EDITOR'S FORUM

EMPLOYMENT, UNEMPLOYMENT, AND ACCESS TO EDUCATION: POLICY DILEMMAS FOR PAPUA NEW GUINEA

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This article examines education policy in Papua New Guinea in light of the most recent evidence on the growth of population and the labor force. Over the intercensal period 1980-1990, the labor force grew by between 2.5 and 3.0 percent per annum, and rates of unemployment among young people increased, especially in urban areas. But in spite of rising unemployment, an acute shortage of skilled labor compelled the private sector to increase reliance on expensive expatriate labor. The education sector in Papua New Guinea is plagued by problems of high unit costs, a high dropout rate, and low continuation rates into secondary school and tertiary institutions. Some policy suggestions are put forward that over time could lead to improved access to education and better absorption of the output in productive employment.

FOR MORE THAN TWO DECADES, development economists have been debating the optimal provision of education in those countries in the developing world that emerged into independence with very low levels of educational attainment. While demand for educational qualifications as a passport to urban wage employment continues to be intense, growing evidence of unemployment among the educated and low rates of return on educational expenditures, especially at the secondary and tertiary levels, have made some economists doubtful of the wisdom of allocating substantial govern-

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ment funds to provision of educational facilities, especially where such provision involves a large subsidy to the better-off sections of society (Jimenez 1986:112). But in recent years, numerous studies have pointed to the importance of an educated labor force in promoting the transfer of knowledge, especially in the fast-growing economies of East Asia. In one recent study of those economies, a team of World Bank economists pointed out that "education is the main theme of the story of the differences in growth between sub-Saharan Africa and the East Asian high performers" (World Bank 1993a:53-54).[1] Developing countries that neglect educational provision, especially at the postprimary levels, are unlikely to be able to grow rapidly through the successful adoption of technology that has characterized the East Asian high performers.

Poor countries with rapidly growing populations are thus confronted with a dilemma. On the one hand, it seems clear that they can never hope to emulate the success of the fast-growing developing economies in East Asia without greatly improving the average level of educational attainment of their labor forces. But on the other hand, a rapid expansion of educational facilities usually implies additional budgetary outlays and the risk that many of those graduating from schools and colleges will not be able to find the kind of employment that they believe their qualifications equip them for. Some governments capitulate to pressures from politically powerful urban populations and devote a substantial part of the education budget to expanding places in the tertiary education system, even though social rates of return to education at this level are generally thought to be lower than at the primary and secondary levels.[2] Primary and secondary educational facilities outside the large cities are neglected, and average enrollment rates remain low. Low educational attainment in turn affects the success of government development programs including health and family planning.

This article explores these dilemmas in the context of Papua New Guinea (PNG).[3] When Papua New Guinea achieved independence from Australia in 1975, rates of educational attainment were extremely low, and the government gave high priority to expanding access to education at all levels. However, the period since independence has been characterized by slow economic growth and rising unemployment, particularly in urban areas, with an accompanying breakdown of law and order.[4] These developments have in turn given rise to an ongoing debate about appropriate educational and employment policies. In this article, I first examine some of the most recent evidence on the growth of employment and unemployment and their relationship with educational attainment, paying particular attention to the data from the 1990 population census. I then relate these findings to recent

debates on educational policy in Papua New Guinea and to new government initiatives for rural development.

How Fast Is the Labor Force Growing?

The four population censuses that have been carried out in Papua New Guinea in 1966, 1971, 1980, and 1990 contain by far the most comprehensive available data on the composition of the labor force. But, as is often the case with census data in developing economies, problems have been encountered in Papua New Guinea in fitting the population into the conventional labor force categories. In addition, changes have been made between censuses in the way certain categories have been interpreted, so that problems of comparability arise, and adjustments must be made before using the data to calculate growth rates or other indicators of change over time.[5] Given these problems, it is clear that it is impossible to come up with a precise estimate of the intercensal growth in the labor force. But it seems fairly certain that it was higher than the growth in the population over ten years of age (2.4 percent per annum) and most probably in the range of 2.5 to 3.0 percent per annum. The urban labor force grew much more rapidly than the rural (6.7 compared with 2.6 percent per annum), and the male labor force grew more rapidly than the female labor force (UNDP/ILO 1993:table 1.1). The slower growth in the female labor force was in turn entirely due to slow growth in rural areas, where the female labor force only grew by 1.4 percent per annum. In urban areas, the female labor force grew more rapidly than the male labor force, largely because of the rapid growth in female wage workers. The very slow growth in the female labor force in rural areas was in part due to the absolute decline in the number of women employed in subsistence agriculture and in part due to the rapid growth in the numbers reported as students and homeworkers. There was also a rapid growth in the number who did not state their labor force category, although the growth of males in this category exceeded that of females. It is probable that some of those reported as homeworkers and as "not stated' were in fact available for employment and could better be described as discouraged job seekers than as outside the labor force.

Changes in the Age Structure and the Educational Attainment of the Labor Force

There was no marked change in the age structure of the labor force in Papua New Guinea between the 1980 and 1990 censuses, except for a near-doubling in the percentage of workers over age sixty-five for both males and

TABLE 1. **Percentage Breakdown of the Citizen Labor Force by Age and Sex**

	Males		Females	
Age Group	1980	1990	1980	1990
Total	100.0	100.0	100.0	100.0
10-19	16.8	20.5	19.6	22.3
20-30	27.9	29.1	25.3	29.6
30-65	53.8	47.1	53.8	45.8
Over 65	1.7	3.3	1.3	2.3

Sources: National Statistical Office 1985, 1988, n.d.

