

**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF BUSINESS AND ECONOMICS**

**DETERMINANTS OF INTERNAL AND OUT
MIGRATION OF PHYSICIANS FROM THE PUBLIC
HEALTH SECTOR**

**BY
BIROUKE TEFERRA**



**ADDIS ABABA UNIVERSITY
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**“Determinants of Internal and External out
migration of Physicians from the Public Health
Sector.”**

By


Biruke Tefera Agonafire

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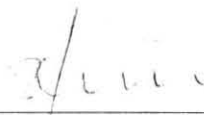
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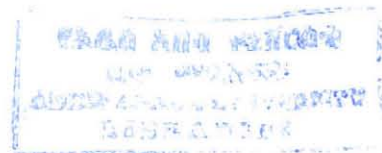


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List of Abbreviations and Acronyms

AEPHC	- Accelerated Expansion of Primary Health Care
AHEAD	-The Association for Higher Education and Development
BPR	- Business Process Reengineering
CHA	- Community Health Agent
CHC	- Community Health Clinics
CSRP	- Civil Service Reform Program
DH	- District Hospital
DPPC	- Disaster Prevention and Preparedness Commission
EFY	- Ethiopian Fiscal Year
FMOH	- Federal Ministry of Health
HC	- Health Center
HEW	- Health Extension Worker
HIV/AIDS	- Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HO	- Health Officer
HP	- Health Post
HRD	-Human Resource Development
HS	- Health Station
HSDP	-Health Sector Development Program
HSEP	- Health Service Extension Package
HW	- Health Worker
MDG	- Millennium Development Goals
MM	- Modern Medicine
MOH	- Ministry of Health

NGO	- Non-governmental Organization
OGA	- Other Government Organization
PHC	- Primary Health Care
PHCU	- Primary Health Care Unit
PHW	- Primary Health Workers
PRSP	- Poverty Reduction Strategy Paper
RHB	- Regional Health Bureau
SDPRP	- Sustainable Development and Poverty Reduction Program
SH	- Specialized Hospital
SNNPR	- Southern Nation, Nationalities and Peoples Region
STD	- Sexually Transmitted Disease
TB	- Tuberculosis
TBA	- Traditional Birth Attendant
TVET	-Technical and Vocational Education
UK	- United Kingdom
USA	-United States of America
WB	- World Bank
WHA	-World Health Assembly
WHO	- World Health Organization

Abstract

Physicians are key personnel in the health care system. Currently there is a worldwide shortage of health workers, particularly physicians. In some countries this shortage of physicians is aggravated by migration. Ethiopia is one of those countries who face severe shortage of physicians. With the advent of private health sectors, the movement and migration of physicians from public to private sector becomes a common phenomenon. Moreover, there is a mass exodus of physicians outside Ethiopia. Because of these internal and external migrations of physicians, the service delivery of the public sector is highly affected. But this phenomenon is given little attention. The objective of this study is to find out the root causes of migration and its impact on service delivery. To do this research both primary and secondary source of data were used. Descriptive and econometric techniques had been employed for analysis. A probit estimation was used to analyze the determinants of migration. The findings of the study show that low salary and remuneration, unavailability of drugs, lack of professional resources and poor quality of management were the major push factors for internal migration. The significant pull factors for internal migration were found to be the opposite of push factors of internal migration. Concerning out-migration the study revealed that low salary, lack of incentives, poor quality of management, and feeling de-motivated by poor health care infrastructure, resources and facilities were the main endogenous push factors. From endogenous pull factors better salary, provision of different incentives, better opportunity and quality of education; and sophisticated health facilities, infrastructure and resources were found to be the most important attracting factors. Low quality of life in Ethiopia and political repression were found to be the most significant exogenous push factors of migration. The opposite of these factors were found to be the most influential exogenous pull factors.

Key words: *physicians, internal migration, out-migration*

Chapter One

Introduction

1.1 Background

Health personnel are one of the key inputs into the production of better health and well being. Without a foundation of skilled human resources, the healthcare system cannot function adequately and efficiently, particularly in the public sector and at the primary level of care.

The quality and quantity of health care workers has been shown to significantly impact on the health of population. Since the quality of health workers and the density of their distribution have been linked with positive health outcomes. Health workers also play a key role in improving and maintaining effective and efficient health systems. Health workers can function as gatekeepers and navigators for the effective, or wasteful, application of all other resources such as drugs, vaccines and supplies (WHR, 2006).

There are an estimated thirty five million people working in the health sector worldwide. But this essential global resource is not equitably shared between countries, largely due to the extent of international migration of health professionals (Martineau,T., et al, 2004). Moreover, nearly all countries are challenged by health workers shortage, skill mix imbalances, misdistribution, negative work environment, and weak knowledge base (Chen, L., et al, 2004).

The World Health Report (2006) assesses the current crisis in the global health workforce, highlighting an estimated shortage of almost 4.3 million doctors, midwives, nurses and support workers worldwide. This shortage is most severe in the poorest countries, especially in the sub-Saharan Africa, where health workers are most in demand.

According to the World Health Assembly (2004), although maternal, child and infant survival rates increase with density of health workers, it is not only the right number of workers that is important. The distribution of health personnel is often inequitable. Developing countries bear the highest burden of disease but have the lowest access to health professionals, and the brain drain

of health workers from low-income countries to more industrialized countries contributes to this. Within countries, the most deprived areas tend to have fewer health professionals than more affluent areas. The distribution of human resources between private and public services is also imbalanced, as there is often a higher concentration of private health services, which are generally not accessible to the poor.

The current human resources shortage in the health sector, mainly in African countries, threatens the realization of any plan for up-scaling interventions to control the spread of diseases like HIV/AIDS, malaria and tuberculosis. The World Development Report (2004) clearly states that without improvements to human resources situation, the health MDGs cannot be achieved. In this situation, migration of highly skilled from health sector of Sub-Saharan African countries draws its significance from the fact that it is a drain on resources that are extremely scarce already. Migration has its most serious effects where staff shortage is already prevalent, namely in the remote areas.

The imbalance in human resources for health that result from health professionals crossing borders of districts, countries, and moving from private to public sectors or leaving health services to join other non-health related business leads to inequity in delivery of health services, especially in the parts of the world that do not have sufficient incentives to attract these professionals (Onzubo, P., 2007)

There is now broad agreement that the inadequate attention to human resource issues in the health sector has contributed to serious problems in many health systems including internal and external brain drain, unequal distribution of the health workers, low morale, informal charges, etc (WHO, 2002). Thus, nowadays many countries are starting to discover setbacks associated with their health human resource.

1.2 Statement of the problem

Like other lower income countries, Ethiopia suffers from a weak public health system characterized by shortages of facilities, equipment, medicine as well as medical personnel, and further aggravated by widespread poverty, low education levels, inadequate access to clean water,

lack of sanitation facilities and unequal distribution of health service, where they exist. Health facilities in Ethiopia are highly limited, even in the capital city and are severely inadequate outside the capital (AHEAD, 2007).

The shortage of skilled human resources remains a key constraint to improving health services in Ethiopia. Although the number of health facilities in Ethiopia has increased overtime, shortages of skilled human resources remain a primary constraint. The shortage of health care workers is one of the biggest problems in the world, with health worker/ population ratios three or four times lower than even in neighboring countries. The shortage is particularly severe at the lower levels of the health pyramid, and is exacerbated by high attrition and outmigration of skilled health personnel (WB, 2004).

International migration from Ethiopia is a relatively new phenomenon that gained prominent magnitude in the 1970s with the advent of the Derg regime. Initially Ethiopians left their country for political and safety reasons, but over time economic hardship has become the main motivation to emigrate. There are no exact figures for Ethiopians abroad, but estimates range from 1 to 2 million. From 1981 to 1991 Ethiopia lost 74.6% of its skilled manpower from various establishments, including universities, hospitals and other key institutions. By 2002, the country had lost, more than one third of its physicians. Ethiopia spends about \$ 5.3 million per year on expatriate professionals to fill its human resources gap resulting from brain drain and shortage of trained Ethiopians (AHEAD, 2007).

Ethiopia is described as the worst African country affected by brain drain. It is believed that currently there are more active Ethiopian physicians in the United States than in Ethiopia. Many Ethiopian doctors also left for Botswana, South Africa and the Middle East. Up to 2006, more than 3,000 Ethiopian physicians have left. As a result, only 900 physicians are available with the challenge of attending to millions of people. The high attrition has created acute shortage of qualified medical workers in the country's health facilities, which is why there is one doctor for 36,000 people. The Ethiopian government is left with no option other than relying on costly foreign experts to fill the vacuum created by brain drain (Afrol News, 2007).

The delivery of health services in Ethiopia was long dominated by the public sector. However, after being banned for many years, the private sector was legalized in the mid-1990s, and the number of private for profit health facilities has expanded steadily. This change affects the health professionals on the job in the public sector in the sense of movement from public sector to private sector (Lindelov, M., et al, 2005). The increasing number of health workers in the private sectors largely affects the poor community. The state owned hospitals are even more crowded where there are fewer physicians than in the private sector for a lot of patients. As a result patients do not get timely service.

A series of HSDP reviews have underlined that shortage and inequitable distribution of professionals in the health sector has seriously affected the implementation of key health programmes. The expanding population size and the increasing migration of health professionals to private sector and NGOs as well as out-migration have made the problem chronic. As a result especially the rural areas have faced a continuous shortage of human resources.

A critical ingredient of any strategy, to achieve the health-related Millennium Development Goals and improvement in the health outcomes, is the people who will design, deliver, and manage the services which are needed. Hence the problem associated with these health human resources should be thoroughly investigated and solutions must be found accordingly.

Insufficient attention has been paid to understand what determines internal and international migration of physicians from the public sector which finally leads to turnover and attrition. Hence, this is the core problem to be investigated by the research. It will attempt to explore the determinants of internal and international migration of physicians and the consequences of their migration on the public health system.

1.3 Objectives of the Study

The objective of this research is to determine the major reasons and effects of physicians' turnover and attrition in public health system in relation to migration.

Specific objectives of the study are:

- To review the current situation of the Ethiopian public health system with a particular reference to physicians,
- To find out the major determinants of physicians' migration in public hospitals and
- To assess the outcomes of physicians migration on service delivery

1.4 Data Source and Methodology

For the preparation of this study both primary and secondary data are used. The primary data for this research was mainly gathered through individual interview and questionnaires administered to physicians in the sampled hospitals (Public and private hospitals). For physicians who out-migrated abroad information is collected through e-mailing questionnaires to physicians (physicians residing abroad).

Secondary data includes different publications about health human resource, organization of health service delivery, health facilities construction and rehabilitation; and policy and institutional framework. Descriptive and regression estimations are employed for the analysis.

1.5 Significance of the Study

There is a perception that public health subsidies are well targeted to the poor due to the fact that large proportions of health care systems are still financed by public funds from the ministries of finance, which also support large public networks of hospitals and clinics.

For countries like Ethiopia the public health system is the major provider of health care service to the people. Especially the poor segments of the society use public hospitals, clinics and the like since private health facilities are inaccessible and unaffordable to them.

Physicians play a vital role in the health care system in general and for the delivery of services to the patients in particular. But nowadays, there is high turnover and attrition of physicians who served the public facilities due to internal migration to the private sector and external migration to the developed nations.

This study tries to identify the factors that underlay internal and external migration of physicians with its accompanying cost in the public health care service delivery. Hence, to manage the migration and its consequences policy makers can get some evidence from the study about factors affecting physicians' decisions to migrate. In addition to this, the results obtained from this research can be used by any concerned and interested party as a spring board for further study in the area.

1.6 Limitation of the Study

The main limitation of this study is insufficient sample size. This is mainly because of limited number of physicians in the first place and the less interest on the part of the physicians to fill out the questionnaire. Especially for physicians who already migrated (both in private and USA) the problem is more serious.

Health human resources or health workers comprise physicians, nurses, health officers, midwives, etc. The study concentrates only on physicians. Although internal migration includes both rural to urban migration and public to private, the research does not deal with rural to urban migration of physicians.

The study also does not explore the labour policies and laws which govern public sector, private sector, and overseas physicians. Hence a comparative analysis regarding labour policies and laws are not made.

1.7 Organization of the study

Basically this research has six chapters. The first chapter presents background of study, statement of the problem, objectives of the study, significance of the study; and scope and limitations of the study. Chapter two reviews the literature on migration and its consequences. Chapter three presents an overview of the current public health system. Chapter four deals with sampling techniques, model specification and analytical frame work of the study. Chapter five discusses the results of descriptive and regression analysis. Chapter six draws conclusions and some policy recommendations.

Chapter Two

Literature Review

2.1. Concepts and Definitions of terms

Health Workers

Health workers are all people engaged in actions whose primary intent is to enhance health. This meaning extends from WHO's definition of the health system as comprising activities whose primary goal is to improve health (WHR, 2006).

Migration

Migration can be analyzed and understood from many perspectives. It has been interpreted by sociologists, economists, demographers and particular professional groups within labour markets (Stilwell, B., et al, 2003). Simply migration is the movement of people from one locality to another.

Internal Vs International migration

Internal migration is move to a new place within a state, a country or continent. While international migration is a movement of people from one country to another to take up employment, to establish residence or to seek refuge from persecution, either temporarily or permanently (ibid).

In the context of health workers, international or external migration describes the movement of health workers who temporarily or permanently settle abroad. Internal migration takes place between public to private health sectors; between rural and urban areas; from poor to districts; and between levels of care (Denise, K., et al 2006 ; Awases, M., et al, 2004).

Migration of personnel

Migration of personnel is defined as, the voluntary movement of workers from one employment station to another in search of different working arrangements. It occurs within and across national boundaries.

Donor Vs Recipient Countries

Countries involved in international migration are either 'donor' (experiencing an outflow of personnel) or 'recipient' countries (experiencing an inflow of personnel), or in some case both, if there is a concurrent inflow and outflow of health personnel. Donor countries, those from which health staff emigrate, tend to be less-developed countries, with low GDP and a low economic capacity to employ sufficient health staff which means there is a relative oversupply. The donor country often has the greatest unmet need for health care and a low average physician/population ratio. Recipient countries receive immigrating health staff; tend to be industrialized countries with a higher GDP and a capacity to absorb health personnel. These countries often have a shortage of health professional themselves due to increasing demand on health care (Biggs, J., 2003). Donor countries also called 'Sending' or 'Source' country while Recipient countries also called 'Destination' countries.

Medical Migrant

Medical migrants consist of professionals who enjoy equivalency certification in sending and destination countries (Alkire, S., et al, 2007).

Brain Drain

Brain drain is defined in the encyclopedia Britannica as the departure of educated or professional people from one country, economic sector or field for another, usually for better pay or living conditions'. Brain drain infers a one way flow and a degree of associated loss, whereas brain exchange or brain circulation are less subjective terms for describing international migration.

Quality of Health Care

There are two principal dimensions of quality of care for individual patients; access and effectiveness. In essence, do users get the care they need, and is the care effective when they get

it? Within effectiveness, there are two key components — effectiveness of clinical care and effectiveness of inter-personal care. These elements are discussed in terms of the structure of the health care system, processes of care, and outcomes resulting from care. Moreover, care for individuals must be placed in the context of providing health care for populations which introduces additional notions of equity and efficiency (Hardee, K. and Smith, J (2000).

2.2. Theoretical Literature

2.2.1. Causes of Health Workers Movement and Migration

The pattern of migration is one that flows from rural to urban, lower income areas to the more affluent, and from less developed to industrialized countries. In addition, health professionals also move from the public to the private sector in the health service, and from the public to the private commercial sector as well (Awases, M., et al, 2004). Over time, migration patterns are sustained through networks that provide prospective migrants with information about job opportunities in destination countries as well as various forms of support to help adjustment after migration (Stewart, J., et al, 2007).

The causes of medical migration are complex. Health worker migration is a result of the interplay of economic, social, cultural, political and legal forces. The specific factors affecting internal and external movements have been sub-divided into push and pull factors. Pull factors in the recipient level health system or country that attract and facilitate the movement of health workers towards that level or country. Push factors are those factors that encourage health workers to leave their country or location of work. Push and pull factors interact with and relate to each other (Padarath, A., et al, 2004).

In the case of international migration, these factors are also called supply-push and demand-pull factors. Supply-push factors are those issues and conditions that cause healthcare workers to be dissatisfied with their work and careers in their home country, such as poor compensation, working and working conditions or career opportunities. These push factors may be presented in some developed countries, causing healthcare personnel to leave one developed country for

another. However, these factors are present in a much more dramatic way in developing countries, and they contribute significantly to the decision by doctors and nurses in these countries to emigrate (Stewart, J., et al, 2007).

Demand-pull factors are the conditions in destination countries that motivate workers to migrate. Like push factors, pull factors can cause workers in one developed country to move to another developed country. However, the pull factors present in developed countries are more powerful influence on the individuals in developing countries (ibid).

Push' and 'Pull' factors acting on the employee may explain the direction of migration, but they do not explain why some people choose to migrate and others prefer to stay. This is why some theorists have moved on to considering rational decision-making processes and a more globalized view of migration, where countries are seen to be independent (Biggs, J., 2003). Push and pull factors however remain important to explain the incentives working on the individual potential migrant.

These push and pull factors have also been sub-divided into those that are exogenous; outside of the health system, but related to the country as a whole and those that are endogenous (directly related to the health system).

