

SHORT COMMUNICATION

Lost investment returns from the migration of medical doctors from Malawi

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Abstract: Migration of medical doctors from African countries to developed nations compromises the delivery of health care on the continent. The full cost of producing a medical doctor was estimated in Malawi by adding the costs of education from primary school through undergraduate medical education. The cost in fees for one medical doctor produced was US\$ 56,946.79. The amount of lost investment returns for a doctor who migrated out and served for 30 years in the receiving country ranged from about US\$ 433,493 to US\$46 million at interest rates 7% and 25%, respectively. Quantitative assessments of the estimated loss in investment allows for informed policy discussions and decisions.

Keywords: brain drain, Malawi, medical training, medical education, migration

in the migration of health professionals from African countries to developed nations. This is much more so because African health systems are severely limited due to severe shortage of health professionals resulting in adverse patient outcomes (Campbell, 2006). In Malawi, the high in-hospital maternal mortality rate has been partly attributed to inadequate numbers of midwives to assist in deliveries (Lema *et al.*, 2005).

The shortage of health professionals in many African countries has been a perennial problem experienced even before independence. Lately however, with emphasis of various global and regional initiatives such as the Abuja Declaration, the Global Fund Against HIV/AIDS, Tuberculosis and Malaria, Millennium Development Goals, the World Health Organization's 3 by 5 Initiative, the Maseru 2001 Southern Africa Development Community (SADC) Declaration and others (Dodd & Cassels, 2006; Rugemalila *et al.*, 2006; SADC, 2003), there is growing realizations that the goals set out in these documents are unlikely to be reached. Among the many reasons for the almost certain failure to achieve the goals is the shortage of adequate numbers of the different cadres of health professionals.

The shortage of health professionals is a global phenomenon. It is the driving force for the movement of African health professionals who obtain employment overseas. While all migration is not necessarily bad, when the source nation suffers from severe negative health delivery limitations as a result

of the flow of health professionals outside of its jurisdiction, this becomes a matter of concern. The shortage of health professionals in Africa results from a diversity of reasons such as poor production levels from the training institutions, inadequate human resources planning and health professionals leaving bedside health services in favour of other duties even within their own countries (Mhalu, 2005; Muula, 2005; Vujicic *et al.*, 2006).

Financial losses are among the losses that a country sending out health professionals experiences. Kirigia *et al.* (2006) has reported on the financial losses in investment due to migration of medical doctors and nurses from Kenya. Estimating the total cost and lost investment in training of a medical doctor in Malawi will inform the 'brain drain' debate as quantification of the losses can be made. We carried out this study in order to contribute to the literature on brain drain and the losses in investment that resource limited countries experience.

In order to assess the total cost of training a medical doctor, we determined that that cost will include educational cost of 8 years of primary and 4 years of secondary school, one year of premedical training and 5 years of the undergraduate medical course. The cost of primary education was determined by obtaining the mean fees paid by students at a private school (Kaphuka Primary School) and a mission school (Malamulo SDA School). Although most school children in Malawi obtain primary and secondary education from public (government) institutions, there is universal free primary school. The

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actual cost per student is not known with certainty. The cost of 4 years of secondary education was obtained from the secondary schools associated with the primary schools already identified above. These schools are self-reliant and therefore probably represent a fair cost estimate of the cost of education. The cost of tertiary education for the premedical course and the 5 year MBBS (Bachelor of Medicine and Bachelor of Surgery) course at the University of Malawi-College of Medicine was obtained through interviews with relevant administrators of the college and review of records. University education in Malawi is heavily subsidized. Pre-medical students pay a total fee of US\$ 2,190 for the one year of study. For each year of medical school, the student pays US\$ 182 while government spends about US\$ 10,000 per student.

The estimation of per capita financial loss due to migration was determined by calculating a future value (FV) of investment for a fixed sum of money at a particular interest rate. The method used was similar to what was used by Kirigia *et al.* (2006) from the Kenyan study. The FV i.e. loss from the country through migration was thus estimated as:

$$FV = \text{Sum} * (1+r)^n$$

Where:

Sum= amount invested;

r= compound interest rate;

n= the number of years the money is invested

(Colorado State University, undated; Kirigia *et al.*, (2006).

Calculation of capital losses was based on the prevailing fixed deposits and mortgage commercial bank rates (r) Malawi at a date May 2006 when these rates were obtained from the banks. The bank rates

were as follows: National Bank, fixed deposit of 7% pa and mortgage of 20%, NBS Bank fixed deposit 10% and 25% mortgage, Opportunity International Bank, fixed deposit 10% and no mortgage product and Stanbic Bank, 8% fixed deposit and no mortgage rate.