Notes: In this and following tables, "Citizen Labor Force" excludes all expatriate workers, "Citizen Population" excludes all expatriates, and totals may not sum to 100% because of rounding.

females (Table 1). This could be a consequence of the harsher economic climate of the years 1989-1990, although it could also reflect changing social attitudes about the role of older people in the labor force. Given that such a high proportion of the population is under the age of twenty-five, we would expect the labor force to be skewed toward the younger age groups also. In 1990, almost 50 percent of the male labor force and 52 percent of the female labor force were under the age of thirty. As would be expected, given the increase in access to education through the 1980s, there was a decline in the percentage of the population over age ten with no education and an increase in the percentages with access to education at all levels. The increase was most pronounced for the categories "completed grade 6" and "completed grade 12 and over," although the absolute numbers in the latter category were still small, especially for females (Table 2). In spite of the gains of the last ten years, it is clear that the level of educational attainment of the PNG population remained extremely low by international standards. This indeed is confirmed by the comparative data of the United Nations Development Program (UNDP 1994:130), which shows that mean years of schooling for the PNG adult population was much lower than in most other countries in the Asia-Pacific region and lower than in all but the poorest parts of Africa.

Trends in the Population Engaged in Money-Earning Activities

Successive population censuses in Papua New Guinea have categorized the economically active population into those engaged in money-earning activities, including cash agriculture, and those either not in the labor force,

TABLE 2. **Percentage Breakdown of the Citizen Population over Age Ten by Educational Attainment and Sex**

	Males		Females	
Highest Level Attained	1980	1990	1980	1990
Total	100.0	100.0	100.0	100.0
None	60.4	46.7	72.8	58.5
Grades 1-5	17.7	19.7	14.2	17.3
Grade 6	12.4	17.8	8.7	14.8
Grades 7-9	5.3	6.0	2.9	3.9
Grades 10-11	3.6	4.9	1.4	2.6
Grade 12	0.6	0.8	0.1	0.3
Apprentice	—	2.0	—	1.0
Diploma	—	0.5	—	0.2
Degree	—	0.3	—	0.1
Not stated	—	1.4	—	1.5

Sources: See Table 1. Data for 1990 are still preliminary.

Note: In the 1980 population census, those with postsecondary qualifications were included in the Grade 12 category.

unemployed, or employed in subsistence agriculture. I have already suggested that the distinction between the last two categories may not have been entirely consistent in successive censuses, especially for women workers. However, it is more likely that the concept of "economically active in money-earning activities" has been applied consistently in successive censuses, and so a comparison is possible for the four censuses since 1966 (Table 3). It is clear that there has been a continuing trend toward greater participation in the monetary economy for both male and female workers. The number of women in money-earning activities has been growing faster than the number of men, although women employed in the monetary sector are still a smaller proportion of the female population (32 percent in 1990) than men in the monetary sector are of males (45 percent in 1990).

The 1980s witnessed a marked slowdown in the rate of growth of the population engaged in money-earning activities, from 8.5 percent per annum in the years from 1966 to 1980 to only 3.5 percent in the 1980s. This slowdown was in part due to the slower growth of the economy during the 1980s.[6] It may also be due in part to the fact that the opening up of many parts of the country, especially the highlands, to cash-crop agriculture in the preindependence years led to a very rapid rate of growth of people engaged, however partially, in the cash economy. This growth could not be

TABLE 3. **Citizen Population over Age Ten Employed in Monetary Activities**

Year	Male	Female	Total
Percentage			
1966	29.1	7.0	18.4
1971	31.8	12.1	22.3
1980	40.0	29.3	34.9
1990	45.0	32.3	39.0
Annual average percentage growth			
1966-1990	4.7	9.5	6.0
1966-1980	6.2	14.7	8.5
1980-1990[a]	3.7 (3.3)	3.3 (3.2)	3.5 (3.3)

Sources: Billington 1984:chapter 4, table 1; National Statistical Office n.d.

[a] North Solomons Province data excluded in estimating the 1980-1990 growth rates. Figures in parentheses show the growth rates when the wage labor force data for North Solomons are included in the 1980 figures.

sustained once the cash-crop boom began to taper off, partly because of land, labor, and marketing constraints and partly because of lower world prices.

The data in Table 3 make clear how far the PNG population has progressed in terms of dealing with the modern economic world compared with the colonial era. The economy can no longer be described as "predominantly subsistence" when almost 40 percent of the population over age ten have some exposure to the cash economy. But it should be stressed that, according to the census definitions, persons earning any money at all from farming or fishing are considered to be engaged in monetary activities, even if most of their time is spent in subsistence activities (National Statistical Office 1988:4). In 1990, less than half the male population over age ten and less than one-third of the female population were involved, even partially, in the monetized economy. If PNG citizens are to face an increasingly commercialized and competitive world with confidence, these proportions will have to increase.

A study by Billington pointed out that between 1971 and 1980 there had been a "significant polarisation" by educational attainment of the citizen labor force engaged in monetary activities (1984:chapter 4). On the one hand, there had been a considerable increase in the share of the labor force in monetary activities with no education, while on the other hand there had been some growth in the share with ten years of schooling and with tertiary qualifications. The 1990 data indicate some reduction in that polarization. The proportion with no education fell from 68 percent in 1980 to 53 percent

TABLE 4. **Educational Characteristics of the Citizen Population Employed in Monetary Activities, 1971-1990**

	Males	Females	Total
Percentage with no education			
1971	53.6	62.1	55.7
1980	60.6	79.2	68.0
1990	46.6	63.6	53.3
Percentage with less than six years of schooling			
1971	33.0	29.2	32.0
1980	11.5	7.0	9.7
1990	11.6	9.7	10.8
Percentage with more than ten years of schooling			
1971	1.7	0.9	1.5
1980	7.6	2.9	5.6
1990	14.0	7.0	11.3

Sources: Billington 1984:table 4.10; preliminary computer tabulations from the 1990 census.

in 1990, while the proportion with ten years of schooling or more rose from 5.6 percent to over 11 percent (Table 4).