Endogenous (health system) factors

Push factors

The following are the most cited push factors inherent to the health system:

- Remuneration and salaries: remuneration levels are potentially the most influential factors in the healthcare workers' decision to migrate either between the public and private sector, or from a poor to a richer country (Dovlo, D., 1999). Poor remuneration is a feature of many health systems in Africa. This is especially so because most health workers in African countries work for the government and poor remuneration of civil workers helps to reduce public spending. The salaries are low and unrealistic (Denise, K., et al, 2006).

- Lack of job satisfaction: health workers may also become dissatisfied (and therefore open to movement and migration) for a variety of non-financial reasons, such as feeling demotivated by poor healthcare infrastructure, insufficient supplies/equipment or inadequate facilities. Various issues related to the job situation also act on the employee to encourage them to migrate, such as poor conditions of service, overwork as a result of understaffing and lack of opportunities for professional growth and development. Most health workers desire a good working environment and would like their skills to be utilized to their best technical and professional ability for example early promotion. Further, the management of the health service may be inefficient, bad or corrupted (Denise, K., et al, 2006; Alkire, S., et al, 2007).
- Work associated risks and hazards: high levels of occupational risks and hazards can contribute to a feeling of insecurity and desire amongst health workers to move to a safer and more protected working environment. The international labour organization (ILO) has ranked health work as one of the most dangerous jobs (Dovlo, D.,1999).
- Lack of further education and career development opportunities: another reason for the movement and migration of health workers is the pursuit of career development opportunities elsewhere. Because of the prospect for continuing education and career advancement may be limited (Padarath, A., et al, 2004).

Pull factors

Most endogenous pull factors are merely the opposite of the push factors. For example higher rates of remuneration, more satisfying work conditions, a safer working environment and better educational and career development opportunities are the pull factors that attract health workers to migrate abroad. Again higher remuneration rates, reduced workloads and improved professional resources in the private relative to the public health sector are amongst the pull factors cited in outflows from public to private sectors (ibid).

Recipient country or institution recruitment: active and aggressive health personnel recruitment has been a steadily growing influence on the movement and migration of health personnel.

Facilitation and support with the emigration process, job hunting, school enrollment for children and accommodation, as well as the provision of destination country social support systems, are aspects of an enhanced recruitment strategy, which contributes to the probability that health workers will seek to work abroad and migrate. While this is often most noted in migration between countries, it has also been raised as health personnel has been argued to avoid unfair attrition of skilled personnel from poor to rich districts due to the benefits offered by wealthier districts and their greater access to and capacity to intervene in labour markets (UNECA, 2000).

Exogenous (out-side health system) factors

Push factors

The following factors are considered as push factors outside the health system:

- **Quality of life and crime:** Living conditions are not up to the required standards, crime, political insecurity and safety concerns are strong exogenous reasons for health personnel movements and migration (Padarath, A., et al, 2004).
- **War, civil conflict and political repression:** repressive political climates and a restriction on freedom of expression and political dissent are also reasons for migration (ibid).
- **Personal:** a significant if not distinctive cluster of causes relates to personal circumstances. For some, the motivation to emigrate may arise primarily from a desire to join family to increase the opportunities for children or simply to experience living abroad. Many professionals migrate not because of reasons that are relevant to them, but because of aspirations they may have for their children. Also significantly, the respect and social prestige for health professionals (especially nurses and community health workers) may be lacking. Or the social status of medical professionals may be low (Alkire, S., et al, 2007; Padarath, A., et al, 2004).

Pull factors

Many exogenous pull factors are the opposite of the exogenous push factors described above. Countries that are able to offer a higher quality of life, freedom from political persecution, freedom of speech and educational opportunities for children, will naturally be attractive to health personnel from many other countries.

In addition, it has also been observed that there is a greater likelihood of people immigrating to an area or country where fellow citizens, relatives and friends are already based. Thus the migration and movement of health personnel may be related to the location, flow and migration of larger groups or communities (OECD, 2002).

2.2.2. Effects of Health Workers Migration

The social and economic consequences of medical migration are difficult to validate because of limitations of methods. All sorts of ills or miracles may be attributed to migration but they are not easily proven because of the absence of counterfactuals- what would have happened without migration?

Moreover, the consequences of migration would be expected to vary among individuals, sending and receiving societies. Hence there are mixed views about the effects of migration on countries and clearly the views depend on which perspective is studied; that of the donor country, the recipient country or the migrant as an individual. Even within donor and recipient countries themselves, there are mixed views on migration as different authorities have different preoccupations.

Migration of health professionals can affect the development of a country as well as the actual health service delivery. The effect that migration has on a country appears to be dependent on the relative need and relative loss of health personnel of that country (donor or recipient), the impact being greatest when needs and loss are high. It is felt that international displacement of skilled health professionals has implications with regard to social equity both within and between nations, although this has yet to be demonstrated in terms of health care delivery. To fully analyze the impact of migration on a country, national statistics of migration, particularly of health human resources are needed which are not often available due to registration and recording problems (Biggs, J., 2003).

The literature gives a general impression that the current pattern of health personnel movements and distribution is regressive (increasing inequities and representing a poor-to-rich transfer),

harmful and devastating to already struggling and under-resourced health systems. Maldistribution itself implies a gap between need or demand and supply, while differences based on area, income or factors other than health need or planning imply distortions within health systems that may undermine the capacity to meet the health needs. Attempts to measure and quantify the impact have, however, been difficult due to lack of data and because of methodological difficulties. (Padarath, A., et al, 2004).

In general, the main consequences of migration are usually divided between its impact on the destination country, source country and the migrants. These impacts could be negative or positive.

Positive impact on the donor country:

The argument is raised that the movement and migration of health personnel can also have positive effects on source countries and communities from a 'flow back' of improved knowledge and skills, the transfer back of remittances and because health personnel movements and migration can sometimes make use of surplus personnel (Padarath, A., et al, 2004).

A positive economic effect of emigration is found on donor countries, in the form of remittances sent by emigrants which is a boost to the national economy and a source of foreign exchange. Remittances can have a significant influence on the living standards of the populace in source countries. Collectively, remittances play a crucial role in the economies of many developing nations since these funds represent one of the most important sources of foreign revenue. (Biggs, J., 2003 ; Stewart, J., et al, 2007).

Some economists and development agencies have even encouraged developing countries to consider the movement of health personnel to richer countries as a form of trade that would be beneficial to their economy. The General Agreement on Trade and Services (GATS) being negotiated through the World Trade Organization lists the transnational 'export' of human resources as a Mode 4 form of trade (Padarath, A., et al, 2004).

But remittances-the portion of international migrant workers' earnings sent back from the country of employment to the country of origin have become a focal point in the ongoing debate concerning the costs and benefits of international migration for employment. Migration can be said to make the health system more efficient in countries with an over supply of health professionals, as out-of-work physicians are reduced, although a more permanent solution be found for over supply in the long term (Biggs, J., 2003).

The other positive consequence of temporary migration, experienced at the level of health care delivery in donor countries is the transfer of experiences, new skills and knowledge as well as the sharing of ideas, when the migrant returns (Biggs, J., 2003). But unfortunately for sending countries there is little evidence that more than a small percentage of emigrants actually return. Stewart, J. et al, (2007) states that even in cases where health workers do return, healthcare systems in developing countries may not be able to take advantage of the skills and expertise acquired abroad. The technologies available in developing countries may be much less sophisticated than those in developed countries, reducing the utility of qualifications and experience overseas. Another concern impacting health care is that, when migrants return with new skills, they may not be suited to the work most needed and if they work in the public sector they may divert resources into ill-suited activities or go into private practice. It remains unclear whether this would have happened anyway without the influence of migration (Biggs, J., 2003).

Negative impact on the donor country:

The other line of argument is that health workers migration cause financial loss, slow national development and the negative effect on the overall functioning of the health system of the sending countries.

Source countries incur significant cost in their investment of training the healthcare professionals. The training of healthcare professionals in most developing countries is either entirely sponsored or heavily subsidized by the government. This substantial investment in training is lost when a nurse or a physician permanently emigrate to a developed country. The United Nation estimates that each migrating African healthcare professionals represents a loss to the source country of

US\$ 184,000 (Stewart, J., et al, 2007). Governments invest in medical education to strengthen their national health capacity. As meager as such training facilities and investments are- two thirds of Sub-Saharan African countries have one medical school or less- the misdirection of resources can be dramatic. In a situation of considerable emigration of medical professionals trained in public institutions, it is clear that emigration drains these investments away from the health needs of the national population. At the same time, the prospect of emigration may attract students to medical education who have, from the start, the intention to emigrate, rather than the commitment to serve domestic needs. Thus the medical education is publicly funded; emigration has the effect of shifting the government subsidy from being an investment in health to being either a privatized benefit to one person or an investment in foreign remittances that, it is anticipated will benefit the country in indirect ways (Alkire, S., et al, 2007).

The potential economic impact of emigration is fairly widely discussed in the literature. It is considered that emigration carries with it an economic loss to the donor country equivalent to the cost of educating the emigrating staff. This is contradictory where there is oversupply of health personnel and it is assumed that emigrating staff are both needed and employable in the donor country. Other donor countries invest in training for their nationals overseas and this can be considered an economic loss if the trained professionals do not return. The likelihood of students who are studying abroad, returning to their home country diminishes the longer they stay and the higher education obtained (Biggs, J., 2003).

Training of eventually migrant health workers is costly, because of the long duration, the high costs of materials and techniques (and the common need for postgraduate education and training programmes) and is a burden for relatively poor states. However, there have been few estimates of the costs of the ensuing brain drain and a variety of methodologies and conclusions (Connell, J., et al, 2007).

The lack of health personnel can also mean that other healthcare investments become wasted, such as when healthcare facilities lie dormant because there aren't any personnel to staff them (Padarath, A., et al, 2004).

A further consequence of health worker migration is that of some patients traveling overseas for health care. Where such referrals are paid by the state the cost is considerable. Even where they are not, as is usually the case, resources are nevertheless transferred overseas. The lack of health personnel may not be the primary motivation for traveling overseas for treatment, but it nonetheless represents a substantial loss of scarce resources. Even in countries that are relatively well supplied with health personnel, the cost of referrals is considerable, making the task of financing local health systems and organizing more labour intensive preventive health care more difficult (Connell, J., et al, 2007).

The migration of skilled health professionals directly affects the health system, and in consequence also affects population health outcomes and health workers remaining in the country.

Migration threatens the functioning of the health system, if there is a net loss of human capital, and this has become a cause for concern in some developing countries, where emigration exceeds immigration. This may be a general loss if a large proportion of the workforce is leaving the country, or area-specific, if there is migration from the rural to urban areas or from the public to private sector (Stilwell, B., et al, 2003).

Emigration exacerbates the shortage of skilled health workers in sending countries, potentially crippling health systems. Thus the out-migration would be expected to compromise the national health of sending countries. Some would argue that it is the very lack of employment opportunities that has generated out-migration. In such circumstances with high levels of unemployed health workers (and low health outcomes), out-migration is a symptom of deeper malaise. (Alkire, S., et al, 2004)

Health workers themselves stressed the decline in circumstances that had followed migration, in terms of such qualitative factors as respect for patients and care givers, attention given to patients and general communication between health workers and clients. Lack of staff also meant a decreased ability to get medication to patients effectively (Connell, J., et al, 2007).

Those health workers who remain in public health systems with inadequate numbers of health workers experience added stress and greater workloads. Many of the remaining health workers are ill-motivated, not only because their workload, but also because they are poorly paid, poorly equipped, inadequately supervised and informed and have limited career opportunities, (Stilwell, B., et al, 2003). As a result of stress and higher workloads public sector staffs have tended to neglect public responsibilities to work in the private sector, and there was high turnover of staff. The movement of health professionals to the private sector, at the same time as international migration, has seriously disadvantaged the poor, most of whom cannot afford higher private sector costs, alongside less adequate public sector services (Connell, J., et al, 2007).

As Stewart, J. et al, (2007) state the migration of healthcare professionals not only make the healthcare system lose the service of healthcare professionals, but the inability to replace them puts added pressure on the remaining employees. Such pressure further strains the system, creating additional push factors that then contribute to the loss of more healthcare professionals.

In terms of health care delivery itself, it is felt that further strain is put on the remaining staff, therefore, the health system of the donor countries, in the form of heavier workloads, unnecessary overtimes etc. The impacts of migration on health care delivery of particular interest are with especial regard to equity, quality and efficiency.

Equity can be affected as shortages or reduced access to services may result. Even emigration of a few people in a specialized field can result in service being withdrawn (Biggs, J., 2003). Of much concern, however, are reports of patients being turned away from busy clinics so that staff can carry on with their private practice. This has an obvious effect on equity of access to care for the poorest (Chinkanda, A., 2004).

Similarly, Connell, J., et al (2007) affirm that the movement of health professionals to the private sector, at the same time as international migration, has seriously disadvantaged the poor, most of whom cannot afford higher private sector costs, alongside less adequate public sector services.

The health system depends on a balance mix of professional skills, appropriately deployed, for equitable coverage. Losing part of the professional mix in the health workforce may result in either an absence of some services or in professionals' having to adapt their roles to deliver services commonly outside their scope of practice. This is not only affects coverage and access for communities, but also health outcomes (Stilwell, B., et al, 2003).

Quality may be reduced if the best health professionals emigrate and are not compensated from by recruiting foreign nationals of a similar level of training or qualification (Biggs, J., 2003). The migration of skilled health workers from the country has adversely affected the quality of health care offered in the health institutions. Mutizwa-Mangiza, D. (1998) reported on falling standards of care, which include 'uncaring and abusive' attitudes towards patients. This is largely attributed to low moral resulting from an excessive workload associated with the stress of dealing with so many dying patients.

The decline in the number of skilled health professionals in the public sector has resulted in significant changes in the quality of care provided. For instance, it has led to understaffing of health institutions, which means that patients have to wait longer before they receive medical attention, which has resulted in unnecessary deaths, for some patients die from an otherwise curable condition. Experienced personnel have been lost from the system, the quality of care has fallen and the health system of the country has virtually collapsed. In addition the physician to patient ratio, nurse to patient ratio, etc increased, making it necessary for personnel who not professionally qualified to attend to patients. Thus, the quality of care rendered has subsequently been compromised (Chinkanda, A., 2004).

The role of traditional healers in contemporary society has been diminished with the introduction of modern allopathic medicine. However, due to the collapse of formal health care system, traditional healers have begun to play an increasingly important role in the health care system. Thus, the poor are finding themselves without formal health care service and are going to the informal sector where they are attended to by the traditional healers who charge affordable rates (ibid).

Positive impact on the recipient country:

It is anticipated that the positive impact would be greater on the recipient country, but there is not a lot of evidence of this in the literature, as more focus is placed on donor countries.

The obvious positive effect is the provision of qualified labour to relieve staff shortages. Looking at health care delivery, it is argued that due to higher staff levels, more people receive care in the recipient country than otherwise would be (Biggs, J., 2003). As migrants strengthen the health care workforce in destination countries, the health status of receiving societies is presumably enhanced. Equity may also be enhanced because migrants work in rural or otherwise less attractive areas (Alkire, S., et al, 2004).

Stewart, J. et al, (2007) also argue that the most direct benefit is the reduction in the shortage of skilled healthcare workers plaguing developed countries. Given that the healthcare systems in these countries still face a shortage, the situation would clearly be even worse without these foreign workers. The quality of healthcare available to consumers will be improved compared to a scenario in which shortages are greater, and public health risks will be reduced as well.

The other positive effect is that receiving countries benefit from international migration from a national perspective savings are made in training and education costs from this form of free riding (Martineau, T., et al, 2004). Some argue that there is also economic gain equal to the cost of training the staff (Biggs, J., 2003). If the employment of immigrant healthcare professionals depresses wages of workers in the healthcare sector, consumers could conceivably benefit financially if any of the reductions in labour costs are passed through in the form of lower prices (or taxes). Receiving countries will also benefit from taxes paid by immigrant healthcare workers. In addition, the recruitment of immigrant healthcare workers can allow local communities with a shortage of domestic healthcare workers to remain competitive in efforts to attract new employers, with the potential positive impact of increased local tax revenues(Stewart, J., et al, 2007).

Martineau, T., et al (2004) state that employers in the receiving countries may also benefit from migrants' flexibility of working, being more prepared to work in less desirable areas of work (e.g.

mental health), under less desirable geographic regions (e.g. the rural areas) and under less social acceptable conditions (e.g. night shifts).

Negative impact on the recipient country:

Some critics argue that the immigration of highly trained healthcare workers is linked to the erosion of employment conditions among domestic healthcare workers. For example, if immigrant workers are more willing to accept part-time and contractual positions than domestic workers, the wages and employment conditions of domestic workers are adversely affected. One negative outcome is lower tax receipts from domestic workers than would otherwise be the case (Stewart, J., et al, 2007).

Martineau, T., et al (2004) argues that reliance on foreign workers may hinder development of the domestic supply and there may be tension between domestic interests of the country and its policy on international development.

It is important to recognise that there may also be adverse effects on the quality of healthcare provided to citizens in the receiving country if immigrant workers are imperfect substitutes for domestic workers (Stewart, J., et al, 2007).

Positive effects on migrants:

The positive effects on migrants can be expected to be linked to the ‘pull’ factors of the recipient countries and so involve better financial situation, increased knowledge an improved future career prospects (Biggs, J., 2003).