With reference to the study by Kirigia *et al.* (2006), we determined that most of the medical doctors who left the country did so within the first few years of graduation, many soon after completing internships. It was therefore estimated that many of these doctors would serve in their new countries for at least 30 years. The results are presented in sequence starting with cost of primary education, secondary and later tertiary education. The lost investments at varying bank interest rates are shown. We obtained the cost of primary school by calculating the mean school fees of two non-governmental schools, a mission school and a private school. Each of the schools' fees was US\$ 109.5 per term (3 school terms in a year). The total tuition per student for the whole 8 years of primary school was: 8 years * 3 terms * US\$ 109.5 = US\$ 2627.73. This method of estimating the cost of primary education has been suggested by Kirigia *et al.* (2006).

The financial cost of secondary school education was estimated by averaging the fees of the same two schools as above. In Malawi, secondary education is for 4 years. The total tuition at secondary school totalled: 4 years * 3 terms * US\$182.5= US\$ 2189.78. The current standard practice to enter medical school in Malawi is that a student has to obtain one year pre-medical training. The fees are US\$ 2189.78. Following pre-medical education, the student can then enter medical school which is for 5 years. The cost per years is estimated at about US\$ 10,000. For the five years, the total is: 5 *US\$ 10,000= US\$ 50,000. The total

Table 1: Cost of training a medical doctor in Malawi

Stage of training	Number of years of training	Cost in US\$
Primary education	8	2627.23
Secondary education	4	2129.78
Premedical school	1	2189.78
Medical school	5	50,000.00
Total	18	56,946.79

cost of producing a medical doctor in Malawi is summarised in Table 1.

In assessing the cost of lost the investment it is normally assumed that the investment was made at the time of migration of the health professional. The following formula, which essentially what a bank could consider is used:

$$FV = \text{Sum} * (1+r)^n$$

Where Sum= principal amount invested;

r= compound interest rate per annum;

n= the number of years the money is invested

(Kirigia *et al.*, 2006).

would be about US\$ 7 million, in Malawi for a 30 year period, the lost investment was about US\$46 million. This means that estimating the lost investment returns from the migration of health professionals from country to country is problematic and it is heavily dependent on the bank rates regimes between the countries. Even in the same country, if bank rates are not stable, the variations in the estimates can be huge. The actual total amount of money spent for training is not dependent on bank rates but rather foreign exchange rates e.g. in our situation, what is the conversion rate between the Malawi Kwacha and the United States dollar.

Table 2: Per capita lost returns (in US\$) from the training of a medical doctor in Malawi

Principal sum	Interest rate (%) per annum	Total investment	lost Expressed as % of the lost investment at 7%
56,945.79	7	433,493.49	1
56,945.79	8	573,036.01	132
56,945.79	10	993,687.45	229
56,945.79	20	13,517,819.09	3118
56,945.79	25	46,001,250.62	10,611

The lost investment as presented at different interest rates is summarised in Table 2.

The lost investment in training of a non-specialist medical doctor at an investment of US\$56,946.79 at 7% interest rate per annum for 30 years is US\$ 433,493.49. At 10% interest rate and the same duration of investment, the lost investment for a doctor increases by US\$ 139,542.52. The rest of the comparisons between lost investments at 7% per annum versus 8%, 10%, 20% and 25% are presented in Table 2. The last column of the tables shows % lost investment comparing a particular row interest rate to the lowest interest rate i.e. 7%.

The total cost of training a non-specialist medical doctor in Malawi was estimated at US\$ 56,946. Comparing the Malawi figure to what was previously reported for Kenya by Kirigia *et al.* (2006), i.e. US\$ 65,997, our cost of producing a medical doctor is lower by about US\$ 1,051. The difference is likely due to the disparity in the cost of living between the two countries. However, when lost investment is calculated, the estimates from Kenya are lower than Malawi due to lower bank rates in Kenya compared to the much higher bank rates in Malawi. While the lost returns from investment in Kenya after 32 years

There is the temptation to assume that the lost investment due to the migration of health professionals is what the 'receiving country', in our case, mostly developed nations, owes Malawi for each medical doctor who migrates. However that is not the case as the lost investment is the total amount expected from investing the money for 30 years or any such period that the doctor remains in service. At graduation from medical school, the medical doctor is 'worth' close to just the total cost of training i.e. US\$ 56,946. Even at this time however, the amounts lost even without factoring in the interests rates over expected time of service are huge with regard to the economies of most African countries.

Most discussions about the losses experienced by resource-limited nations through the migration of health professionals emphasise qualitative analysis i.e. no estimation of actual costs involved. Quantifying the costs of education can inform policy decisions as to what are likely to be reasonable remedies for the losses experienced.

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