The evidence of slower growth in citizen employment in monetary activities in the 1980s together with a considerable improvement in average educational attainment indicates that most of the new employment opportunities in monetary activities were for people with at least some schooling, and those with low levels of educational attainment (especially those with incomplete or no primary schooling) found it more difficult to get employment in monetized activities than in the previous decade.

Unemployment in Papua New Guinea

Given the slow economic growth that prevailed through much of the 1980s and the coincidence of the 1990 census with a period when the country was facing a regime of fiscal stringency and tight monetary policy, it was to be expected that 1990 rates of unemployment would be higher than in 1980. But the definitional changes adopted in the 1990 census make it difficult to judge just how much worse unemployment became during the 1980s. If we use the narrow definition of unemployment in the second National Manpower Assessment, then it seems clear that the unemployed grew as a percentage of the labor force in both urban and rural areas (Table 5). But the problem with this definition, as the second National Manpower Assessment pointed out, was that it excluded many of the "discouraged' unemployed

TABLE 5. **Changes in the Rate of Unemployment of the Citizen Labor Force, 1980-1990**

	Unemployed as a Percentage of					
	Labor Force			Total Population over Age Ten		
	1980[a]	1980 (-NS)[b]	1990	1980[a]	1980 (-NS)[b]	1990
Urban and rural						
Male	3.2	3.9	9.1	2.5	2.6	6.9
Female	1.5	1.7	5.9	1.0	1.0	3.5
Urban						
Male	7.1	8.8	28.6	5.4	5.6	20.6
Female	5.9	1.6	34.3	1.8	1.9	11.9
Rural						
Male	2.6	3.2	5.4	2.1	2.1	4.1
Female	1.3	1.4	3.4	0.9	1.0	2.2

Source: National Statistical Office n.d.

[a] Estimates from the second National Manpower Assessment, table 1.4.

[b] 1980 data adjusted to exclude North Solomons Province and to exclude those in the "other" category from the labor force.

who in 1980 were placed in the "other" category (Department of Finance and Planning 1986:4-6).[7] Thus the second National Manpower Assessment used a second, broader definition of unemployment that included those in the "other" category. If we apply this broader definition to the 1990 data, we find that unemployment in fact declined in 1990 compared with 1980, for both males and females. In urban areas, however, the unemployment rate for males increased markedly, with a smaller increase for females.

But there are problems with the "broad" definition of unemployment used in the second National Manpower Assessment, at least insofar as the 1990 census data are concerned. The "other" category in 1990 was much more tightly defined than in 1980 and was much less likely to capture the discouraged workers. However, it is quite possible that some discouraged workers who wanted employment but felt that none was available either reported themselves in 1990 as homeworkers or fell into the "not stated" category. (Both these categories experienced rapid growth in the intercensal period.) But there can be little doubt that, whichever definition is used, unemployment in urban areas worsened considerably over the course of the 1980s.[8] It is likely that there was a worsening in rural areas as well, although it is not possible to draw an unequivocal conclusion from the census data now available. It depends on just how many of those classified in the "other

and not seeking work" category in 1980 were in fact unemployed and also on how many of those in the "housework" and "not stated" categories in 1990 were actually willing to work but not actively seeking work because they were pessimistic about its availability.[9]

In Papua New Guinea, as in most other developing countries where a high proportion of the labor force is located in rural areas and engaged at least partly in agricultural production, it will be necessary to carry out special labor force surveys in order to determine the extent of employment, unemployment, and labor underutilization in rural areas.[10] Such surveys ask not just whether a person is engaged in those activities that count as "employment" in the internationally accepted definition of the term, but also about the number of hours worked and the person's availability for further work. There is a widespread perception among scholars studying economies like that of Papua New Guinea that the international definition of unemployment used by organizations such as the International Labour Organisation excludes people working in subsistence agriculture. This is incorrect; all people working in subsistence production should be included, and the very high labor force participation rates in rural areas for both males and females suggest that most people who work in agriculture in Papua New Guinea are in fact enumerated as "employed."[11] To the extent that unemployment in rural areas rose in the 1980s, it is because many young people became reluctant to take up traditional agricultural tasks and instead sought wage employment. This problem needs to be distinguished from that of labor underutilization, which refers to people working shorter hours than they would prefer. Underutilization may also be increasing in at least some rural areas, but it is not captured in the census data.

The census data do show the composition of the unemployed by age and educational status. Using the narrow definition of the unemployed, it is clear that the great majority were young people; 70 percent were under the age of twenty-five (Table 6). Almost 70 percent were male, and slightly under half were in urban areas. In relation to the total labor force and to the total population, the problem of open unemployment (i.e., those actively seeking work) is more severe in urban areas, giving rise to the widespread perception of politicians and the public that unemployment is mainly an urban phenomenon. This is not correct, in that over half the unemployed were in fact located in rural areas. Although those classified as unemployed in rural areas may have the option of employment in traditional agricultural tasks, they were not willing to take up such employment, but sought other work, probably in the wage economy. In addition, it is probable that a high proportion of the "discouraged" workers, who did not show up as unemployed but were excluded from the labor force, were located in rural areas.

TABLE 6. **Percentage Breakdown of the Unemployed Citizen Labor Force by Educational Attainment and Age**

	Male		Female		
	Urban	Rural	Urban	Rural	Total
Total	34.1	34.2	14.9	16.8	100.0
Educational attainment					
No school	8.5	13.3	4.7	8.2	34.7
Grades 1-5	4.6	4.4	2.0	1.7	12.7
Grade 6	12.0	10.3	5.2	4.6	32.1
Grades 7-9	3.4	2.4	1.2	0.9	7.9
Grades 10-11	4.2	3.0	1.4	1.1	9.7
Grade 12	0.4	0.2	0.1	0.0	0.7
Over Grade 12[a]	0.9	0.7	0.3	0.2	2.1
Age group					
10-14	2.6	7.3	1.8	5.1	16.8
15-19	10.1	10.9	5.2	5.6	31.8
20-24	8.5	7.1	3.4	2.6	21.6
Over 25	13.0	9.0	4.4	3.4	29.8

Source: National Statistical Office n.d.