The biggest ‘winners’ in medical migration are the migrants and their immediate families, both those who accompany them and those who receive remittances at home. Assuming that they are able to avoid the exploitation of unethical recruitment agents, professional migrants are able to obtain employment with superior compensation, better working environments, opportunities for career advancement, and prospects of personal and family satisfaction. (Alkire, S., et al, 2004)

Negative effects on migrants:

The difficulties of working in a foreign country should not be underestimated; leaving behind loved ones, entering unknown cultures, communicating in other language, experiencing gender or racial prejudices and discrimination (Biggs, J., 2003).

Health professionals may feel so frustrated on returning home with the lack of resources and the possibly unstimulating work, or experiencing difficulties re-integrating, they look for early opportunities to leave again (ibid).

The individual migrants may be exploited. Despite the current heights demand for migrant health professionals, the process of getting a job can be lengthy costly and risky. Fees charged by recruitment agencies can be exorbitant (Martineau, T., et al, 2004).

Emigrant workers may have little bargaining power in negotiating their compensation and working conditions, leading to lower pay and less favorable working conditions than exist for domestic workers. In some cases professionals are forced to accept positions that are one or more steps below their positions in their home countries, for example registered nurses working as less skilled practical nurses, or physicians working as registered nurses (Stewart, J., et al 2007).

2.3. Empirical Literature

2.3.1 Push and Pull Factors for Migration

There are evidence which show the contribution of pull and push factors for health care professionals' migration.

The available literature consistently reports that many developing countries especially African health professionals are dissatisfied with their current situation. Consequently, health professionals often migrate to seek more profitable situations, both financially and intrinsically.

For individuals the possibility to enhance earnings remains the pivotal factor in explaining the propensity to migrate. Hence most studies established that the major reasons for the intention to migrate are primarily economic.

Differentials in salary levels between source and destination countries are important stimulus to migrate. Earnings figures of \$75-\$200 per month in the Philippines compared to \$3,000-\$4,000 per month available in the United States. South African nurses have also indicated their intent to migrate in search of better remuneration (Bach, S., 2003).

The study conducted in Zimbabwe indicate that most of the professionals would like to emigrate so that they can receive better remuneration in the intended country of destination (55 percent), or would like to save money quickly in order to buy a car or pay off a home loan (54.1 percent). Still others intend to emigrate to achieve better living conditions 47.2 percent, through lack of resources and facilities within the health care system of Zimbabwe 45 percent, because they see no future in Zimbabwe 45 percent, or because of the declining health care services in the country 42.9 percent (Chikanda, A., 2004).

Furthermore, 87 percent of the health professionals indicated that the public sector failed to offer competitive salaries, and 65.5 percent said they found it difficult to live on their earnings. Even though 86.6 percent said their salaries were paid in time, the health professionals concurred that it was necessary for them to do two or more jobs to make ends meet. Though 86.6 percent would prefer to stay in the public sector if they were offered better salaries, 67.5 percent were considering moving to the private sector, which offers higher salaries. In addition to the above, the private sector offers better fringe benefits compared with public sector 77.9 percent (ibid).

Interview held with emigrant health staff revealed that most skilled health professionals have emigrated in search of better remunerations 56 percent and better living conditions 48 percent. However, others were fleeing the high levels of political violence in the country 48 percent, saw no future for their children 48 percent, and were frustrated by the lack of resources and facilities in the country. Still others had observed a general decline in the health care services in the

country 44 percent and some migrated because of the poor management of the health services in the country (ibid).

A close look at the HIV/AIDS pandemic and the migration nexus reveals that HIV/AIDS has increased the workload of the few remaining health staff, while many are said to have migrated from the country due to lack of preventive measures, which expose them to the risk of contracting the disease. The exposure to the disease has created a stressful environment in which workers become frightened at the thought of contracting it (ibid).

Khadria, B (2004) study shows that Indian medical professionals want to go abroad mainly to gain professional experience, which they think will be highly valued in India when they come back. However, most doctors and the majority of prospective nurses want to settle down abroad permanently, because they hardly perceive their career prospects to be bright in India. In addition, they are encouraged by higher earnings, perks and high quality of life in the host country.

As per the study conducted by Awases, M., et al (2004) in six countries; in Cameroon, recruitment 28.6 percent, desire to gain experience 28.6 percent and better remuneration 26.6 percent were the major reasons why emigrant Cameroonians had left their country. This was followed by search for better living conditions 19 percent, and a general sense of despair about the resources and economic prospects in the country. The reasons most commonly cited out migration by emigrant Ghanaians were the need to gain experience 86 percent, lack of promotion opportunities 86 percent, despondency 86 percent, economic decline and poor living conditions 71 percent. Ugandan expatriates mentioned the desire for better remuneration 72 percent, followed by the need for better living conditions (41%) and the need to upgrade their qualifications 38 percent. Zimbabwean emigrants had emigrated because of economic reasons 55 percent, by far the most important push factors, followed by the decline of the health service 53 percent, lack of facilities 38 percent and despair about the future of the country 38 percent.

As Hagopian, A. et al (2005) state in addition to relatively low pay rates, post-graduate training in Ghana and Nigeria was described by students and faculty alike as frustrating. And consequently lead to migration.

Regression analysis using data on Estonian health professionals was carried out to analysis the relative importance of different determinants of migration intension. According to the regression analysis variables that significantly influence the intention to migrate are income variables, age, gender, and being married. (Vork, A., et al, 2003).

The overwhelmingly most important reason that health care workers state why they plan to work abroad is better wage. This followed by better working conditions and better quality of life abroad. Prospects of higher wages abroad are certainly justified, because Estonian health care professionals earn considerable less than their Scandinavian colleagues both in absolute terms and also in relative terms when compared to average wages. For example, in Estonia health professionals earned 135% of the average wage in 2001, in Sweden the relevant wage was 196% of the average in 1998 (ibid).

Older people and married people have significantly lower probability to have intentions to migrate; reflecting both larger current migration costs and lower expected future returns from migration. While the willingness to go to work abroad is somewhat higher than among Estonian people aged 15-64 in general (ibid).

The study conducted in Southern African countries showed that volatile, unstable and repressive political conditions, high levels of poverty, unemployment and famine, coupled with a lack of business and economic opportunities operate as push factors. Poor housing, general isolation from social networks and lack of quality education for children have also been cited as push factors (Padarath, A., et al, 2004).

In South Africa, for example, approximately 96% emigrants cited high crime rates as their reason for emigrating. South Africans quote the declining quality of life since the demise of apartheid, general dissatisfaction with the cost of living, taxation levels, the government's affirmative action

policy and the standard of public services as primary reasons for their decision to emigrate. Out-migration due to political fears and sometimes prejudice has affected each country in the region at different times, particularly post independence. Old elites (and many skilled medical personnel were included in this group) feared political change. This group may have been more concentrated in the private health sector (ibid).

In the early 1970s, the chief motivation for the migration of physicians from Lebanon was civil instability still played some role in the decision to train abroad. In fact, civil instability is likely to have gained more importance as a motivation during the summer 2006 when the armed conflict devastated the country's civil infrastructure (Akl, E.A. et al, 2007).

Working conditions, which reduce job satisfaction, act as push factors. Poor management, lack of medicines and equipment, bureaucratic inefficiencies and inadequate support and communication with health personnel are all factors that contribute to dissatisfaction amongst public sector health workers, especially in rural areas where the health infrastructure is worse and encourage migrating to private health sector. A survey conducted in Zimbabwe in 1998 showed that a common cause of for health workers resigning from the public sector was the inability to offer effective care to patients due to inadequate resources in the health facilities (USAID, 2003).

Higher remuneration rates, reduced workloads and improved professional resources in the private relative to the public sector are amongst the pull factors cited in outflows from public to private sectors. For example, a Zimbabwean nurse could be expected to increase her salary by 40% if she joined the private sector (Padarath, A., et al, 2004).

2.3.2. The Consequence of Migration on Health Care Service Delivery

The provision of health care may be affected both in quantity and quality by migration of health professionals. Vast amount of anecdotal data suggest strong links between the migration and the reduced performance of health care systems. Actual correlations between emigration and malfunctioning health care systems are difficult to make, yet it is implausible that the loss of health workers has no effect on the health system.

Generally, the available evidence on the consequences of migration on health care delivery is very scanty.

Dovlo, D., (1999) in his 1998 survey of seven African countries, found vacancy levels in the public health sector to range between 7.6% (for doctors in Lesotho) and 72.9% (for specialists in Ghana). Malawi reported a 52.9% vacancy level for nurses. Such vacancy rates will inevitably lead to inadequate coverage, and some population health needs will remain unmet.

According to the study conducted by Awases, M., et al (2004) the general deteriorating quality and quantity of the services provided due to the migration of skilled health professionals has been noted and observed as a matter of critical concern. While the respondents in the countries reported general satisfaction on the quality of care factors. There are specific aspects that have been severely affected by the disproportionate increase in the rate of migration and brain drain in countries. For example, in Cameroon, although in some cases the quality of health care was generally considered to be acceptable, 25% of health workers agreed that the quality of health care provided is deteriorating due to lack of drugs, long queues and lack of mutual respect between the public as users of health services and the health professionals. According to 80% of those interviewed, many factors are linked to the decline in quality of health care, such as an increasing workload per person and working under very poor conditions.

The caseload for the health workers who remain has generally increased as reported by Cameroon, Ghana and Uganda, while South Africa reported potential increases. Those who remain are overextended, overburdened and de-motivated, and this leads to inadequate attention given to patients. The end result is that quality of service is compromised. For example, in one country, the workload was considered excessive where there was a ratio of 100 patients per nurse, while average is 37 patients per nurse. In another country, the caseload is said to have become heavier when doctors leave rural areas. These figures reflect the increased workload of the remaining workers amidst the generally unsatisfactory and difficult conditions, thereby increasing the pace of 'burnout' and de-motivation. The end result is, of course, compromised quality and quantity of care provided (ibid).

The number of referrals abroad has correspondingly increased considerably in the six countries, except for South Africa. The migration of specialized personnel has led to sending patients abroad who would otherwise have been treated within the countries. Furthermore, the increased number of referrals abroad entails an unprecedented increase in both expense of care to fewer people and in the use of foreign currency, which could have been used for other developmental programmes or even for motivation and retention of the country's health workers (ibid).

Cameroon and Senegal reported other reasons for the decline in quality of health care, including that of non-qualified personnel performing duties that are normally beyond their scope of practice, such as a nurse functioning as a medical doctor. Yong recruits are often left alone to carry out work without supervision, at the risk of making incorrect diagnoses and prescribing inappropriate treatment, while unqualified personnel are left to perform duties that are specialized, and beyond their scope of practice and which may endanger the lives of patients (ibid).

The shortage of staff has affected the number of hours that health facilities remain open, more so for those with severe shortages than others. An example from the Ghana study reflects the picture of many of the countries. The study revealed that apart from in-patient, emergency/casualty and surgical services at the academic, tertiary and regional referral hospitals, which provided 24-hour service including weekends and holidays, health services delivery at all other levels opened to the public at 8:00 am from Monday to Friday. Closing time, however, depended on the number of patients waiting to access the service. Out-patient and support service like x-rays are not available to the public in these health facilities at weekends and public holidays. Extra hours spent in offering health services averaged between 2 to 4 hours per day depending on the type of facility (ibid)

This study shows that the emigration of skilled health personnel has important negative effects on the accessibility and equitable distribution of health care, for the departure of skilled health personnel has a direct effect on reducing the quality of health care in the institutions concerned. Marginal and disadvantaged areas such as rural areas have been worst affected, as the skilled workers tend to shun such areas. The effect of emigration of skilled health personnel are

generally more severe in rural areas, although not all those interviewed shared the opinion. Cameroon, Uganda and Zimbabwe reported concern that the potential inequity in access to health services has increased as local communities are forced to seek services from the more expensive private sector; unfortunately, the poor cannot afford to pay and thus are denied access to service (ibid).

Of much concern, however, are reports regarding patients being turned away from busy public health institutions so that staff can carry with their private practices. This has an obvious effect on equity if access to care for the poor. Quality, effectiveness and equity are thus compromised by migration from the public sector (ibid).

The study has revealed the major causes of migration of health workers from Zimbabwe and has shown that the migration of health professionals negatively impacts on health service delivery. Most of the country's health institutions are understaffed and operate with skeleton staffs, which are reeling under their heavy workloads. The shortage of health professionals is most critical in rural areas where most health centers are being served by unqualified health staff. The situation is better in urban areas, where there are alternative sources of medical health care. Besides offering better health care services, albeit at higher fees, the private sector also provides an escape route for the disgruntled public health sector professionals. In fact, the migration of health professionals to the private sector has been viewed as a major factor responsible for the decline in quality of health care services offered by the public sector (Chikanda, A., 2004).

The study has demonstrated that at the national level the number of health professionals employed declining. Notwithstanding the fact that some health professionals are moving to the private sector, others have chosen to remain in the public sector for a number of reasons. It can be inferred that a number of health professionals use private employment as a stepping stone to secure the necessary funds for purchasing air tickets for moving overseas, the process is referred to as step wise migration (ibid).

The migration of health professionals has negatively impacted on health service delivery. The community respondents complained of declining quality of care in health institutions as well as

uncaring attitudes by the health professionals. The crisis in the public health system has benefited traditional healers, who have been able to offer an alternative form of medical care. While it was acknowledged that there are numerous 'bogus' traditional healers, the formal health sector compliments the formal health care system and provides medical care mostly to the poor who cannot afford the high fees charged by private clinics(ibid).

2.4. Worldwide trend of health workers shortage, movement and Migration

2.4.1 Global Shortage and Mal-distribution

Health systems around the world are in crisis. In both developed and developing countries systems are struggling to meet needs of citizens. One of the most critical challenges these systems face a shortage of health care professionals. In developed countries, national healthcare systems periodically experience shortage of nurses or physicians. Usually these shortages are simply a function of demand growing faster than supply. This is most often corrected by introducing greater incentives into the labour market. By contrast, developing countries have long experienced chronic shortages of healthcare professionals. These shortages are usually rooted in a lack of resources that prevents the training or retraining of sufficient number of nurses, physicians, or other healthcare professionals. However, in recent years, a number of demographic and societal changes have combined to create significant and long term shortages in both developed and developing countries. There is an almost universal shortage of registered nurses caused by increased demand in the face of a declining supply. Many countries also face significant shortage of medical doctors (Stewart, J., et al, 2007).

Even if it is difficult to assess accurately the extent of present and future shortages, various sources indicate that they are present and growing in most regions of the world. In the case of registered nurses, nearly every European country is experiencing a shortage. As an example, in 2001 the UK had 57,000 fewer nurses than needed to staff the National Health Service. The Canadian nurses' Association has estimated that by 2011 Canada could have a shortfall of 78,000 nurses. Data suggest that Australia was facing a 40% shortage of nurses to fill open positions in 2006. In the developing countries of Asia, Africa, Latin America and Caribbean, the situation is even more critical. Virtually all developing countries suffer from a chronic shortage of nurses. In



2003, the Pan-American health Organization reported that 35% of nursing jobs across the Caribbean were vacant. The Philippines had 30,000 vacancies for nurses on 2004. In 2003, Malawi reported that only 28 of nursing positions were filled, and in the same year South Africa had a shortage of over 32,000 nurses. The best estimates indicate that, collectively, sub-Saharan African countries have a shortfall of over 600,000 nurses (ibid).

Chen,L., et al (2004) indicated there is a massive global shortage of health workers. Estimated global shortage is at more than 4 million workers approximately. Sub-Saharan countries must nearly triple their current numbers of workers by adding the equivalent of 1 million workers through retention, recruitment, and training if they are to come close to approaching the MDGs for health.

In a report released in 2006, the World Health Organization summarized the total stock of healthcare workers, estimated shortages, and percentage increases in the number of healthcare workers needed to eliminate the shortage by WHO region (Table 2.1).

Table 2.1. Estimated Critical shortage of Doctors, nurses and Midwives by WHO Region

WHO Region	Number of countries		In counties with shortage		
	Total	With shortages	Total stock	Estimated shortage	% Increase required
Africa	46	36	590,198	817,992	139
Americas	35	5	93,603	37,886	40
Southeast Asia	11	6	2,332,054	1,164,001	50
Europe	52	0	n/a	n/a	n/a
Eastern Mediterranean	21	7	312,613	306,031	98
Western Pacific	27	3	27,260	32,560	119
Total	192	57	3,355,728	2,358,470	70

Source: WHO (2002), Estimates of Health Personnel

While these data may provide a starting point for gauging the situation around the world, they likely underestimate the global shortage of healthcare workers. For example contrary to other source, no European country is shown to be currently experiencing a shortage of doctors, nurses and midwives(Stewart, J., et al, 2007). Also, regional studies conducted in two United States suggest that the WHO's estimated shortages for the Americans are too low (Spetz, J., et al, 2005). The contradictions between the WHO's and other assessments stem, in part, from the WHO's focus on 'critical shortages'. While shortages of highly trained healthcare workers in Europe clearly exist, the magnitude of these shortages is small relative to the much larger gaps between demand and supply in developing countries (Stewart, J., et al, 2007). The reasons for shortages in less affluent countries are somewhat different from those in wealthier nations.

Poor economic growth and successive fiscal difficulties appear to be the immediate causes of the crisis. On the one hand, budgetary stringency reduces African governments' ability to attract, retain, and maintain the morale of professional health workers as treasuries are unable to upgrade salaries and working conditions, especially of skilled staff. On the other hand, because medical and nursing training in Africa is mostly government provided or financed, fiscal crises have also severely limited governments' capacity to train health workers. This double pressure on the production and retention of health workers has created shortages in such key cadres as doctors, clinical officers, medical assistants, nurses, midwives, and laboratory technicians (USAID, 2003). But the HIV/AIDS and resurgent epidemics have increased the burden of disease in Africa, relative to the rest of the world creates a higher demand for medical attention. Along with the growth of population, an increase in education and public awareness, over time, will enhance the demand for health services (Alkire, S., et al, 2007; USAID, 2003).

