Diploma	Secondary	Diploma 2	University
Ibb	0.07	0.09	0.15	0.07	0.12	0.03	0.03
Abyan	0.26	0.27	0.22	0.21	0.27	0.07	0.11
Sana'a City	0.07	0.09	0.12	0.04	0.12	0.02	0.02
Al-Beidha	0.11	0.12	0.20	0.16	0.16	0.05	0.04
Taiz	0.11	0.13	0.21	0.10	0.18	0.04	0.05
Al-Jawf	0.14	0.15	0.20	0.04	0.09	0.01	0.02
Hajjah	0.08	0.11	0.13	0.05	0.10	0.03	0.03
Al-Hudeidah	0.09	0.14	0.14	0.07	0.15	0.04	0.03
Hadramout	0.16	0.23	0.18	0.15	0.20	0.03	0.75
Dhamar	0.04	0.05	0.09	0.04	0.07	0.02	0.01
Shabwah	0.21	0.23	0.21	0.10	0.25	0.07	0.09
Sa'adah	0.05	0.05	0.08	0.03	0.06	0.02	0.01
Sana'a	0.04	0.05	0.07	0.03	0.06	0.01	0.01
Aden	0.21	0.27	0.20	0.20	0.25	0.07	0.09
Laheg	0.16	0.22	0.18	0.15	0.22	0.05	0.07
Al-Mahweet	0.06	0.08	0.12	0.06	0.11	0.01	0.02
Al-Mahrah	0.01	0.15	0.11	0.08	0.15	0.02	0.04

Source: Estimated from the probit model estimates, 2% Sample of the Population Census.

Table 16
Maximum Likelihood Probit Estimates of Poverty Determinants, Yemen 1992

Variable	Upper Poverty Threshold Level		Lower Poverty Threshold Level	
	Marginal effect	1-value	Marginal effect	4-value
Governorate				
Gov-Ibb	0.4915*	11.833	0.4467	7.718
Gov- Abyan	0.3294*	6.885	0.2695	4.604
Gov- Sanaa city	0.2949*	6.213	0.2177	4.155
Gov- Al-Beidha	0.5037*	12.772	0.5932	10.291
Gov- Taiz	0.4699*	10.790	0.4543	8.001
Gov- Al-Jawf	0.2638*	5.069	0.3658	5.898
Gov- Hajjah	0.2608*	5.362	0.1162	2.160
Gov- Al-Hudeidah	0.5426*	13.083	0.4712	8.348
Gov- Hadramout	0.5066*	12.530	0.5292	9.142
Gov- Sa'adah	0.4500*	10.534	0.4236	7.187
Gov- Sana'a	0.0766*	1.465	-0.1374	-3.038
Gov- Aden	0.5405*	14.420	0.5464	9.431
Gov- Laheg	0.5535*	13.736	0.5062	8.902
Gov- Mareb	0.3605*	7.736	0.3858	6.477
Gov- Al-Mahweet	0.4773*	10.395	-.0264	-0.405
Gov- A1-Mahrah	0.5603*	16.639	0.6677	12.036
Gov- A1-Mahrah	0.1924*	3.603	0.3069	4.985
Labor & demographic attributes				
Age	.000401***	1.394	.00029	1.290
Age ²	-4.7e6***	-1.508	-4*e6	-1.662
Education	-.0056*	-1.995	-.0058	-2.625
Public 1	-.01763*	-2.115	-.0085	-1.287
Unem=1	.01582	1.163	.02723	2.486
Household size	.05152*	80.868	.03035	65.709
Children aged<5	.01505***	1.621	.00797	1.069
Urban=1	-.03138*	-5.435	-.0061	-1.344
Asset Ownership				
TV=1	-.06969*	-19.075	-.0579	-12.094
VCR=1	-.1099*	-8.543	-.0664	-14.659
Rooms	-.00221*	-46.965	-.1461	-6.061
Private car-1	-.2813*	-46.965	-.1461	-30.979
Log likelihood	-37162.85	-32051.251		
χ^2 (29)	15354.64	9702.66		
Pseudo R ²	0.1712	0.1315		

Source: Estimated from the Micro-data of Yemen's Expenditure Survey, Rounds 1 through 4, CSO, 1992.

Table 17
The expected probabilities of falling into poverty
by education and sector of employment. (age>19&age<45, urban residents).

EDUCATION LEVEL	PRIVATE SECTOR EMPLOYMENT	PUBLIC SECTOR EMPLOYMENT
No education	.234	.213
Read & write	.235	.238
Elementary	.230	.251
Preparatory	.235	.227
Diploma	.248	.214
Secondary	.221	.197
Post-secondary Diploma	.208	.218
University	.226	.183
Higher education	.199	.134

Source: Derived from the Probit model of poverty determination.

Note: Expectations are for the lower poverty threshold level.

Table 18
Public sector workers who had no education and
served for 20+ years and their expected wage, Yemen 1994

AGE GROUP	PERCENT	EXPECTED WAGE YR/MONTH*
35-39	11.5	5706
40-44	21.7	6022
45-49	18.9	6011
50-54	17.9	6182
55-59	14.5	6056
60-64	11.7	5831
65-69	3.8	5553
Total	100	5934

Source : Derived from the 2% sample of the Population census, 1994.

Wages are predicted based on regression estimates obtained from MCS&AR data and applied to the 2% sample.

Table 19
Budgetary Impact of Retiring Workers

AGE GROUP	CHARACTERISTICS AND POTENTIAL SAVINGS			
	<i>Number</i>	<i>Education</i>	<i>Years of Public Service</i>	<i>Wage Savings per Year</i>
55-59	11061	4.0	23.9	
60-64	8596	3.21	19.9	
65-69	8902	3.03	29.3	
				4709493300
<i>As a % of wage bill</i>				7% of current wage bill

Note: wage data are estimates provided by ministry of Civil Service and Administrative Reform, 1996. Size and Education data are derived by the authors from the 1994 census files.

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