[a] Includes certificate, diploma, and degree students.

A further important point about the unemployed in Papua New Guinea is that they are, in large part, uneducated or dropouts and graduates from the community (primary) schools. Around one-third had no education, and almost 80 percent were either without any formal schooling or educated at most to grade 6 level (see Table 6). Unemployment of the educated is only a small part of total unemployment. This is probably to be expected given the very low rates of educational attainment prevailing in the population at large. But it does mean that it may be unwise to expect that unemployment will decline rapidly and labor force utilization improve as rates of economic growth accelerate in the 1990s.[12] Faster economic growth in Papua New Guinea, especially that generated in the mining, construction, and service sectors, will lead to an accelerated demand for skilled workers, and, given that most of the currently unemployed are so poorly educated, it is likely that employers will prefer to fill many vacancies by recruiting expatriate labor.[13] Unless the government takes the initiative with policies designed to improve the skill level of the currently unemployed, it is unlikely that many will be able to find employment even in a more buoyant economy.

Although only a small proportion of the unemployed are secondary and tertiary graduates, rates of unemployment among individuals with these levels of education were not negligible in 1990 (Table 7). In urban areas, the

TABLE 7. **Unemployed as a Percentage of the Total Labor Force by Educational Attainment, 1990**

	Rural		Urban	
	Male	Female	Male	Female
Total	5.4	3.4	28.1	33.5
No school	3.4	2.2	34.2	40.2
Grades 1-5	6.3	3.9	33.5	43.7
Grade 6	8.8	7.1	37.6	49.4
Grades 7-9	10.1	9.7	29.5	31.4
Grades 10-11	14.0	15.6	18.9	17.6
Grade 12	9.0	8.1	9.9	7.9
Certificate[a]	3.5	3.4	7.4	5.0
Diploma	3.2	2.8	4.1	3.6
Degree	3.8	3.8	2.5	2.7

Source: 1990 population census, preliminary tabulations.

Note: Estimated from the preliminary data, which slightly understate rates of unemployment.

[a] Includes apprentices.

unemployment rate peaked for those who left school after grade 6 and fell slowly thereafter, with almost 19 percent of the male labor force with grade 10 and 11 qualifications unemployed and 18 percent of females. In rural areas the rates of unemployment were lower, but they were highest for workers with high school qualifications. These rates might reflect the fact that in a recession, workers with high school qualifications were less willing to go back to traditional village employment and more willing to declare themselves unemployed. The fact that, even in the middle of a severe recession, unemployment rates were quite low among workers with certificate, diploma, and degree qualifications testifies to the acute shortage of these workers in Papua New Guinea.

The Growth and Changing Structure of the Wage Labor Force

An important point to emerge from the comparison of the 1980 and 1990 census data was that the female wage labor force grew much more rapidly than the total labor force (5.4 percent per annum compared with only 1.8 percent per annum). As a result of these divergent trends, the female share of the total wage labor force increased from 13 percent to 18 percent in the intercensal period, and females accounted for 35 percent of the total intercensal growth in the wage labor force (Table 8). The urban male share of the

TABLE 8. **Percentage Distribution of the Citizen Wage Labor Force by Location and Sex, 1980-1990**

	198O[a]	1990
Males		
Urban	41.6	42.2
Rural	44.9	39.8
Urban + rural	86.5	82.0
Females		
Urban	7.3	10.5
Rural	6.1	7.6
Urban + rural	13.4	18.1

Sources: See Table 1.

[a] Data for 1980 include the North Solomons.

wage labor force stayed roughly stable over the period, but the rural male share fell. The educational level of the wage labor force showed a considerable improvement, indicating that the new opportunities in wage employment were for skilled rather than unskilled labor. In 1990, almost 54 percent of the female wage labor force and 35 percent of the male wage labor force had attained at least a grade 10 education (Table 9). The higher average level of attainment of women no doubt reflects their concentration in occupations such as secretaries, nurses, and teachers. The faster growth in the female wage labor force through the 1980s indicates that demand for wage employees in these relatively skilled occupations grew more rapidly than demand for wage labor in the more traditional, and less skilled, male occupations, especially in rural areas.

A markedly lower proportion of the wage labor force are in the youngest age groups compared with the labor force as a whole. According to the 1990 data, only 7.5 percent of the male wage labor force fell into the ten-to-fourteen and fifteen-to-nineteen age groups compared with 21.7 percent of the labor force as a whole. Similarly only 12.8 percent of the female wage labor force were in those two lowest age groups compared with 23.4 percent of the labor force as a whole (UNDP/ILO 1993:18). These figures reflect the fact that the wage labor force is better educated than the total labor force. They probably also reflect the deterrent effect that the minimum-wage regulations have had on the employment of youths. The high minimum wages in Papua New Guinea have attracted much critical comment over the years, and in 1992 the Minimum Wages Board recommended sweeping changes to

TABLE 9. **Percentage Breakdown of the Citizen Wage Labor Force by Educational Attainment and Sex, 1980 and 1990**

	Males		Females	
	1980[a]	1990	1980[a]	1990
Total	100.0	100.0	100.0	100.0
No education	38.6	24.4	22.2	17.6
Grades 1-5	13.6	10.2	7.0	5.2
Grade 6	17.7	21.8	17.2	15.0
Grades 7-9	12.1	8.4	21.9	8.6
Grades 10-11	15.6	16.9	29.0	25.9
Grade 12	2.4	2.8	2.6	3.5
Apprentice/ certificate		9.6		18.2
Diploma		2.8		3.4
Degree		1.7		1.1
Not stated		1.4		1.4

Sources: National Statistical Office 1988, n.d.