While in developed countries the shortage arises because of the mismatch between demand and supply. The demand may attribute to longer-term demography and epidemiologic transitions. Changing pattern in the burden of diseases has implications for care requirements, as does the aging of populations. The demand for health care workers is further accentuated by shifts toward nuclear family structures, institutionalized elder and child care, advances in labour intensive health technologies, and changing consumer preferences(Alkire, S., et al, 2007). On the supply side, these countries have low retirement age for health professionals and falling enrolments into

training. In addition to these problems there is pressure in some countries to reduce working hours, lowering the full-time equivalent value (Martineau, T., et al, 2004).

Padarath, A., et al (2004) indicates that Northern industrialized countries are faced with an ageing population, an ageing health workforce and increased healthcare expectations. Legislation reducing the amount of time healthcare workers can work is expected to result in greater demand for health personnel. The United States, for example, will need a further one million nurses over the next 10 years to meet its shortfall. By 2010, one in four nurses in the United Kingdom will be 50 years or older.

Demand for highly skilled health professionals in many developed countries is increasing: for example, the UK currently needs 10,000 more doctors and 20,000 more nurses to meet the need of the new health plan. At the same time the economies of many developing countries have become significantly weaker with the consequent fall in the value of salaries. Employment overseas becomes all the more attractive as morale in under-funded health services falls (Martineau, T., et al, 2004).

The recruitment of healthcare workers from less developed countries has emerged as one of the main responses of developed countries to the shortage of healthcare professionals. The latter are increasingly being recruited for temporary or permanent positions abroad. Though some of this movement occurs between developed countries, most is from developing to developed countries. The globalization of the labour market for healthcare professionals has major implications for individual practitioners, for healthcare systems, and for governments. Some of these implications are positive, including the opportunities for nurses and physicians to improve their professional and personal lives and for developed countries to address the shortages of registered nurses and medical doctors they face. There are also significant negative consequences, primarily the drain this represents on the ability of less affluent countries to provide adequate healthcare for their citizens. (Stewart, J., et al, 2007)

Hussey, PS. (2007) also showed that employers in developed countries rely on physician immigration to meet their staffing requirements. In the United States, one in four physicians was trained in another country. For the US and other developed countries, immigrant physicians are

used to meet staffing requirements in underserved areas, such as rural areas and inner cities. However, in the face of a perceived worldwide shortage of physicians, fairness of developed countries depending on immigration to meet their workforce requirements has been seriously questioned.

Foreign medical doctors make up a substantial proportion of the physician workforce in some of the most affluent countries in the world. More than 34% of physicians practicing in New Zealand are from overseas. In the United Kingdom, foreign physicians represent 30.4% of that occupation. Other developed countries have similar proportions of foreign physicians, including the United States with 26.4% and Norway with just over 16% (Stewart, J., et al, 2007).

To estimate the global health workforce to be more than 100 million people. Added to the 24 million doctors, nurses, and midwives who are recorded, there are at least three times more uncounted informal, traditional, community, and allied workers. The enumerated professionals are severely maldistributed between regions and countries. Sub-Saharan Africa has a tenth the nurses and doctors for its population that Europe has: Ethiopia has a fiftieth of the professionals for its population that Italy does (Chen,L., et al, 2004).

In the year 2000, the world had about 8.5 million doctors and 15.2 million nurses and midwives, giving an average world density of 1.4 doctors and 2.6 nurses per 1,000 populations. There were 1.8 nurses for every doctor. Although Europe and North America have only 21 percent of the world's population, these two wealthy continents commanded 45 percent of the world's doctors and 61 percent of its nurses. In contrast, Africa which contains about 13 percent of the world population has only 3 and 5 percent, respectively, of doctors and nurses. Africa as a whole averages only 1.4 of these skilled workers per 1,000 in comparison to Europe's density of 10.3, a seven-fold difference. Net movement of workers is distorting these imbalances even further. The pool of graduates departing from sending countries and the stock of foreign-trained health workers in receiving countries reflect these shifts (Alkire, S., et al, 2007).

The maldistribution of health care workers is a universal problem, particularly in developing countries. Health professionals' migration from poor to rich once contributes to worldwide health workforce imbalances that may be detrimental to the health systems of source countries.

Shortages in health care staff have intensified over the past 2 decades as a result of both the emigration of health care workers from developing to developed countries and the disparities between urban centers and rural regions. The migration of medical professionals has considerable ethical and practical implications. Health care systems in several countries in the developed world depend heavily on imported health care professionals. The dependence of the USA on the international medical graduates (IMGs) is encoded in various policies, most specifically in Medicare's financial support for a number of residency positions that exceed the total number of domestic medical school graduates. Likewise, Canada is adding residency positions to accommodate IMGs and is streamlining immigration and training requirements to facilitate the direct entry of IMGs into practice. Although recipient nations and immigrating doctors benefit from this migration, less developed countries lose important health care capacity as a result of the loss of doctors (Hagopian, A., et al, 2004; Syed, N.A., et al, 2007).

Similarly, Chen, L., et al (2004) noted that nearly all countries have maldistribution, which is worsened by unplanned migration. Urban concentration of workers is a problem everywhere. Improving within-country equity requires attracting health workers to rural and marginal communities and retaining them. There is also maldistribution between public and private sectors in many countries. And international equity is severely affected by international migration, because the loss of nurses and doctors is crippling health systems in many poor sending-countries.

2.4.2. Movement and Migration of Health Workers

Migration is possible for all health professionals who have marketable skills. Traditionally doctors and nurses have made up the bulk of migrants. More recently there has been increased movement of other health professionals such as pharmacists, physiotherapists and other professional group involved with health care (Martineau, T., et al, 2004).

The movement of people from one place to another has shaped and will continue to shape society. In 2000, almost 175 million people (2.9 percent of the world's population) were living outside their countries of birth for one year or longer. These numbers have doubled since 1965

and the migration of health workers has followed a similar trend. As expected most of the migration is to developed countries. Moreover, 65 of all economically active migrants who have moved to developed nations are highly skilled. When the international community embarked on the eradication of malaria in 1955, Africa was not among beneficiaries because it lacked trained personnel. Today more than ever before, the migration of health workers especially from developing to developed countries is of great concern. This is due to the prevalence of HIV and ADIS in these areas, re-emerging infections like tuberculosis, and health concerns due to famine and civil wars. At present, Africa still lacks such personnel and yet it must deal with multiple disease-control efforts. (Denise, K., et al, 2006)

The problem of brain drain is worldwide. In India, it is estimated that 40% of the doctors who work in the private sector migrate outside the country. Whilst a number of developing countries suffer from 'brain drain', in the developed countries glut of physicians has at times led to efforts to curb doctors and specialist training. The WB estimated that in 1972, over 140,000 physicians making up 6% of all physicians worldwide reside outside the countries in which they were born or trained (Dovlo, D., et al, 2001).

Today, educated overseas health care professionals represent more than a quarter of the medical and nursing workforces of Australia, Canada, the UK and the USA. International medical graduates constitute 23-28% of doctors in the USA, the UK Canada and Australia, and lower income countries supply 40-75% of these IMGs (Syed, N.A., et al, 2007).

Similar figures are quoted by Hagopian, A., et al (2004) who state that more than 23% of American's 771,491 doctors received their medical training outside the USA, the majority (64%) in the low-income or lower middle-income countries. This migration has significant impact on the countries of origin of these doctors. Often the doctors who are the most motivated and distinguished of their peer groups are the first to leave for the developed world. This puts the health care delivery system of the host country under considerable pressure. In addition to health care delivery, the educational programmes and research activities of the host countries suffer because the very people who are likely to assume positions of leadership in academic are those

who migrate abroad. The end result is the impoverishment of the host country's pool of doctors (Syed, N.A., et al, 2007).

Also, Astor, A., et al (2005) has showed that over the last half-century, there has been a significant increase in the number of physicians who have migrated between countries, especially from developing to developed countries. In Canada, 23% of practicing physicians are trained abroad, while in the US, international medical graduates account for 23.5% of all physicians and 24% of all medical residents. Several events have contributed to this phenomenon. During the 1960s and 1970s, governments in developing countries used subsidies to promote the expansion of physician training in order to meet the primary health care needs of their populations. The health care systems in many of these countries could not absorb the trainees, leading a large number of physicians to seek employment elsewhere. In addition, the increasing conformity of medical training, the internalization of the English language, the willingness of physicians educated on developing countries to work in rural and other undesirable locations in developed countries have made them a prime target for recruitment.

2.4.3. Pattern of Migration

The pattern of medical professional migration is complex. Some migration is short-term or reciprocal exchange. Other flows are clearly long-term. Most migrants leave open the possibility of return. Also, many source countries may in turn try to replace emigrants with immigrants from other countries, as in the Czech Republic and South Africa (Alkire, S., et al, 2007)

Some patterns of migration are empirically well documented. English-speaking countries are a primary destination of emigrating health workers. The proportion of foreign-trained health workers is particularly high in Anglophone countries, reflecting several decades of net accumulation. Between 23 and 24 percent of physicians in New Zealand, UK, Canada, the US, and Australia are foreign-trained. Not all emigrants come from developing countries, of course. There is, for example, considerable within OECD circulation from the UK and Canada into the United States. Some countries have developed regional pairings. For example, 20 percent of migrant physicians in the UK are from Africa; 30 percent of migrants to the US are from India

and Pakistan. In most cases, including the US and UK, medical migrants come from a relatively small number of source countries. While the greatest percentage of foreign-trained relative to nationally trained health professionals in New Zealand, the greatest number of immigrants' medical professionals reside in the US or the UK (ibid).

Individuals and employers are, of course, not sole agents shaping the pattern of health worker migration. Relationships among governments clearly constrain the extent to which free-market forces operate and individual contracts are executed. In the 1960s and 1970s colonial cultural ties (including language) were very important in determining migratory patterns. For example, there were a high proportion of British immigrants from Commonwealth countries, especially from India and the Caribbean. These ties extended in the nursing profession and were evident in the nursing education structure, the textbooks and the curriculum (Martineau, T., et al, 2004).

Stewart, J., et al (2007) showed that many critics of existing migration trends view the patterns as simply another manifestation of systemic neocolonial exploitation. Such criticism emphasizes that the migration of healthcare professionals often serves the interests of former colonial powers and insists that arrangements are largely agreed to by the elite in former colonies who are relatively insulated from the consequences of their decisions. In fact, in countries with both public and private healthcare, these elites are able to strictly avoid the public system.

In some cases former colonial powers are actively involved in setting educational and training standards in former colonies, and the type of training received is relatively adaptable to meet the needs of the destination country. Most emigrating healthcare professionals move to the nation that formerly exercised colonial control over their country of origin. Most foreign nurses and physicians in the UK have migrated there from countries formerly part of the British Empire. Also, a significant of the RNs and MDs in Portugal are migrants from former Portuguese colonies, such as Angola, Mozambique and Cape Verde. The Philippines, a former American colony, is the leading country supplying foreign nurses for the United States healthcare system (ibid).

Lessons from the past shown that migration is highly unpredictable. Today the patterns of migration have changed. New countries have emerged as the source for doctors, they include: the

Caribbean; Egypt; the Sub-Saharan African states; Cuba; and the former Soviet Union. Many African doctors migrate within the continent, mostly to Southern African states where salaries are often higher. Chinese and Spanish nurses coming to UK and international recruiters will continue the search of new source countries (Martineau, T., et al, 2004).

Historical rates of migration have varied considerably, and it would be mistaken to conclude that recent exchanges are unprecedented. Yet, migration streams appear to be accelerating, especially in the past decade. Trends are difficult to establish globally because the data are neither uniform nor universally available. However, the migration of nurses in particular displays an increasing trend. For example, the number of non-EU nurses and midwives that have registered in the UK has increased ten-to-fifteen fold in one decade. Similarly, in Northern Ireland, the number of non-EU nurses has increased and recently surpassed the number of new nurses from either Ireland or the EU. Turning to source countries, we find that even in comparison with the relatively high earlier rates recent trends are markedly upward, with a three-to-four fold increase over only five years (Alkire, S., et al, 2007).

2.4.4. Situation in Africa

In general, the health personnel to population ratios in Africa have been high and have always lagged behind the rest of the world. In the 1980s, one doctor catered to 10,800 persons in sub-Saharan Africa, compared to 1,400 in all developing countries and 300 in industrial countries. In the same period, one nurse catered to 2,100 persons in Africa, compared to 1,700 persons in all developing countries and 170 in industrial countries (World Bank, 1994).

According to WHO (2002) estimate the provider-to-population ratios persistently remained high in the 1990s, with most countries having 1 doctor per 10,000 population or more. In fact, ten countries have 1 doctor per 30,000 population. Comparable countries like Bolivia, Honduras, and India have 1:2,000 or 1:3,000 ratios. Thirty one countries do not meet WHO's "Health for All" standard of 1 doctor per 5,000 population. Even those that do have enough doctors, geographical maldistribution is so severe that there may be 1:5,000 ratio in the city of Nairobi while remote Turkana District suffers from a 1:160,000 ratio. Even in South Africa, a better endowed country, poor districts may only have 1 doctor for a population of 30,000.

Table 2.2: WHO Estimates of African Countries by Population per Health Workers Ratios late 1990s

Population per physician	Countries
1 per 30,000 or more	Burkina Faso, Central African Republic, Chad, Eritrea, Ethiopia, Gambia, Malawi, Mozambique, Niger, and Tanzania
1 per 20,000	Angola, Benin, Comoros, Democratic Republic Congo, Lesotho, Mali, Rwanda, Sierra Leone, Somalia, Togo, Uganda, and Zambia
1 per 10,000	Burundi, Cameroon, Cote d'Ivoire, Djibouti, Ghana, Madagascar, Senegal, Sudan, and Swaziland
1 per 5,000	Botswana, Cape Verde, Gabon, Equatorial Guinea, Guinea, Guinea-Bissau, Kenya, Mauritania, Mauritius, Namibia, Nigeria, Sao Tome and Principe, Seychelles, South Africa and Zimbabwe
Population per nurse	Countries
1 per 10,000 or more	Central Africa Republic, Gambia, and Mali
1 per 5,000	Benin, Burkina Faso, Chad, Eritrean, Madagascar, Niger, Senegal, Togo, and Uganda
1 per 2,000	Cape Verde, Comoros, Cote d'Ivoire, Democratic Republic Congo, Equatorial Guinea, Ghana, Guinea, Lesotho, Sierra Leone, and Sudan
1 per 1,000	Angola, Botswana, Djibouti, Guinea-Bissau, Kenya, Mauritania, Mauritius, Namibia, Nigeria, Sao Tome and Principe, Seychelles, South Africa, Tanzania, Zambia and Zimbabwe
Population per midwife	Countries
1 per 20,000	Angola, Burkina Faso, Central African Republic, Chad, Equatorial Guinea, Eritrean, Guinea, Mali, Niger, and Sierra Leone
1 per 10,000	Benin, Gambia, Madagascar, Mauritania, Senegal and Togo
1 per 5,000	Comoros, Congo, Cote d'Ivoire, Guinea-Bissau, and Uganda
1 per 2,000	Ghana, Lesotho, Namibia, Nigeria, Sao Tome and Principe, Seychelles, Tanzania, and Zimbabwe

Source: Source: WHO (2002), Estimates of Health Personnel

The number of trained health workers in Africa has historically been inadequate, but in recent years, many countries have suffered from serious scarcities of almost all cadres due to economic and fiscal difficulties and incomplete civil service reforms (USAID, 2003).

The poorly coordinated expansion of the health-facility network in many African countries has also contributed to the HR problem in a major way. In many countries, the construction and refurbishment of health facilities has outpaced the health system's ability to staff and maintain them on a sustainable basis. Many standing clinics and hospitals are unstaffed or understaffed, and patients' access to functional health services continues to be difficult and time consuming, even if physical facilities are available, as in Malawi, Zambia and elsewhere. In Mali, the government aggressively expanded the number of community health posts to 533, but by January 2001, only 43 percent were found operational, the rest having been closed for lack of personnel. Thus, gains made in improving physical access to a health facility have been eroded due to lack of staff (and drugs), a familiar story in many countries in the region (ibid).

The existence of internal and external migration of health care workers adds fuel to the prevailing shortage of health workers especially in the public health care service. The migration of health workers within and between countries is a growing concern worldwide because of its impact on health systems in both developing and developed countries alike. The problem assumes urgent dimensions in view of the global drive to overcome poverty improve health and promote development in poor countries (Dare,O., et al, 2004). The United Nation's millennium development Goals (MDGs) of reducing child mortality, improving maternal morbidity and combating HIV/AIDS, TB and malaria by the 2015 are clearly unrealistic in Africa within the time frame stipulated unless timely evidence based solutions are proffered and effectively applied(WHO, 2004) Poverty, long histories of internal and regional wars, battered economies, and other social and political factors, and fragmented health systems have led to the poor quality of health care.

In Africa, the public health sector is arguably the most seriously affected by the migration of health professionals, as the sector plays an important role in providing health services to the bulk of African's population, most of whom are classified as poor. The private health sector is a relatively new development in most countries and typically operates on a for-profit basis. A health service is run by non-governmental organizations (NGOs) and health-related organizations are, however, run on a not-for-profit basis. Since most private service providers charge high fees for health services, they tend to exclude the poor. The private health facilities are generally well

staffed and have a good supply of drugs and equipment. Due to low budgetary allocations, public health institutions are experiencing shortages of protective clothing, basic equipment and drugs; they also have not been able to offer their staff competitive salaries, as governments have been put under pressure by multi-lateral lending institutions to reduce public expenditure and the wage bill (Awases, M., et al, 2004).

Moonlighting and eventual voluntary departure from the civil service for more lucrative local employment has also marked the African health sector labor market in recent years. A major factor has been the rather quick liberalization of medical practice in such countries as Malawi, Mozambique, and Tanzania resulting in the movement of trained MOH civil servants to private practice, either individually or with nonprofit or for profit health providers. Health service providers especially doctors may opt to initially straddle two jobs, keeping their civil service posts while moonlighting on the side. Countries may also formally allow double practice, even in government health facilities, as in Mozambique. While this looks like a reasonable arrangement, it has tended to result in disappearing civil servants who report to duty on shorter work-hours. It has also resulted in the displacement of poor patients by private-paying patients in government facilities. As medical practice becomes privatized, doctors may eventually opt only to practice privately. Pharmacists and, to a lesser extent, laboratory technicians are more likely to move completely into the private sector, as has been shown in Ghana (USAID, 2003).

The proliferation of NGOs in the 1990s certainly caused a large exodus of health workers from the government service, either as direct health providers, program managers, or consultants. NGO health projects attract a wide range of government health professionals since the pay is much better and the work is similar to that of the civil servants, hence very little retraining costs are needed. In hindsight, the lack of a pre-service training program for this NGO demand for health professionals meant that NGOs had little recourse but to poach from the existing civil service pool. Curiously, despite the liberalization, public-private partnerships remained woefully underdeveloped, such that training programs in child health, reproductive health, tuberculosis, and malaria were, for the most part, limited only to government health workers (ibid).

African countries are also confronted with the growing problem of the mass exodus of health professionals to the more developed countries. Even though the phenomenon of brain drain is not

new to the continent, there is concern over the acceleration of the problem in recent years. Owing to wide range of economic and political factors, health professionals have been leaving for destinations within the region and abroad. The advent of more efficient electronic communication networks since the 1990s has made the movement of health professionals much easier than before, as potential migrants are better informed of opportunities in other countries(Awases, M., et al, 2004).

According to USAID (2003), out-migration has also adversely affected the labour supply in many African health sectors. Health workers from poorer African countries, such as Ghana, Kenya, Malawi, and Zimbabwe, have moved to more affluent countries on the continent, notably South Africa and Botswana. A recent study found that only one quarter of rural doctors in South Africa are natives of that country, the remainder mainly coming from other African states. Others have emigrated to the United Kingdom, Canada, and the United States. A global carousel phenomenon has been observed among skilled health professionals where workers from poorer African countries migrate to richer southern African neighbors, southern African doctors migrate to Canada or the UK and Canadian doctors themselves migrate to the US.

A quarter of all doctors practicing in the United States are foreign medical school graduates, of which a large majority—60 percent—come from developing countries that are being decimated by AIDS, malaria, tuberculosis and other infectious diseases. South-to-North brain drain within the medical community is far from negligible; a stunning number of health professionals have left their country of origin to practice in the developed world. The World Health Organization estimates that 20,000 health professionals emigrate from Africa annually (Stillwell, B., et al 2004). Global commission on International migration (2005) noted that in general, migration continues to rise.

2.5. The Current Debate on Health Workers Migration

There is a growing controversy surrounding the international movement of medical professionals. The debate has recently intensifies, partly because the capacity of many of the world's poorest countries to address health crises is severely crippled by acute shortages of workers exacerbated by out-migration of medical professionals. The double crises of escalating disease and personnel

shortages have refocused attention on medical migration. The fact that these medical labour movements are considered part of the 'globalization' process pours fuel over the controversial social effects of accelerating transnational flows in our global era (Alkire, S., et al, 2007).

At one extreme are those who define the basic human right of professionals to move, irrespective of occupation. They also cite the potential benefits of open international labour markets, including economic and efficiency gains, Diaspora remittances (now twice the size of official overseas development assistance), and 'brain circulation' including the return flow of new ideas, entrepreneurship, technology, and contacts. Joining these labour market proponents are those who seek freer movement of labour for equitable globalization. They argue that restriction on labour movements accentuates global economic inequities. Rather than less migration, these proponents argue for more and freer movements. (Alkire, S., et al, 2007; Schindman, A., 2006)

At the other extreme are those who charge northern countries with exploitative predatory behavior towards Southern countries. They argue that poaching the best and brightest of human resources exacerbates global health inequities. A normative lens is cast on unethical recruitment practices and the self-serving Northern policy of selective immigration that captures public educational subsidies from Southern sending countries. As health conditions worsen in some Southern sending countries, the depletion of skilled health workers has rapidly reached crisis proportions. In many sending countries, the concerns of ministries of health are in conflict with the labour export policies of ministries of finance and planning (Alkire, S., et al, 2007).

Much recent discussion has been dominated by concern that increased migration is undermining health systems. In May 2003 health ministers from the majority of commonwealth countries agreed a code of practice and a companion document that highlighted concerns about brain drain: In recent years, international migration, fuelled by many factors, has grown to such proportions that it is affecting the sustainability of health systems in some countries. While both developed and developing countries are experiencing the negative impact of loss of skills, such loss is more keenly felt in developing countries, which are finding it increasingly difficult to compete for skilled human resources in the existing global market (Bach, S., 2003).

This perspective, however, has been challenged with concerns about brain drain giving way to discussion of brain exchange and brain circulation. This shift is underpinned by three main arguments. First, in more networked global economy with increased foreign direct investment the idea of a straightforward brain drain is viewed as passé. Second, amongst some economists there is a strong belief that migration of highly skilled workers is beneficial to all because of the emergence of transnational communities that link the Diasporas to the home countries, stimulating investment and entrepreneurship. The third argument is that migration is often more temporary than in the past, enabling countries to attract migration return, providing a new dynamic for investment (ibid).

Chapter Three

Overview of the Current Ethiopian Health Care System

Health care is one of the crucial components of basic social services that have a direct linkage to the growth and development of a country as well as the welfare of a society. Ethiopia experiences a heavy burden of disease with a growing prevalence of communicable infections. Many Ethiopians face high disease morbidity and mortality largely attributable to potentially preventable infectious diseases and nutritional deficiencies. The health system is underdeveloped and much of the rural population has little access to modern health care that lead to the instability of the health care delivery system to respond both qualitatively and quantitatively to the health needs of the people. Previously, the health delivery system was highly centralized; delivered in a fragmented way and relied on vertical programs; and there was little collaboration between the public and the private sectors. Consequently, the Ethiopian Transitional and Federal Government have initiated political, economic, and social changes resulting in the formulation of the 1993 – Health Policy and Strategy.

3.1. Policy and Institutional Framework

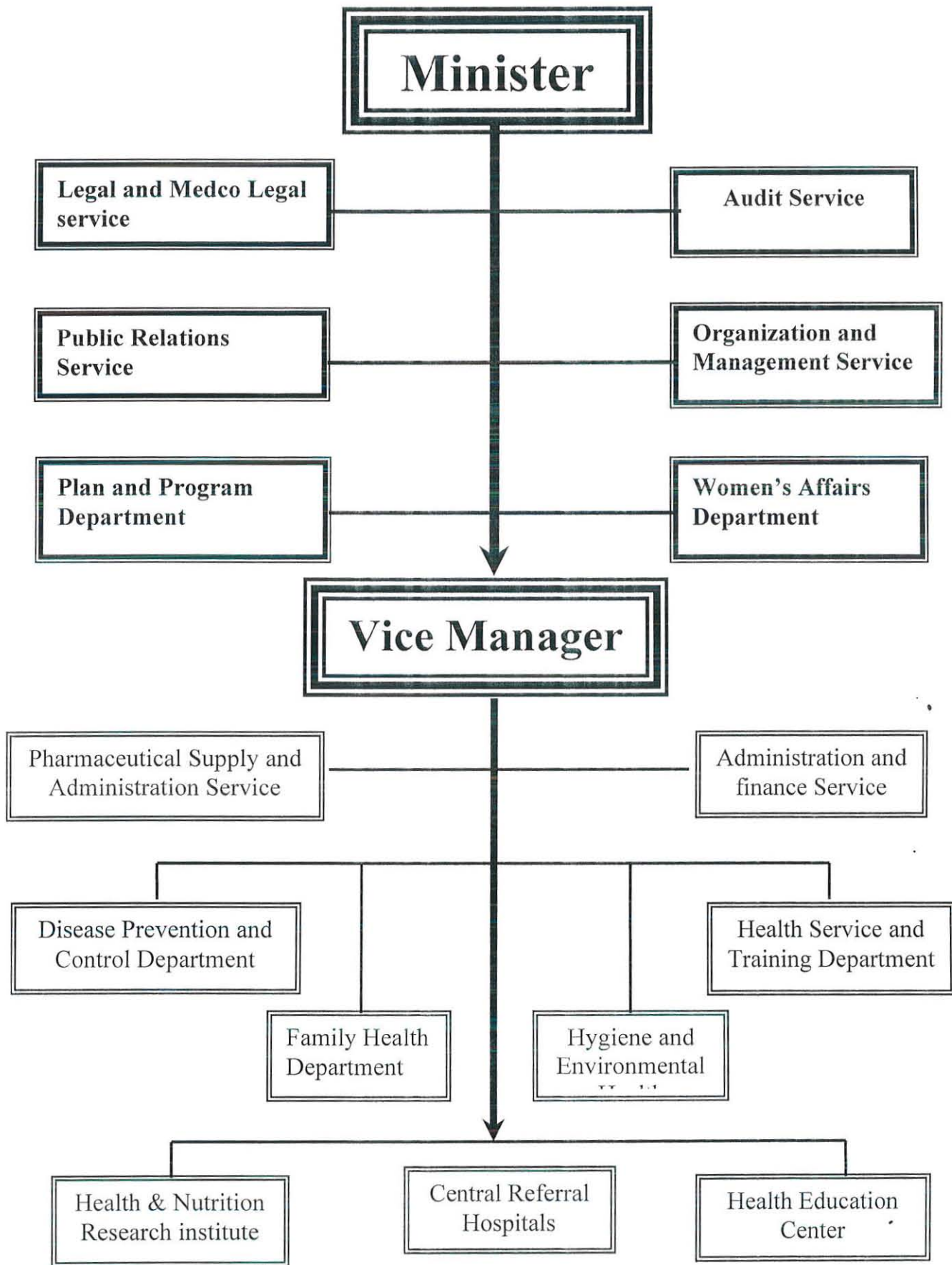
The Ethiopia's National Health Policy was approved by the Council of Ministers in September 1993. This policy is based on ten principles (World Bank, 2005):

- Democratization and decentralization of the health system
- Development of the preventive and promotive components of the health care
- Development of an equitable and acceptable standard of health service system that will reach all segments of the population within the limits of resources
- Promoting and strengthening of inter-sectoral activities
- Promotion of attitudes and practices conducive to the strengthening of national self-reliance in health development by mobilizing and maximally utilizing internal and external resources
- Assurance of accessibility of health care for all segments of the population

- Working closely with neighboring countries, regional and international organizations to share information and strengthen collaboration in all activities contributing to health development, including the control of factors detrimental to health
- Development of appropriate capacity, based on assessed needs
- Provision of health care for the population on scheme of payment according to ability, with special assistance mechanisms for those who cannot afford to pay
- Promotion of the participation of the private sector and non-governmental organizations in health care

Since historically the managerial set up of Ethiopian health service has been centralized, the new health policy and strategy involves a move towards democratizing and decentralizing the health system and strengthening the regional, zonal and district/woreda health departments. The roles and responsibilities of the Federal Ministry of Health (FMOH) and Regional Health Bureaus (RHBs) are defined by the national and regional constitutions. The following figure shows the organizational structure of the Ministry of Health.

Figure: 3.1. Organizational Structure of the Ministry of Health



Public services are going through a deep decentralization process. Ethiopia has gone through two stages of decentralization: first stage of which involves the decentralization of function from the center to regions in early 1990s. Since July 2002, public services have been undergoing a deeper decentralization process as the primary responsibility for service delivery and management of government services are further devolved to the woredas. The primary objectives of the political, administrative and economic decentralization policy are to increase local participation aimed at strengthening ownership in the planning and management of government of government services; to improve efficiency in resource allocation; and to improve accountability of government and public service to the population.

Under the new system, the woreda councils receive block grants and are responsible for setting priorities, delivering services, and determining budget allocations at the local level within the framework of broad national policies. The woreda council is responsible for the planning and implementation of all woreda development programs including health services. For example the woreda is responsible for construction of health centers and health posts, and for the procurement of drugs and equipment. However, in actual practice, this process is still evolving because woredas still depend on regional and central levels such as the recruitment and allocation of health personnel and the procurement and distribution of supplies.

The rapid decentralization has also resulted in some transitional issues, mostly related to rebalancing allocations; lack of clarity on responsibilities and expenditure assignments; and some disruption in budget formulation and reporting.

In the new organizational framework of the health sector, the FMOH's responsibilities comprise policy formulation, standard setting, issuance of licenses and qualification of professionals, establishment of standards for research and training, and coordination external loans and grants.

Government policy also envisages a greater role for the private sector in health services delivery and financing. The enhanced participation of the private sector will be encouraged (within an appropriate regulatory and monitoring framework) to ensure coordination of public and private sector activities.

In terms of regulatory mechanisms, the health policy documents recognize the involvement of NGOs in the Ethiopian health care system. Regulatory provisions have been made to encourage the activities of NGOs although there are still some issues regarding lengthy procedures at the time of NGO appraisal and licensing. Departments of the Ministry of Justice (MOJ) and Commission for Disaster prevention and preparation (DPPC) are responsible registering all NGOs wishing to operate in Ethiopia.

Certificates for the operation of private hospitals are issued only by the MOH of the Federal Government of Ethiopia, while certificated for clinics at all levels are issued by the concerned RHBs on the basis of the rules and regulations of MOH.

According to the guidelines of the MOH, the RHBs have the responsibility for supervising, monitoring and evaluating the activities of all clinics. The provision of the operation of private hospitals is the responsibility of MOH.

Another major initiative that has an impact on the implementation of health activities is the Civil Service Reform Program (CSRP), which was introduced in February 2002. Its aim is to create a civil service that is both efficient and sufficiently competent to achieve the economic, social and political goals of the government and to promote a participatory culture. The CSRP has five subprograms; expenditure management and control, human resource management, service delivery, management systems, and ethics.

One of the important policy measures taken by MOH in 2002/03 was the development of the Health Services Extension Package (HSEP) initiative that seeks to provide communities with essential packages of services in the following four areas:

- Hygiene and environmental sanitation: excreta disposal, solid and liquid waste disposal, water quality control, food hygiene, proper housing, arthropod and rodent control, and personal hygiene
- Disease prevention and control: HIV/AIDS and other STD prevention and control, TB prevention and control, malaria prevention, and first aid

- Family health services: maternal and child health, family planning, immunization, adolescent reproductive health, and nutrition; and
- Health education

For a country like Ethiopia, where limited percent of the population has physical access to primary health care (PHC), and where unfavorable health staff-to-population ratios exist, the move towards complementing facility-based care with outreach services such as the HSEP is believed strategically important.

The HSEP is being piloted in five regions. The original MOH design for health outreach was based solely on prevention, hygiene and sanitation education. This design has since been amended to ensure that the two health extension workers (HEWs) who will be assigned to each kebele are also trained to provide reproductive health information and services. The HEWs will also liaise with PHC facilities for patient referrals (particularly for high risk pregnancies and emergency obstetric care). While there is a clear need to expand coverage of both preventive and curative care, especially in rural areas, the MOH has expressed concerns that it might not be realistic to expect two HEWs per kebele to be able to effectively provide both preventive care and some curative based services. Thus, it would also be important for curative care services to be provided by properly trained health staff. This policy has experiences some degree of resistance at the local level, and HPs in some regions are providing curative care.

3.2 Policy and Program Reforms

The initial health sector development program (HSDP) was drafted in EFY 1986/87 (1993/94). It was designed for a period of 20 years with rolling five-year program period. This program is a comprehensive national health program that covers all aspects of policy and planning, implementation, monitoring and management of all the areas that relate to the provision of health care to the inhabitants of the country. Basically HSDP has three goals:

- Build basic infrastructure
- Provide standard facilities and supplies

- Develop and deploy appropriate health personnel for realistic and primary health delivery at the grass-roots level

The first phase, HSDP I, was implemented from 1997 – 2002. It sought to:

- Increase access to health care from 40 percent to 50-55 percent
- Improve the technical quality of PHC services, including the restructuring of the pharmaceutical sector and expanding the supply and productivity of health personnel
- Develop an information, education and communication plan to communicate PHC messages to isolated areas
- Improve health systems management at federal and regional levels
- Improve financial sustainability of the health sector; and
- Promote greater private sector investment in the health sector

HSDP II started in July 2002 and covers a three-year period from July 2002 to July 2005. It followed the same component format as HSDP I. Many stakeholders consider HSDP II as a transitional plan covering three years prior to the start of HSDP III. Both HSDP I and HSDP II are intimately linked to PRSP of the country, and like the National Health Policy, are the result of a critical examination of the nature, magnitude and root causes of the prevailing health problems of the country and awareness of newly emerging health problems. Founded on a commitment to democratic principles and to decentralized management and provision of service, it accords appropriate emphasis to the needs of the less privileged rural population which constitute the overwhelming majority of the population and it also sets realistic goals and the means for attaining them. In so doing, the Government accords health a prominent place in its order of priorities and commits itself to the attainment of these goals accessing through the proper utilization of both internal and external resources (FMOH, 2002/03).