[a] In 1980 those educated above grade 12 were included with grade 12. Data for 1980 include North Solomons Province.

the system.[14] The distinction between urban and rural minimum wages was dropped and a national minimum wage introduced, which was set about 12 percent higher than the rural minimum in 1991. A new national "youth wage" was introduced, which was set at 75 percent of the national minimum wage. It is difficult to predict what impact these changes will have on the absorption of young people into the wage economy, although in the short run it is unikely to be very great. In the longer run, it has been argued that the 1992 changes could "assist employment growth in the formal sector," especially by encouraging new firms that would not be affected by the problem of different wages for existing and new employees. Over time, the new regulations should also lead to the narrowing of differentials between urban and rural wages (McGavin 1993:72).

In most developing countries the public sector wage labor force is an important component of the total wage labor force and of total nonagricultural employment. In their pioneering comparative analysis of government employment and pay, Heller and Tait found that the proportion of all nonagricultural employment accounted for by government workers in fact varied considerably across countries (1984:table 22). In the Asian context the proportion varied from over 50 percent in India to just over 12 percent in Singapore and the Philippines. In Papua New Guinea, the total public sector establishment in 1992, including the uniformed services, was just under

TABLE 10. **Government Employees as a Share of Nonagricultural Employment and Per 100 Population, Papua New Guinea and Select Asian Countries**

Country (date of data)	Percentage of the Nonagricultural Labor Force	Per 100 Population
Papua New Guinea (1990)	19.3	1.6
India (1977) (1981)	54.5	1.5
Indonesia (1990)	11.3	2.1
Philippines (1979) (1983)	12.6	3.2
Thailand (1979) (1980)	24.0	2.9
Korea (1981)	13.4	3.1
Singapore (1981)	12.2	5.4

Sources: Heller and Tait 1984:table 22; Central Bureau of Statistics 1992; Edgren 1987:7. PNG data from the Department of Personnel Management; the 1992 data were assumed to be unchanged in 1990.

60,000, which is slightly more than one-quarter of the total wage labor force and just under 20 percent of the nonagricultural labor force (Table 10). This total refers to central-government employees only; in addition there are thought to be some thousands employed directly by the provincial governments. As a proportion of the total population, the civil service in Papua New Guinea is actually quite small by international standards; there were fewer than two public sector employees per one hundred population (see Table 10). As a proportion of total nonagricultural employment, Papua New Guinea is in the middle of the range: neither as high as countries such as India nor as low as Indonesia, the Philippines, or Singapore.

Current Dilemmas in Educational Policy

The 1990 population census, in spite of its flaws and the problems of comparability with earlier censuses, provides a more comprehensive picture of labor utilization in Papua New Guinea than was available previously. It is clear that, in spite of the slow economic growth and stagnating living standards that have characterized the PNG economy since independence, there have been a number of important changes in patterns of employment and in attitudes to employment in both urban and rural areas. Numbers involved in the monetary economy, both as wage employees and as self-employed in both agricultural and nonagricultural activities, have been growing more rapidly than the total labor force. But many who wanted to work in the monetary economy were not able to find employment there, and unemployment

grew more rapidly than numbers of paying jobs (UNDP/ILO 1993: table 1.1).

Although the rapid growth in the numbers of unemployed is alarming, it does indicate that many younger people now see employment in the monetary economy as a desirable goal and declare themselves as unemployed and looking for work rather than simply as subsistence agricultural workers or as outside the labor force. In the 1960s, economists regarded most of the PNG population as deriving a materially and spiritually sufficient livelihood from traditional activities in the subsistence sector (see, for example, Fisk 1971). They could only be lured from what Fisk termed conditions of "subsistence affluence" by the offer of substantially larger remuneration in the monetary sector. A combination of growing population pressure in traditional agriculture and the dissemination of Western consumption norms through the mass media is rapidly changing these attitudes, especially among young people. Many are no longer content with the traditional ways. During the 1980s these attitudinal changes occurred at a time when the PNG economy was increasingly unable to absorb poorly educated young people into the cash economy, and some of those who could not get the material goods they wanted through gainful employment tried to get them through criminal activity.

It is far from clear that the prospects for employment generation will improve, even with the accelerated rates of GDP growth that occurred between 1991 and 1994 as a result of expanded mining sector output. Many of the jobs generated in the mining sector and in ancillary industries are for skilled and semiskilled workers, and employers are more likely to recruit from abroad than to train young, unemployed locals. In spite of the rhetoric about localization, the number of expatriates employed in Papua New Guinea appears to have increased during the 1980s and by 1992 probably numbered around 17,500 (UNDP/ILO 1993:215-222). Most were people with specialized technical skills. Given the problems facing the technical and vocational training sector in Papua New Guinea, it seems inevitable that the mining sector and other modern industries will have to continue to rely on foreign technicians for some years to come.[15]

Thus a mismatch between the needs of the modern sector of the economy and the output of the education system is likely to continue for years and perhaps decades to come. Young PNG citizens with little or no schooling will continue to be confronted with the choice of returning to jobs in the agricultural sector (with young men increasingly replacing young women) or joining the already large numbers of unemployed in both urban and rural areas. The only possible solution to this problem in the medium term is to improve educational and training facilities at all levels. Indeed, that conclu-

sion is widely accepted within the government, which has committed itself to carrying out the recommendations of the 1991 Education Sector Review.