Currently, HSDP III covering the EFY 1998 (2005/06 G.C) to EFY 2002 (2009/10) is now in its third year implementation. HSDP III, which is designed in line with the wider policy frameworks such as SDPRP II and MDGs. It fully reflects the commitment to the achievement of the Health MDGs and also constitutes the health chapter of the National Sustainable Development Poverty Reduction Programme-II. It is based on the various policies and strategies that were developed and endorsed to serve as the vehicles for the achievement of MDGs. The phases of all HSDP have

clear strategies for making targeted interventions against poverty related diseases that are in the main HIV/AIDS, Malaria, and Tuberculosis. Other focus areas of interventions are Child Survival, Reproductive Health and Maternal Health Care. The main priority area for the 1998 EFY has been on the training and deployment of HEWs, to this end, it was planned to train 7500 HEWs each year for the EFY 1998-2000. HEWs are being trained in 40 Technical and Vocational Education and Training (TVET) schools (FMOH, 2006/07).

SDPRP

The overall objective of the Ethiopian Government-led Sustainable Development and Poverty Reduction Program (SDPRP) is to reduce poverty by enhancing economic growth while maintaining macroeconomic stability. It is built on four pillars:

- Enhanced Rapid Economic Growth (including private and financial sector development, vulnerability and roads)
- Improved Human Development (including education, health, HIV/AIDS, water and sanitation)
- Democratization and Governance (including decentralization, justice system reform, and urban management); and
- Improved Public Sector Institution Performance (including civil service reform, and tax reform)

In addition, the SDPRP identified key sectoral measures and crosscutting issues to focus on including education, roads, water and sanitation, HIV/AIDS, health, gender and development. In health, in particular, it seeks to improve the balance between preventive and curative healthcare through a community based healthcare delivery system aimed at creating a healthy environment and lifestyle (World Bank, 2005).

3.3 Organization of Health Service Delivery

Healthcare services are provided through four sectors: public sector, private sector, NGO sector and traditional healers;

The public system

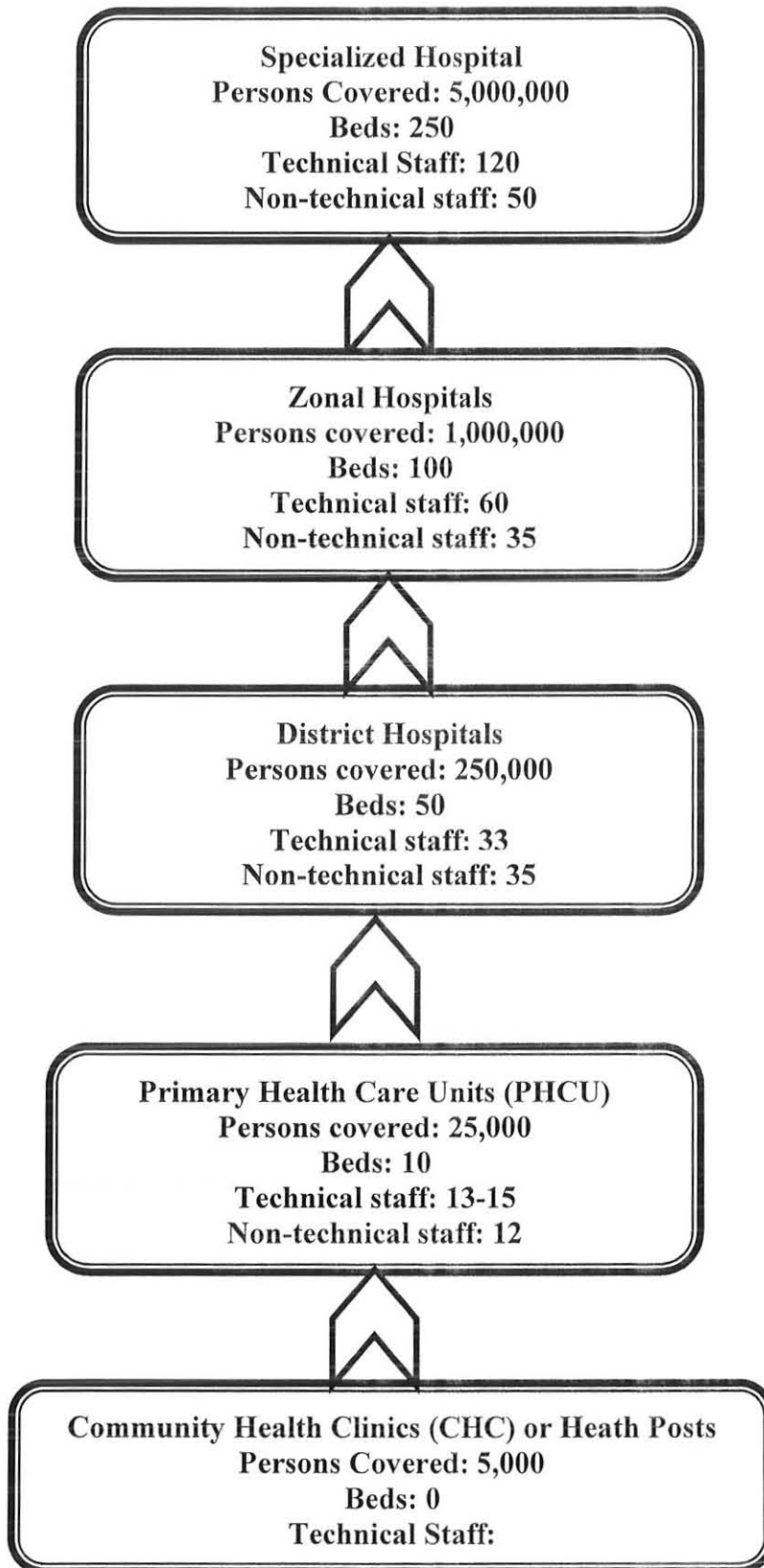
Prior to the implementation of HSDP, the public health system was structured into a six-tier system:

- Central referral hospitals (covering approximately 588,000 persons)
- Regional hospitals
- Rural hospitals
- Health centers (covering approximately 223, 000 persons)
- Health stations (covering approximately 45,000 persons)
- Community health posts (covering approximately 21,000 persons)

A change in the service delivery structure to a four-tier system was planned during HSDP I. The main change was replacing health stations (popularly known as clinics) with primary health care units (PHCUs). Each PHCU would have a health center surrounded by ideally five satellite community health clinics (CHC) or health posts, each serving a population of 5,000. Thus each PHCU would serve a total of 25,000 people. The PHCU is expected to provide comprehensive, integrated and community-based preventive and basic curative services, in particular:

- Maternal and child health care, including immunization, family planning advice and services, nutritional health, and micronutrient supplementation
- Curative services for common ailments such as parasitic infections, diarrhea, acute respiratory infections and tuberculosis
- Minor surgery and life saving operations such as appendectomies and caesarean sections
- Technical assistance in establishing and monitoring environmental and occupational health standards within its catchments areas
- Recordkeeping of basic vital statistics and diseases surveillance
- Training of CHAs and traditional birth attendants (TBAs) who will staff the CHCs or HPs

Figure: 3.2. Structure of the Public Health Delivery System



Each district hospital functions as a referral and training center for ten PHCUs. Zonal hospitals (ZHs) provide specialist services and training while specialized hospitals (SHs) provide comprehensive specialist services, and in some instances serve as centers for research and post basic training.

Restructuring of the public health delivery system is still underway and the new system is not consistently implemented. This situation exists principally because regions have not fully accepted the proposed concepts and replacing health stations by health posts that do not provide both preventive and curative services. The staffing of HPs with minimally trained staff almost exclusively for preventive purposes has generated substantial debate because of the view that HPs are not meeting the population's basic needs for both preventive and curative care. It has been generally difficult to downgrade HSs to HPs, mainly because of popular oppositions to having facilities, especially for remote areas, that only offer preventive services.

The government runs a majority of the formal health facilities, and their numbers have increased significantly over recent years. But the distribution of facilities is uneven: urban areas are better covered than rural areas.

The NGO sector

The health sector is one of the sectors where faith based organizations and NGOs started their operations. There are a number of NGO projects in the health sector. There are also other NGO projects focused on water supply and sanitation and the environment that have a direct impact on health.

Despite the government's interest and policy commitment to increasingly involve NGOs in the health sector, there appears to be little articulation on how such policy commitments are to be translated into action. The absence of NGO guidelines to direct their involvement in the health sector has created the problems. There are two standards for health facilities: one for government facilities and another for private facilities. NGO facilities are expected to follow the government facility standards based on the understanding that these organizations will be transferred to the

government in the future. However, the private hospital guidelines also apply to hospitals constructed by private not-for-profit agencies, including NGOs.

The Private Sector

Prior to 1995 private sector involvement in the health sector was negligible because there was no legal framework within which the private practices was allowed to practice. After 1995, a number of private for profit hospitals, private for profit clinics and pharmaceuticals manufacturing firms have opened across the country. Private providers are concentrated in urban areas, particularly in Addis Ababa a significant portion of health need are met by the private sector. While the majority of health facilities in the country are government owned the pharmaceutical sector is dominated by the private sector.

Traditional Healers

In Ethiopia, traditional medicine (TM) includes the use of herbs, the belief in the healing powers possessed by healers, Holy Water and other remedies for addressing both physical and mental illness.

Little literature exists regarding traditional medicine. But it appears that it is fairly common for people to seek TM first and modern medicine (MM) only when TM fails. There is ongoing discussion at the MOH about how to better integrate TM into health care delivery system. A task force has been established to develop policy and guidelines.

3.4 Health Facilities Construction and Rehabilitation

The objective of this component is to increase access to, and to improve the quality of, health services through the rehabilitation of existing health facilities and construction of the new one.

Table 3.1 Health Infrastructure from year 1995 E.C to year 1999 E.C

Number of facilities	1995	1996	1997	1998	1999
Hospitals	119	126	131	138	143
Health center	451	519	600	635	690
Health stations + NHC	2396	1797	1662	1206	1376
Private clinics not for profit	383	359	379	480	397
Private clinics for profit	1229	1299	1578	1784	1756
Health posts	1432	2899	4211	5955	9914
Pharmacies	302	275	276	246	320
Drug shop	299	375	381	476	577
Rural drug vendors	1888	1783	1787	1754	2121

Source: Health and Health Related Indicators, FMOH (2002/03-2006/07)

The target during HSDP-I was to increase health service coverage from 40 to 50-55 percent and to further increase to 65 percent from 52 percent during HSDP-II. It was also planned to equip and furnish PHCUs according to standard. In order to meet these targets, the number of government health centers has increased from 243 in 1996/97 to 412 in 2001/02 (70 percent increase at the end of HSDP-I) and subsequently to 690 in 2006/07. The number of HPs increased from 76 in 1996/97 to 1193 in 2001/02 and subsequently to 9914 in 2006/07. Moreover, the number of hospitals has increased from 87 in 1996/97 to 110 in 2000/01 and then to 143 in 2006/07.

Furthermore, considerable rehabilitation of health facilities, and buildings and furnishing of support facilities has been undertaken. The overall picture is of an encouraging trend towards improved infrastructure at the lower levels of the health system, which strengthens access to more peripheral areas and the first level referral echelon.

In order to expand and achieve universal health coverage by the end of year 2008 and improve the delivery primary health care service to the most neglected rural population, the Accelerated Expansion of Primary Health Care Services (AEPHCS) coverage strategy has been prepared and launched.

However, the shortage and high turnover of engineering staff coupled with down sizing of engineering units in RHBs has hampered the capacity to implement and supervise construction activities at RHB and WHO levels. This could adversely affect the implementation the AEPHCS, whereby significant number of health facilities will be constructed at a national scale in short period of time (HSDP-III, 2005).

3.5 The Human Resources

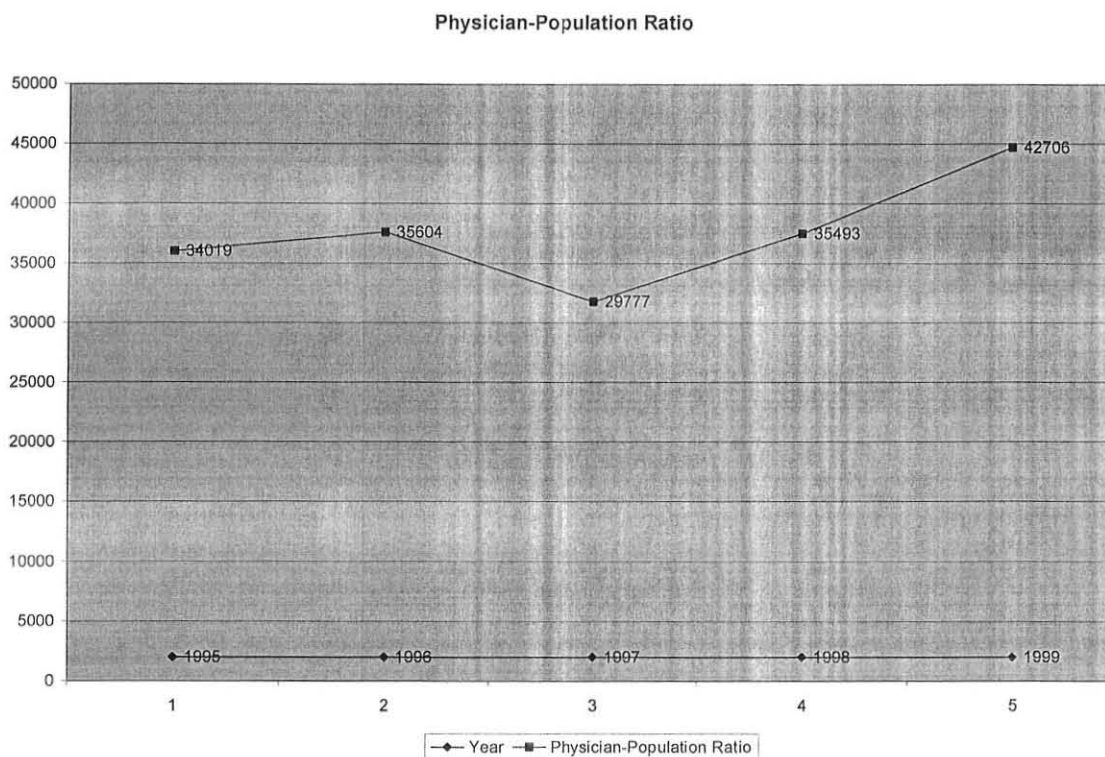
Health sector is one of the sectors that rely heavily on the availability of adequate and stilled human resource. The National Health Policy has also pointed out that “development of human resource with emphasis on expansion of frontline and midlevel health professionals with community base, task oriented training shall be undertaken”. One of the issues that characterize human resource in the health sector is the multiplicity of disciplines making it difficult to substitute one health professional in one field for another in another field. This entails availability of the optimum number and professional mix of human resource for the effective coverage and quality of the intended services.

Availability and Regional Distribution

Ethiopia has a population of 77 million, the third highest in Africa, yet there are only 1,806 practicing physicians. While the WHO standard is 1 physician for 10,000 populations, currently physician-to-population ratio in Ethiopia is 1:42,706. This is a deteriorated ratio compared with previous years' ratio trend as indicated in figure 3.3. Ethiopia has only about 0.04 physicians per 1,000 people compared to the SSA average of 0.1 per 1,000 people. It has the lowest physician-per-person ratio in the world (FMOH, 2006/07; World Bank, 2005). Each year, half a million children die from diarrhea and one in six do not survive beyond their fifth birthday (Merlin, 2007).



Figure 3.3 Trend of physician-to-population ratios from 1995 E.C to 1999 E.C



Source: Health and Health Related indicators, FMOH (2002/03-2006/07)

In the year 2006/07 the health assistant to population ratio and para medicals to population ratio was 1:24,223 and 1:19,965 respectively. Likewise, physician to population ratio both health assistant to population ratio and para medicals to population ratio are worsening from year to year. But the health extension workers increase overtime, hence in year 2006/07 the health extension to population ratio is 1:4,369.

One nurse in Ethiopia serves 4,250 persons. This ratio is somewhat better than the WHO standard of 5:5,000 ratios. However, this particular figure must be treated with caution because while clinical and staff nurses constitute a large part (79 percent) of the total number of nurses, it is clear whether these nurses graduated either from the two-year diploma program or the one year certificate program or whether the figures presented have combined nurses graduating from these programs (FMOH, 2006/07; World Bank, 2005). The HSDP I evaluation (2003) stated that the

largest increase in nursing staff is made up of junior clinical nurses who only one have year of training and who not well prepared for practical work.

Table 3.2 Number of Health Personnel Graduated from year 1995 E.C to year 1999 E.C

Human resource graduates	1995	1996	1997	1998	19999	Total number of graduates
Physicians	285	289	492	245	368	1,679
Health officers	181	249	333	247	545	1,555
Nurses	1,465	2,384	4,536	1,618	1,846	11,849
Para medicals	1,054	999	803	791	789	4,436
Health extension workers		2,737	7,090	7,136	8,560	25,523

Source: Health and Health related indicators, FMOH

As indicated in table 3.2, there are concrete efforts to train more people, and the numbers of health personnel are increasing from year 1995 to 1999; 1,679 physicians, 1,555 health officers, 11,849 nurses, 4,436 para medicals and 25,523 health extension workers were trained.