This review proposed an initial three years of elementary schooling in the local language, followed by six years of primary schooling and three years of lower secondary schooling, which could be either academic or vocational. Two further years of upper secondary schooling would be either academic (permitting entry to the university or to college) or a preemployment technical training course. It is argued that implementation of this new structure would mean fewer children leaving school after six years and improved retention rates at both elementary and primary levels because of the use of local languages and "greater cultural bonding" (Department of Education 1991a:2). The Education Sector Review expressed alarm at the "appalling attrition rates" between grades 1 and 6, almost 45 percent. It pointed out that many children are leaving school functionally illiterate and that continuation rates from sixth to seventh grade actually fell through the 1980s. The great majority of those leaving primary school do not possess the skills that are needed in formal wage employment and are thus faced with a choice between employment in more traditional agricultural activities or open unemployment. The 1990 census data indicate that an alarmingly high number were taking the second option.

The Debate over Costs and Benefits

Reception of the Education Sector Review findings has generally been positive; one authority has argued that the main proposals are "sound, and if properly implemented, capable of addressing long-standing structural problems of the education system" (Gannicott 1993:155). But the immediate issue concerns their cost. The Education Sector Review made it clear that implementation of the new structure would involve considerably increased government expenditures, especially at the primary and lower secondary levels. During the 1980s, total government expenditures on education, at both the provincial and the national levels, actually fell in real terms and, even allowing for some increase in 1990-1991, real expenditure per pupil was considerably lower in 1991 than in 1983 (Department of Education 1991a:2; see also Blyth 1991).

Support for increased government expenditure at the primary and secondary levels comes from recent estimates of social rates of return to education in Papua New Guinea put forward by McGavin (1991a:table 1), which range from 6.1 percent (completed primary school compared with incomplete primary school) to 28.5 percent (completed provincial high school compared with incomplete high school). If indeed returns to completed sec-

ondary schooling in particular are so high, the case for higher enrollments at the secondary level seems compelling, even if achieving that target involves increasing educational expenditures relative to other forms of government expenditure and relative to GDP During the latter part of the 1980s, expenditure on education averaged around 6 percent of GDP (UNDP/ILO 1993: 163). Although this expenditure is high in comparison with many developing countries, some countries are spending considerably more; Zimbabwe, for example, is estimated to have spent over 10 percent of GDP on education in 1990 (UNDP 1994:159).

The Education Sector Review documents made it clear that the guiding philosophy influencing educational development in Papua New Guinea should be integral human development rather than a narrow focus on manpower needs (Department of Education 1991b:58). This finding directly challenged the approach adopted by many economists working in Papua New Guinea in the 1970s and 1980s, which had been far more preoccupied with fitting educational development into the projected capacity of the economy to absorb particular types of labor. This is the approach enshrined in the two National Manpower Assessments, which both advocated an extremely cautious approach in expanding access to education.[16] The second National Manpower Assessment warned in 1986 that those who had completed only primary schooling could not expect to find employment in the formal labor force, and indeed the 1990 census results show that this has been the case. It also queried whether use of government resources to "overeducate" was rational and suggested that further expansion of the secondary system might be unwise when the products of the system only take up jobs that had hitherto been performed by people with either no education or with at most six years of primary education (Department of Finance and Planning 1986:35-36). Improving quality of education with a view to replacing expatriates might be more sensible than expanding quantity.

The 1990 census data on employment and unemployment made it clear that the government cannot ignore issues of labor demand and supply. In particular, the evidence of high rates of unemployment among people with primary and lower secondary education shown in Table 7 must give cause for concern. How can these figures be reconciled with the evidence of high rates of return to primary education reported by McGavin? It should be noted that these rates of return were calculated from a small sample of nongovernment wage employees (McGavin 1991a:224). It can justifiably be asked whether estimates of returns to education from such a small and atypical sample of the labor force can serve as a basis for planning educational expansion for the nation as a whole. At the very least, such estimates should be adjusted for the probability of unemployment and for the probability that

in the future the great majority of people with at most a primary education will not find employment in the wage economy.

A major problem in Papua New Guinea, as in so many other parts of the former colonial world, is that in the immediate aftermath of independence pressures for rapid localization meant that many people were pushed into jobs for which they lacked appropriate qualifications. This explains why in 1980 such a high proportion of the male wage labor force in particular had at most grade 6 education (see Table 9). Those who possessed considerable natural ability succeeded in learning on the job. But in many cases, inevitably, the job was, and continues to be, done rather badly, and this is an important reason for low productivity levels in many parts of the economy. Over time, as poorly trained workers are replaced by people with better qualifications, the economy as a whole will benefit. It is well known that, as countries develop, the educational requirements for particular jobs increase, and the productivity of the worker in the job is greater as a result. In Japan, Western Europe, and North America, many secretaries are college graduates, and much more can be expected of them than in Papua New Guinea, where secretaries have had at most lower secondary education. Many farmers in the developed countries have postsecondary education, which means they are far better equipped to adopt modem agricultural technologies than farmers in Papua New Guinea with no schooling at all.

In addition, as numerous studies have shown, broader social benefits accrue from educational expansion than are captured in rates-of-return estimates. For example, parents with at least primary education are far less likely to have children die in infancy (World Bank 1993b:43). Schultz emphasizes the links that have been found in many countries between education of women and lower fertility, and suggests that "a subsidy that favoured women's schooling would help shift private household resources towards investments in the quality of the younger generation" (1993:74-78). Ayegi found clear evidence from a demographic survey conducted in Papua New Guinea in 1978 of a decline in numbers of children born as female educational attainment increased (1988:table 5.7). It seems that the return to female education in Papua New Guinea in the form of smaller, healthier families would be considerable. Although female participation in education in Papua New Guinea has increased rapidly since the 1970s, mean years of schooling of females in 1992 was estimated by the United Nations Development Program to be only half that of males, and the average figure was one of the lowest in the Asia-Pacific region (UNDP 1994:130-147). From this comparative viewpoint, the case for expanded access to education in Papua New Guinea, with a particular focus on increased female participation, would seem very strong.

If the broader social cost-benefit arguments are to be accepted as determining the pace of educational expansion in Papua New Guinea, rather than a narrow manpower-planning approach, then several key policy issues arise. How should a rapid expansion of education be funded? How should competing demands on the education budget be prioritized? And should the government assume responsibility for providing employment for the greatly expanded output of the system? The final part of this article examines these policy issues in more detail.

Policy Options

Educational attainment in Papua New Guinea, although on average very low by international standards, is characterized by considerable regional variation. Fernando has shown that in 1980 gross primary enrollment as a percentage of the age cohort varied from almost 90 percent in East New Britain to just over 40 percent in the western and southern highlands (1992:19). Regional equity as well as an understandable desire to make at least a minimum educational package available to children everywhere in the country as part of the process of nation building will almost certainly induce the government to give top priority to the attainment of universal primary education, although how that is to be defined in the context of the Education Sector Review's proposals is not completely clear.

Presumably it would mean the completion of the three elementary years, followed by the six-year primary cycle. The cost of giving all chidren in the country nine years of basic education would involve a considerable increase in government funding over current levels. One recent set of estimates has demonstrated that, assuming educational costs are held constant in real terms, expanding total enrollments to achieve in 2010 100 percent enrollments in the six-to-twelve age group, 50 percent enrollments in the thirteen-to-fifteen age group, and 20 percent enrollments in the seventeen-to-eighteen age group will cost a sum amounting to over 9 percent of GDP (Gannicott 1993:149). The cost of achieving the Education Sector Review target of universal enrollment of the six-to-fifteen age group would amount to over 12 percent of GDP

Is such an increase feasible in light of present and future budgetary constraints? Gannicott thinks not and reaches the rather pessimistic conclusion that "even 20 years from now. . . it will not be possible for Papua New Guinea to provide a basic 10 years of schooling to everyone in the age group" (1993:151). However, he does point out that this prognosis could change if the government were prepared to tackle the problem of high unit costs in the education system. Particularly damaging is the extremely expen-

sive tertiary system, which is almost wholly funded by government subsidies. "Failure to tackle higher education costs has a clear trade-off in terms of achieving better primary schooling" (Gannicott 1993:157). Proposals for reforming the system of financing tertiary education, involving a graduate tax, have been put forward, but there is as yet little indication that the government is willing to implement them (Curtin 1991:123-124).[17] The current system is regressive in that the highest subsidies are given to those students who have the highest earnings expectations, but the political will to reform the situation appears to be lacking.

Indeed, the Wingti government was determined to reduce parental contributions to the cost of education. In 1993 it abolished all fees in government primary and secondary schools. At the primary level, such fees were a deterrent to poor parents "who already face significantly higher opportunity costs in sending their children to school, in terms of lost family labour" (Fallon et al. 1994:67). But at the secondary level the move is almost certain to be regressive, as the highest fees are paid by middle-class children attending the higher-quality schools in the larger urban centers. Gannicott has argued that the additional subsidies that the government will have to pay to make up for the lost fees would amount to K20.5 million in 1993 and would increase thereafter (1993:148). These additional costs will slow down the rate of expansion of schooling in the more remote areas of the country.

Papua New Guinea is not the only country in the Asia-Pacific region wrestling with the budgetary consequences of expanding access to education, and much can be learned from studying the experience of other countries. In Thailand until very recently, the great majority of children dropped out of school after the six-year primary cycle, and continuation rates into lower secondary school fell to under 40 percent in the late 1980s (Ministry of Education 1992:60). The government responded to the problem of low continuation rates by expanding rural primary schools to accommodate students staying on to complete the three-year lower secondary cycle. Although doubts have been expressed about the quality of the education offered, the scheme has greatly reduced the costs of lower secondary education in rural areas, and retention rates have increased rapidly since the scheme has been in operation. Parents particularly value the fact that children can continue at school while staying in their home environment, which allows them to participate in domestic chores and reduces the risk of their becoming too "urbanized" (Myers and Sussangkarn 1992:18).

In the PNG context, one way of reducing unit costs is to reduce staff costs, especially in the first three years of the primary cycle, which the Education Sector Review envisages will be taught in the local language. Teachers at this level could be recruited locally and trained in special high schools, rather than at the tertiary level. Indeed, the ambitious program of village

services initiated by the Wingti government in 1992 placed particular emphasis on the provision of primary education (Nilkare 1992). In introducing the program, the government stressed that the officials recruited in the context of the village service programs could not expect to be paid at the high levels of remuneration enjoyed by civil servants directly under the control of the central government. If teachers working in rural primary schools and giving instruction in the local language could be brought under the purview of this program, the cost of providing such education could be greatly reduced.

A rapid expansion in the provision of village services, including not just education but health, agricultural extension, and legal services, could also make a significant contribution to the provision of employment for rural school-leavers. In announcing the government initiative, Minister John Nilkare stated that the new program had the potential to create up to 40,000 jobs in rural areas. Given the quite low provision of public servants per capita in Papua New Guinea (see Table 10), this expansion in numbers of public officials is probably justified, especially if the extra officials are to be located in rural areas, engaged in the provision of basic social and community services, and not paid at the high rates prevailing in the urban public service.