Table 3.3 Health Personnel in service from 1995 to 1999

Human Resource in service	1995	1996	1997	1998	1999
Physicians	2,032	1,996	2,453	2,115	1,806
Health officers	631	683	776	715	792
Nurses	14,160	15,544	18,809	17,845	18,146
Health assistant	6,856	6,628	6,363	4,800	3,184
Para medicals	4,641	5,251	6,259	5,431	3,863
Health extension workers			2,737	8,901	17,653

Source: Health and Health related indicators, FHOH (2002/03-2006/07)

During the last five years there has been also a significant increase in the number of, health extension workers, nurses and health officers in service. In particular the number of health extension workers increased by 545 percent (from 2,737 to 17,653), nurse by 28 percent (from 14, 160 to 18, 146), and health officers by 25 percent (from 631 to 792). In contrary the number

of physicians, para medicals and health assistant in service declined by 11 percent, 17 percent and 53 percent respectively.

The distribution of the healthcare workforce is inequitable. There are significant regional differences: in general, the urban areas have a better health care worker to population ratio than rural areas.

Table 3.4: Regional Distributions of Health Workers, 1999 E.C

Region	Population	Physicians		Nurses		Health Extension workers	
		Number	Ratio	Number	Ratio	Number	Ratio
Tigray	4,449,000	59	75,407	2,094	2,125	1,235	3,602
Afar	1,418,000	10	141,800	208	6,817	64	22,156
Amhara	19,624,000	133	147,549	1,973	9,946	5,950	3,298
Oromia	27,304,000	149	183,248	3,278	8,329	5,553	4,917
Somali	4,444,000	53	83,849	476	9,336	135	32,919
Ben-Gumuz	640,000	6	106,667	397	1,612	86	7,356
SNNP	15,321,000	155	98,845	2,143	7,149	4,465	3,431
Gambella	253,000	4	63,250	156	1,622	47	5,383
Harari	203,000	41	4,951	277	733	39	5,205
Addis Ababa	3,059,000	118	25,924	1,201	2,547	0	-
Dire Dawa	412,000	31	13,290	226	1,823	79	5,215
Central, Private, NGO/ OGA		1,047		5,717		0	-
Total	77,127,000	1,806	42,706	18,146	4,250	17,653	4,369

Source: Health and Health Related Indicators, FHOM (2002/03-2006/07)

Among the predominantly rural regions, Afar and Somali fare the worst. Even though the most populated regions (Amhara, Oromia, and SNNP) have the largest number of health personnel, they also have among the lowest health personnel-to-population ratios, constrained by a limited number of health staff relative to their large population ratios, constrained by a limited number of health staff relative to their large population ratios. Oromia has the lowest physician-to-

population ratio while Harari has the largest physicians-to-population ratio compared to other regions. Afar and Gamebella had only one specialist in 1999. But prior to 1999 these regions have no specialist physicians at all, only have general practitioners. The Amhara region has the lowest nurse-to-population ratio while Harari region has the largest nurse-to-population ratio. In most publications of FMOH, it is indicated that there is an improvement in physicians-to-population ratios by including Health Officers in the calculations of physician-to-population ratio. Marginal increases in the number of physicians, including HOs, can be observed in most of the regions; however in this study HOs are not included for the calculations of physicians-to-population ratio.

The healthcare workforce is male-dominated. Most female health workers are located in urban areas. This is particularly true for doctors, HOs and even for nurses. Addis Ababa and Tigray are the only regions where females comprise more than 50 percent of the total health workforce. On the contrary, Benishangul Gumuz has the lowest percentage of female staff.

The staffing standard at various health facility levels is based on the new four-tire system. Since the transition to the four-tire system is not progressing as planned, current staffing represents a mix of the old and the new systems. The staffing norms and actual status of HSs is unclear, because these facilities were supposed to be phased out and replaced with HPs. However, regions have continued to construct HPs that offer both preventive and clinical services. HPs have been staffed with primary health workers (PHWs), community health assistants (CHAs) and traditional birth attendants (TBAs) in HPs. In most cases staffing standards do not meet the needs of the communities. For example, representatives from Oromia state that the minimum service level that any facility should offer is similar to what HSs currently offer. The current standard number of technical staff set for HCs and district and zonal hospitals (ZHs) does not allow for adjustments based on actual workload and utilization. Hence, some regions have adapted the standard to their own requirements or regional realities. For example, the MOH staffing standard only provides for HOs and general practitioners in district hospitals (DHs), surgeons and gynecologists are not included in the staffing requirements. However, DHs are expected to serve a population size of 250,000. Transport costs and travel time faced by poor patients to reach ZHs may serve as substantial barrier to utilizing needed health service. In order to address this issue, it is reported

that some regions (Tigray and Amhara) have surgeons and/or gynecologist as part of their standard staffing (World Bank, 2005)

In terms of administrative-to-health staff ratios, the numbers of administrative staff tends to be greater than the number of health workers. In addition to the large number of administrative and support staff, a considerable number of trained HWs occupy non-clinical positions.

Overall, there are staff shortages. There are large number of staff whose skills do not match the community health needs for both preventive and curative services, and often implementation staffing norms vary and needed health services delivery staff are assigned to administrative positions.

3.6 Problems related to Health Human Resources

Although the number of health facilities in Ethiopia has increased over time, constraints to improving health services lie primarily in the shortage of skilled human resources. Moreover, human resource lags behind the network plan and construction. As a result, health facilities remain un-staffed for considerable periods of time after their construction.

The shortage of health care workers is one of the largest shortages in the world, with health population ratios three to four times lower than in neighboring countries. The shortage is particularly severe at the lower levels of the health pyramid. The effect of such low ratio means that millions of children die from preventable disease, women risk death during childbirth, and elderly patients endure debilitating illness without treatment (World Bank, 2004).

The shortage of health care workers in the public health sector is exacerbated by high attrition, internal and out-migration of skilled health personnel.

Attrition rates for lower and middle level cadres have been steadily decreasing (HSDP I evaluation, 2003). In this evaluation paper it is indicated that attrition among physicians has been increasing, most likely due to the pull of the private sector market, as well as considerable brain drain.

Based on the annual population growth rate of 2.9 percent; an annual attrition rate of 3 percent among public service health staff; and an assumed continued expansion of output from health worker training schools of 2.8 percent; the HSDP Mid-Term Review estimates that adequate staffing levels will not be attained within 25 years. This is based on the following assumptions: the annual population growth rate is 2.9 percent; the annual attrition rate is three percent among public sector, and output from health worker training schools continue to increase by 2.8 percent.

As the private health sector has expanded over the years, it has attracted health staff from the public sector. This is interesting to note because based on existing policies, staff trained in public sector institutions are required to spend a certain number of years working in the public sector. However, in reality this appears not to be the case

In Addis Ababa more than 50 percent of the nurses and doctors are employed in the NGO/OGA/Private sector. In addition, many publicly employed health workers are also doing part-time work in the private sector. The phenomenon is not limited to Addis Ababa. In Afar about 30 percent of the health workers were involved in private/NGO sector work (World Bank, 2005).

The number of specialists and physicians who were working in state owned hospitals decreased in 67 percent and 11 percent respectively. The increasing number of physicians in private sectors largely affects the poor community. The state owned hospitals become even more crowded where there are only few physicians for lot patients (Genaye, 2006).

In order to obtain the best of both public and private sectors many health workers work in the public sector (morning) and private sector (afternoon and evenings). While this work division of the workday is commonly practiced, there is also some resentment about the unofficial privatization within the public sector in terms of informal payment or referral to a provider's private practice. These informal activities are officially not allowed, however, they are becoming increasingly accepted among employers and employees (Barr et. al., 2003).

Health workers are not only leaving for private sectors, the number of health workers especially physicians who leave the country has been a long rooted problem for the country. Even though, there is anecdotal data in the number of physicians and other health workers out-migrated, there is a clear indication about the intensity and magnitude of health workers migration.

Genaye (2006) indicated that like in many other poor countries nearly half of the medical school graduates leave the country for a better economic opportunity. Most of these physicians leave for African countries like Botswana.

New York Time (2004) reported that Ethiopia is turning to paraprofessionals, here known as health officers. The country producing only 150 physicians a year at public expense, but two thirds of them never show in public health required. Many physicians go abroad and to other African countries or practice in the private sector. More than 400 physicians now work in the United States and Canada.

Afrol News (2007) revealed that Ethiopia faces a major crisis in its health service as up to 80 percent of its physicians are fleeing the country. According to the report Ethiopia is the African country worst affected by brain drain. Currently there are more Ethiopian physicians working in the United States than in Ethiopia. Many Ethiopians also left for Botswana, South Africa and the Middle East. According to the study, more than 3,000 of the country's physicians have deserted leaving only 900 physicians with the challenge of attending to millions of people.

In a new database of health professionals' emigration, Clemens M., et. al, (2006) reported that there are 553 Ethiopian physicians living abroad. These physicians are found in UK (65), USA (420), France (16), Canada (30), Australia (9), Portugal (1), Spain (1), Belgium (2), and South Africa (9).

As it is observed from the public health system, the Ethiopian government is left with no option other than relaying on costly foreign experts to fill the gap.

In general the main problems related to human resource in the Health Sector are:

- Presence of several vacant posts at different levels of the health system
- Migration of skilled and experienced staff from the public sector
- Increasing burden of work on the existing small number of staff
- Lack of attention to study and solve the causes of migration of staff from the public sector

3.7 Human Resource Development Reform

The Human Resource Development (HRD) core process and the Human Resource Administration sub process have been selected for redesign through BPR. HRD core process has been subject to a redesign by a team of technical experts drawn from different partners and the FMOH. The redesign is expected to adequately address both the development (training) and retention of the health workforce of the country. Best practices explored from other countries will be adapted to the Ethiopian context. The team has currently finalized the assessment and the working on design options.

While the design of HRD core process is underway, some crucial strategies of the HRD are also under implementation. One of these strategies involves the accelerated production of key health professionals in greater number; that is, “flooding” strategy in HRD has been implemented in the training of health extension workers and health officers with significant results. The other strategy is the legal enforcement of mandatory service years on professionals after graduation and before eligibility to leave the public sector. Regulation has been passed to enforce that health workers graduating with first degree and above to serve a minimum of 2 years in the newly emerging regions and 4 years in the rest of the country before becoming eligible to leave the public sector. Whilst a comprehensive incentive package is under serious consideration in the HRD core process, improvements have been made on duty allowance payment for health workers to relieve the serious shortage and de-motivation of human resource in health institutions. New salary scale is also under consideration for senior level health professionals. In an attempt to fill the prevailing shortage in certain categories of health professionals, the FMOH is finalizing the necessary process to engage 32 health professionals from abroad (HSDP-III, 2006/07).

Chapter Four

Methodology

4.1. Methodological Review

Utility based on the relative attractiveness of competing alternatives from a set of mutually exclusive alternative is called discrete choice. The decision maker chooses the alternative with the highest utility. Characteristics of the decision-maker and of the choice alternatives determine the alternatives' utilities (Silberhorn, N. et., al, 2006).

In such qualitative response models, the variable to be explained, y is a random variable taking on a finite number of outcomes; in practice the number of outcomes is usually small. The leading case occurs where y is a binary response, taking on the values zero and one, which indicate whether or not a certain event has occurred (Wooldridge, J.M. 2003). In such a case, when the dependent variable takes 1 or 0 value, it is said to be dichotomous in nature. The dichotomous variable is a special case of the polychotomous or multiple categories of dependent variables.

Discrete choice models can be used to analyze and predict a decision maker's choice of one alternative from finite set mutually exclusive and collectively exhaustive alternatives. Such models have numerous applications since many behavioral responses are discrete or qualitative in nature. That is, they correspond to choices of one or another of a set of alternatives (Koppelman, S. F. and Bhat, C. 2006). The ultimate interest in discrete choice modeling lies in being able to predict the decision making behavior of a group of individuals. A further interest is to determine the relative influence of different attributes of alternative and characteristics of decision makers when they make choice decisions.

There are numerous different types of qualitative response models in different situation what they have in common is that, they are models in which the dependent variable is an indicator of a discrete choice, such as 'Yes or 'No' decisions. Details of proof for most of these models can be found in surveys done by Amemiya, T. (1981), Maddala, G. (1983), Dominich, T. and Mc Fadden. D (1975).

The values taken by the dependent variables are merely coding for some qualitative outcomes. None of these situations lends themselves readily to our familiar type of regression analysis. Nonetheless, in each case, we can construct models that link the decision or outcome to a set of factors. Our approach will be to analyze each of them in general frame work of probability models.

$$\text{Prob}(\text{event } j \text{ occurs}) = \text{prob}(Y=j) = (\text{relative effect, parameters}) \dots\dots\dots 4.1$$

The study of qualitative choice focused on appropriate specification, estimation and use of models for the probabilities of events, where in most cases, the event is an individual's choice among a set of variables.

4.2. Theoretical Framework

Most researches on the determinants of migration are based on the human capital theory. In that framework, people maximize their lifetime utility and migration is viewed as a human capital investment.

The human capital theory of migration considers migration decision as investment decisions where costs have to be borne today with an expectation of returns accrue overtime. In a basic human capital model, an individual compares the present costs of migration with the discounted present value of income gains (which can be considered as return to one's human capital accumulation overtime), if any, from each potential destination; and chooses the destination with the highest expected net gain (Rajbhandary, S. and Basu, K. 2006). That is, individuals migrate when the long terms returns exceed the moving cost (monetary and non monetary costs).

Household members migrate from areas with few opportunities to areas high opportunities predominately motivated by economic considerations. Lee, L. (1966) has divided these economic considerations in push and pull factors. Todaro, M. (1976) has highlighted the importance of expected rather actual earnings differential as a pull-factor. Todaro bases his analysis on a rational individual who calculates the expected gain of migrating on the bases of the expected wage at the destination and the costs involved in migrating. The neo-classical model view

migration as the result of cost-benefit analysis carried out at the individual level (Todaro, M. 1969; Harris, J and Todaro, M. 1970). Potential migrants compare differential income and cost of migrating and moves if the decision produces a positive present value. The fundamental implication of the neo-classical approach is that migration is driven by income differentials between different countries (places) by the cost of moving, considered separately by each individual, given their particular characteristics.

An abounded empirical literature has tried to identify the determinants of migration decision given that migration responds to spatial differences in utilities, mainly due to spatial differences in incomes net of migration costs. The approach consisted in estimating modified gravity models' of migration inspired by Newton's law of gravitation which depicted migrating flows as directly related to the size of populations at the origin and destinations and inversely related to distance. These modified gravity models also considered the effects of both push and pull factors both in the areas of origin and destination. Today, this approach broadly describes population movements have been replaced by finer micro-econometric methods (Somik, V. at el, 2006).

The typical migration equation at the micro level specifies a binary variable (moving versus staying) as a function of a set of repressors. This approach focuses on the decision to migrate of individuals originally located in a given area. In this perspective, migration choice can usually modeled either with a linear probability, a probit or a logit model (ibid).

The probit model can be employed to model the probability of migration as a set of independent variables consisting of choice characteristics as perceived by the individual. This model is derived from the random utility model, where it is assumed that individuals are rational, so they make choices that maximized their perceived utility subject to some constraints (Rajbhandary, S. and Basu, K. 2006).

The random utility model is:

$$Y^*_{ij} = \beta' X_{ij} + \varepsilon_{ij} \dots \dots \dots 4.2$$

$$Y_{ij} = 1 \text{ if } Y^*_{ij} = \max (Y^*_{i1}, Y^*_{i2}, \dots, Y^*_{im}) \dots \dots \dots 4.3$$

$$Y_{ij} = 0 \text{ otherwise} \dots \dots \dots 4.4$$

Where: Y^*_{ij} the level of indirect utility associated with the j th choice for the i th individual, X_{ij} is the vector attributes of the j th choice as perceived by the individual i , ε_{ij} is the residuals or stochastic part of the model and m is the number of alternatives in the choice set.

The probability that an individual i choose alternative j is

$$P_{ij} = \Pr oba(Y_{ij} = 1) = \frac{\exp(\beta' X_{ij})}{\sum_{k=1}^m \exp(\beta' X_{ik})} \dots\dots\dots 4.5$$

The estimated equation provides a set of probabilities for two choices. The probit model is estimated by maximum likelihood method.

4.3. Model specification

The Probit Model is used to identify factors that affect the probability of having decision and intention to migrate using separate estimations. In the sample of the survey there are two types of respondents. These are physicians who already migrated (either to private or USA) and physicians who do not yet decide to migrate. Since the number of respondents who already emigrated are very little it is found to be feasible to estimate the probability of decision not to migrate rather that decision to migrate. By doing so it is plausible to observe the probability of the decision to migrate conversely. In the survey, the non-migrant physicians are asked to reveal whether they have intention to migrate or not. Hence, the probit model is a single-bounded dichotomous choice model to be framed under the random utility model.

Haab, T. C. and McConnell, K.E (2002) quoted Hanemann (1984) having developed the basic model to analyse dichotomous responses based on the random utility theory. The central theme of this theory is that although an individual knows his/her utility certainly, it has some components which are unobservable from the view point of the researcher. As a result, the researcher can only make probability statement about respondent's 'yes' or 'no' responses or decisions.