In the short term, budgetary constraints will probably mean that implementation of this program will proceed only slowly. In the medium term, given the continued dominance of the minerals sector in export earnings and given its very limited capacity to create employment directly, most new employment will have to come from growth in the nontraded goods sectors.[18] Certainly some nontraded sectors, such as construction and many services, including the village services already referred to, have the capacity to absorb large quantities of labor. But because a large part of the profits generated by the mining sector accrues to government, government expenditure patterns will be a crucial determinant of the employment effects of the revenue from minerals exploitation. Since independence, government expenditure in Papua New Guinea has been oriented to the maintenance of a small, urban-based, and extremely highly paid civil service and to the construction of capital-intensive public works. Inevitably the direct and indirect employment effects of such an expenditure strategy have been extremely limited. A reorientation of public expenditure toward the provision of labor-intensive services in rural areas together with greater emphasis on cost recovery in sectors such as higher education could over time allow more rapid expansion of educational facilities in rural areas, on the one hand, and expanded employment opportunities, on the other. The longer-run returns in the form of a more productive labor force and a more integrated nation would be considerable.

NOTES

This article draws on work that I carried out in 1992, when I was part of a team preparing a report on employment strategy and human resource development in Papua New Guinea, under the auspices of the United Nations Development Program and the International Labour Organisation. The views in this article are entirely personal.

1. For further discussion of educational investment in the context of the Pacific Rim economies, see Williamson 1993.

2. See Jimenez 1986 for further details.

3. Per-capita GDP in Papua New Guinea in 1992 is estimated to have been slightly in excess of US$1,000, which would make it a "lower middle income country," according to the World Bank ranking. But the United Nations Development Program classifies it as a "low human development" country, because of its relatively low life expectancy and low levels of educational attainment. See UNDP 1994:129-131. For further discussion of Papua New Guinea's development achievements, see Booth 1995.

4. In spite of the improved growth record in the early 1990s, the available data suggest that real per-capita GDP in 1993 was little higher than that in 1975.

5. The first problem in comparing the 1980 and 1990 data, and probably the easiest to correct for, relates to the exclusion of the province of North Solomons in the 1990 census; because of the separatist rebellion, no enumeration took place there. In addition there appears to have been considerable underenumeration in other parts of the country, although this problem has, in part at least, been corrected for in the final census figures that were made available in early 1993. A further set of problems relates to changes in the way questions were asked about participation in the labor force. In urban areas, both the 1980 and 1990 censuses asked a question about current occupation: where the respondent had worked in the last seven days. In 1980, the same question was asked in rural areas, but in 1990 it was changed in rural areas to a question concerning "principal economic activity over the past 12 months." Other things being equal, this change is likely to lead to a larger estimate of the labor force in rural areas in 1990, as people who had worked in the last twelve months but not in the week preceding the census enumeration will be included in the labor force in 1990 but not in 1980. Another change in definitions concerned the questions about unemployment and other activities. In 1980, people who were not currently working were asked if they fell into one of two categories: "other activities and looking for work" and "other activities and not looking for work." As the second National Manpower Assessment pointed out, the second category probably included many discouraged workers or people who were not openly looking for work as they knew none was available. The interviewer's manual for the 1980 census stated that the "other activities and not looking for work" category should be used for people who were not working for money and not working in their gardens or in their houses, but just doing nothing, or perhaps helping a neighbor build a house. In contrast to the 1980 instructions, in 1990 the "other activities" category was used for people who received income from property and land, for pensioners, or for anyone else who did not fall into any of the other activity categories. Because the 1990 definition of the residual category was more specific and less ambiguous than in 1980, fewer people fell into it.

6. For a discussion of the reasons for the slow growth performance in 1980, see Booth 1995.

7. The second National Manpower Assessment pointed out that the "other category" was defined to include "quite large numbers of young people who are apparently sitting around in villages doing very little."

8. The underenumeration of the population, especially the urban population, that occurred in the 1990 census is also likely to have led to some understatement of unemployment. The poorest sections of both Port Moresby and Lae, where the problem of unemployment is probably greatest, appear to have been most affected by the underenumeration.

9. It is also likely that the use of the one-year reference period in rural areas in 1990 reduced the extent of reported unemployment, as more people would have worked during the past year than during the past week.

10. The labor force surveys carried out three times a year in Thailand could serve as a model, although obviously enumeration procedures would have to be sensitive to the special problems arising from Papua New Guinea's unique society and culture.

11. For a detailed discussion of the concept and boundary of economic activity used by organizations such as the International Labour Organisation in measuring the labor force, see Dupre, Hussmanns, and Mehran 1987.

12. In 1991 and 1992, GDP growth is estimated at over 9 percent per annum. Much of this is derived from growth in mining sector output.

13. Figures from the Department of Labor indicated that as of July 1992, 28,724 requests for work permits had been approved and 15,427 permits issued. Almost 14,500 noncitizen employees holding work permits were in the country in 1992. See UNDP/ILO 1993: chapter 7.

14. For a discussion of the history of minimum-wage legislation in Papua New Guinea, see in particular Colclough and Daniel 1982 and McGavin 1991b. McGavin 1993 discusses the likely impact of the 1992 changes.

15. The problems of the technical education and vocational training sectors are discussed at length in UNDP/ILO 1993:chapter 6.

16. See Morris and Pourhosseini 1982 for a description of the first National Manpower Assessment, published in 1982. Gupta provides a critical assessment of the first National Manpower Assessment (1982). International agencies such as the World Bank have also advocated a cautious approach to the expansion of education in Papua New Guinea. See Curtin 1991:108-111 for a critique of the 1987 World Bank report.

17. The authors of the National Higher Education Plan, published in 1990, declared themselves "strongly opposed to any conventional scheme of student loans" (Commission for Higher Education 1990:72). However, they did concede that other forms of student funding, to supplement if not replace the NATSCHOL (national scholarship) system, should be investigated.

18. A detailed assessment of the impact of the growth of the minerals and petroleum sector on the economy is given in Parsons and Vincent 1991:31. Their model predicts that nontraded goods sectors such as health, education, construction, and public services will grow rapidly while traditional traded goods sectors such as agriculture will contract.

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