The indirect utility function for the j^{th} respondent can be specified as follows:

$$U_{ij} = U_i(P_j, Q_j, X_j, \varepsilon_{ij}) \text{-----} 4.6$$

Where P_j = vector of pushing factors

Q_j = vector of pulling factors

X_j = vector of individual characteristics and attributes

$i=1$ denotes the utility level with migrating and $i=0$ with not moving

ε_{ij} = random component of the given indirect utility

The physician is deciding to migrate if and only if the following conditions are satisfied.

$$U_{1j}(P_j, Q_j, X_j, \varepsilon_{1j}) > U_{0j}(P_j, Q_j, X_j, \varepsilon_{0j}) \text{-----} 4.7$$

For the researcher, however, the random components of preferences cannot be known and he/she can only make probability statement of 'yes' or 'no' responses. Thus, the probability that the respondent says 'yes' is the probability that he/she thinks that he/she is better off by deciding to migrate. For individual j , the probability is:

$$P(\text{Yes}) = [U_{1j}(P_j, Q_j, X_j, \varepsilon_{1j}) > U_{0j}(P_j, Q_j, X_j, \varepsilon_{0j})] \text{-----} 4.8$$

This probability statement provides an intuitive basis to analyse binary responses. Assuming the utility function is additively separable in deterministic and stochastic preferences:

$$U_i(P_j, Q_j, X_j, \varepsilon_{ij}) + \varepsilon_{ij} \text{-----} 4.9$$

Given the additive specification of the utility function the probability statement for respondent j becomes:

$$P(\text{Yes}) = [U_{1j}(P_j, Q_j, X_j) + \varepsilon_{1j} > U_{0j}(P_j, Q_j, X_j) + \varepsilon_{0j}] \text{-----} 4.10$$

This probability statement is the point of departure for the linear utility function in a set of covariates, which is assumed by our empirical model.

The Probit model can be defined as

$$T_i = \beta_0 + \beta' X_i + \varepsilon_i \text{-----4.11}$$

Where:

- β' is vector of parameters of the model
- X_i is vector of explanatory variables
- ε_i (the error term) is assumed to have random normal distribution with mean zero and common variance δ^2 (Greene, W. H. 1993).
- T_i =unobservable individuals' actual migration decision T_i is simply a latent variable. What we observe is a dummy variable $dtmg$ (migration decision), which is defined as:

$$dtmg_i = 1 \text{ if } T_i \geq \beta_i^* \text{-----4.12}$$

$$dtmg_i = 0 \text{ if } T_i < \beta_i^* \text{-----4.13}$$

The probability of a “yes” response, or a “no” response, $p^{Y \text{ or } N}(\beta_i^*)$ can be set in terms of random utility maximization chosen by the respondent. It is clear from the random utility framework that the individual’s migration decision is a random variable from the point of view of the researcher. Thus, while the individual knows his/her own maximum $dtmg$, T_i , to the observer it is a random variable with a given cumulative distribution function (cdf) denoted by $G(T_i; \theta)$ where θ represents the parameters of this distribution, which are to be estimated on the basis of the responses to the survey. Then, following the work of Hanemann (1984), the response probabilities related to the underlying migration decision distribution are:

$$P^Y \equiv p \{ \text{yes to } \beta_i^* \} \equiv p \{ \beta_i^* \leq T_i \} = G(\beta_i^*; \theta) \text{-----4.14}$$

$$P^N \equiv p \{ \text{no to } \beta_i^* \} \equiv p \{ \beta_i^* > T_i \} = 1 - G(\beta_i^*; \theta) \text{-----4.15}$$

The resulting log-likelihood function for the responses to a survey using the single –bounded format is

$$\ln L(\theta) = \sum \{ d_i^Y \ln G(\beta_i^*; \theta) + d_i^N \ln [1 - G(\beta_i^*; \theta)] \} \text{-----4.16}$$

Where $d_i^Y=1$ if the i^{th} response is yes and 0 otherwise, while $d_i^N=1$ if the i^{th} response is no and 0 otherwise.

NB: All of the above specification also applied for the probability of intention to migrate (intm).

4.4. Survey Design and Administration

To do this research Addis Ababa and USA were chosen. Addis Ababa was selected to be the study area since there are relatively more number of physicians compared to other parts of the country. Similarly USA is a host to a large number of emigrated Ethiopian physicians. Even if physicians migrated to different parts of the world including Africa, their final destination is expected to be United States of America. That is, physicians flight to other countries temporarily; they use these countries as a transition for their final destination, USA.

Five general public hospitals and five specialized public hospitals are available in Addis. Each of the public hospitals has different attributes and thus it is found to be difficult to apply random sampling to select among five general hospitals. For example Gandhi hospital don't provide other health care services except labour, Ras Desta hospital don't have patient flow because of its limited service type and little number of physicians, and Zewditu hospital don't have physicians except residents and is at the verge of closing down.

Hence the researcher used purposive sampling technique to select the samples. Menilike II hospital and Yekatit 12 hospital are chosen from the general public hospitals considering their diversified services, relatively sufficient number of physicians, and patient flow. Likewise, from the specialized public hospitals Tikur Anbessa Hospital is selected.

Among private hospitals which are found in Addis Ababa Hayait General Hospital and Betezata General Hospital are selected purposively. Since almost all private hospital administrators are not willing to permit accessing their physicians to fill out the questionnaire, these hospitals are selected due to their administrators' willingness. Moreover Hayait and Betezata hospitals have service diversity.

In USA the survey is conducted in two states Washington DC and North Carolina. This is due to the fact that the researcher's contact persons are living in these two states. The contact persons are individuals who assist the researcher by finding physicians who will fill out the questionnaire.

Three types of questionnaires were prepared for the three types of respondents. That is, the first questionnaire is prepared for the remaining physicians (physicians working in the public hospital), the second questionnaire type for private sector physicians (physicians who migrated from public to private sector), and the third one for those working in USA (physicians who emigrated from the public health sector to USA health care system).

After designing the draft questionnaires, pre-testing of the questionnaire was done through discussion with some physicians. This pre-testing is made in order to make some possible modifications in the design of the questionnaire for the main survey. Based on the pre-tests some adjustments were made in the contents and structure of the questionnaire.

Physicians are randomly chosen from each of the sampled hospitals to fill-out the questionnaires. The physicians are selected based on the following four inclusion criteria:

1. If the physician is working in public sector (remaining physician) he/she should serve the public sector at least for two years.
2. If the physician is working in private sector he/she must worked in the public health system at least for one year and in the existing (private) sector at least for two years.
3. If the physician is working in USA he/she should had worked in the public health sector of Ethiopia at least for one year and in the USA health care system at least for two years
4. All of the physicians should learn in the Ethiopian Medical Universities at least for their fist degree.

Based on the above criteria the questionnaires were distributed on January 2008 for 80 public sector physicians, 35 private sector physicians and 35 USA physicians. For public and private physicians the questionnaire is distributed and collected directly by contacting the physicians in their respective hospitals. But for USA physicians the internet is used to distribute and collect the questionnaire. That is, the researcher's contact persons select the physicians as per the criteria stated and the researcher send the questionnaire directly to the selected physicians or to the

contact persons through their e-mail address. Then they (either the physicians themselves or the contact persons) returned back the filled out questionnaire through the researcher's e-mail address. Out of 150 questionnaires 63 questionnaire from public sector physicians, 20 questionnaires from private sector physicians and 22 questionnaires from USA physicians were filled out and returned until April 2008.

Finally, the data collected was coded and prepared for descriptive analysis using SPSS 15 and STAT 9 for econometric analysis.

4.5. Description of Variables and their Hypothesized Sign

Dependent variables

The dependent variables are two: 'Migration Decision' and 'Migration Intention'. These dependent variables are dichotomous:

Migration Decision (dtmg) =1 Decision not to migrate

0 Decision to migrate

Migration Intention (intm) =1 Intention to migrate

0 No intention to migrate

Since respondents who already emigrated are small in number (20 in private and 22 in USA) it is not feasible to estimate the probability of 'decision to migrate'. Hence by estimating the probability of decision not to migrate attempt is made to see the probability of decision to migrate conversely.

Explanatory variables

For the case of internal migration the explanatory variables are grouped into three. These groups are individual characteristics; push variables and pull variables. While for out-migration the explanatory variables are categorized into five. These categories are individual characteristics, endogenous push variables, endogenous pull variables, exogenous push variables, and exogenous pull variables.



Individual characteristics

Individual characteristics of the respondents are Sex, Age, Marital status, Educational level and Work experience of the physician.

Sex (sex)

This is a dummy variable taking 1 if the physician is male; 0 otherwise. Given the fact that women have high traditional values about their role in the family and society in our country, female respondents are expected to be more willing to decide not to migrate than their male counterparts. While male physicians are expected to have more intention to migrate compared with their female counterparts. Hence, for decision to migrate sex has negative sign while for intention to migrate it has a positive sign.

Age (age)

Age (measured in number of years) of the physician is expected to be directly related to decision not to migrate since as the physician gets older and older he/she wants to be stable in his/her workplace rather than emigrating elsewhere. But age is inversely related to the intention to migrate. Because, as the younger physicians are more informed to the availability of opportunities elsewhere and are always in search of new opportunities they have the potential of intention to migrate compared with older physicians. Thus for decision not to migrate age has a positive sign but for intention to migrate it has a negative sign.

Marital status (mst)

This is a dummy variable taking 1 if the respondent is married; 0 otherwise and is expected to be positively related to decision not to migrate and negatively associated with intention to migrate. Married physicians are likely to have a stable family hence they do not want to migrate for the sake of not disturbing their already established family. But unmarried physicians have intention to migrate because they have no family that hinders them from having intention to migrate.

Educational level (edul)

Educational level is a dummy variable taking 1 if the respondent's educational level is general practitioner; 0 other wise (specialists and above). If the physician is a general practitioner the decision not to migrate increases while the intention to migrate decreases. Because, general practitioner may think that their level of education is not fulfilled the level required by health sector employers outside the public health sector. So they decide not to migrate and no intention to migrate. Therefore, for decision not to migrate the sign of this variable is expected to be positive while for the intention to migrate its sign is positive.

Push Variables for Internal Migration

Push factors are factors that existed in the public health system and have ability to force the physician to migrate. Push variables are Low salary and remuneration, Heavy workload, Lack of professional resources, Unavailability of the supply of drugs, Poor quality of management, and Lack of promotion opportunities.

All of these variables are measured as dummy. Each variable takes 1 if the respondent believes the variable has substantial influence for migration; 0 otherwise. The study expects that all of these push factors have negative contribution for the probability of decision not to migrate but positive contribution for the probability of the intention to migrate.

Pull Variables for Internal Migration

Pull factors are factors that are found in the private sector and attract the physician to migrate. These pull factors are Better salary and remuneration, Reasonable workload, Improved professional resource, Better supply of drugs, and Better promotion opportunities.

Every pull factor is measured as dummy. The variables take 1 if the respondent acknowledges the variable's contribution for migration is considerable; 0 otherwise. Each of these pull variables are expected have a negative influence on the probability of the decision not to migrate, but a positive influence on the probability of the intention to migrate.

**Table 4.1 Summary of definition and expected sign of variables used in the regression
(Internal Migration)**

Variable	Definition	Measurement	Expected Sign	
			Decision not to migrate	Intention to migrate
	PERSONAL/DEMOGRAPHIC FACTORS			
sex	Sex	as dummy variable	-	+
age	Age	in years	+	-
mst	Marital Status	as dummy variable	+	-
edul	Educational level	as dummy variable	+	-
	PUSH FACTORS			
ilsal	Low salary and remuneration	as dummy variable	-	+
ihwl	Heavy workload	as dummy variable	-	+
ilpr	Lack of professional resources	as dummy variable	-	+
iuss	Unavailability of the supply of drugs	as dummy variable	-	+
ipmgt	Poor quality of management	as dummy variable	-	+
	PULL FACTORS	as dummy variable		
ibsal	Better salary and remuneration	as dummy variable	-	+
irwl	Reasonable workload	as dummy variable	-	+
impr	Improved professional resource	as dummy variable	-	+
ibss	Better supplies of drugs	as dummy variable	-	+

Endogenous Push Variables for Out-migration

Endogenous push variables refer to variables which are found in the public health sector; that forces physicians to migrate out. These variables are low salary and remuneration, de-motivation by poor health care infrastructure, resources and facilities, poor management of the health service, unprotected working environment and high occupational risk, heavy workloads, decline in health service, lack of provision of incentives, lack of promotion opportunities, lack of opportunities for education, upgrading and training.

These variables are measured as dummy. Each variable takes 1 if the respondent considers the variable as having immense influence for migration and 0 otherwise. The study expects the sign of these variables for the probability of decision to migrate to be negative while for the probability of the intention to migrate positive.

Endogenous Pull Variables for Out-migration

Endogenous pull variables refer to variable which existed in the health care system of overseas that attract physicians to migrate. Endogenous pull factor are better salary and remuneration, attractive fringe benefits, a more pleasant and caring working environment, availability of improved health facilities, infrastructures and resources, and provision of incentives.

Endogenous pull variables are measured as dummy. And every variable takes 1 if the respondent regards it as the contribution of the variable for migration is enormous; 0 otherwise. It is expected that the probability of decision not to migrate negatively affected by these endogenous pull factors while the probability of intention to migrated positively affected by these factors.

Exogenous Push Variables for Out-migration

Exogenous push variables refer to variables which are found outside the public health system but in the country (Ethiopia) as a whole. These variables are low quality of life and living condition, pessimistic view about the future economic situation, low value and respect given to physicians, political repression, violence, crime, war, and conflict.

All of these exogenous push factors measured as dummy. Each of these variables takes 1 if the respondent rates the variables as highly contributing to migration of physicians and 0 otherwise. The expectation of the study is that exogenous push factors negatively affect the probability of decision to migrate but positively affect the probability of the intention to migrate

Exogenous Pull Variables for Out-migration

Exogenous pull variables refer to variables that are not directly related to the health system of overseas but otherwise. These variables are wish to travel and see the world, to join friends and

relatives abroad, family related matters, quality of life and comfortable standards of living, political freedom and stability, and a safer and peaceful social environment.

Every exogenous pull factors are measured as a dummy, and they take 1 if the respondent believes the impact of these variables for migration is immense; 0 otherwise. It is expected that these factors have negative contribution for the probability of decision not to migrate and negative contribution for the probability of the intention to migrate.

Table 4.2 Summary of definition and expected sign of variables used in the regression (Out- Migration)

Variable	Definition	Measurement	Expected Sign	
			Decision not to migrate	Intention to migrate
	PERSONAL/DEMOGRAPHIC FACTORS			
sex	Sex	as dummy variable	-	+
Age	Age	in years	+	-
mst	Marital Status	as dummy variable	+	-
edul	Educational level	as dummy variable	+	-
	ENDOGENOUS PUSH FACTORS	as dummy variable	-	+
olsal	Low salary and remuneration	as dummy variable	-	+
ophi	Feeling de-motivated by poor health care infrastructure, resources and facilities	as dummy variable	-	+
opmgt	Poor management of the health service	as dummy variable	-	+
ouwen	Unprotected working environment but high occupational risk	as dummy variable	-	+

ohwl	Heavy workloads	as dummy variable	-	+
olinc	Lack of provisions of incentives	as dummy variable	-	+
oledu	Lack of opportunities for education, upgrading and training		-	+
	ENDOGENOUS PULL FACTORS		-	+
obsal	Better salary and remuneration	as dummy variable	-	+
ofri	Attractive fringe benefits	as dummy variable	-	+
oplwe	A more pleasant and caring working environment	as dummy variable	-	+
oimfa	Availability of improved (sophisticated) health facilities, infrastructures and resources	as dummy variable	-	+
otsav	To save money to buy car and to build a house		-	+
obedu	Better quality and high opportunity for education, training and upgrade		-	+
ogexp	Desire to gain experience		-	+
	EXOGENOUS PUSH FACTORS			
olqli	Low quality of life and living condition	as dummy variable	-	+
opfe	Pessimistic about the future economic situation	as dummy variable	-	+
ovalp	Value and respect given to physicians	as dummy variable	-	+
opol	Political repression	as dummy variable	-	+
ovio	Violence and crime	as dummy variable	-	+
owar	War and civil conflict	as dummy variable	-	+

		variable		
	EXOGENOUS PULL FACTORS	as dummy variable		
owish	Wish to travel and see the world	as dummy variable	-	+
ofrie	To join friends and relatives abroad	as dummy variable	-	+
ofami	Family related matters	as dummy variable	-	+
oqlif	Quality of life and comfortable standards of living	as dummy variable	-	+
opolf	Political freedom and stability	as dummy variable	-	+
ossen	A safer and peaceful social environment	as dummy variable	-	+

Chapter Five

Results and Discussions

This chapter deals with the findings of the survey. As described earlier the study is based on primary data. The study included three types of respondents. These were 20 physicians working in a private hospital, 22 physicians working in the USA, and 63 remaining physicians in public hospitals. Herein the information, which was obtained from these respondents through self administered close and open-ended questionnaire, will be described, discussed and analyzed.

5.1. Descriptive Results and Discussions

In this section the respondents' characteristics, causes of migration, intentions to migrate, return and stay will be described and discussed. Moreover, the trend of physicians' migration and its possible effects on service delivery will be described and discussed.

5.1.1. Characteristics of the respondents

Age

The respondents fall under the age range of 22 and 62 years, the mean age being 38 years. The age profile of the sample with the place of employment shows that the mean age of the emigrating physicians both in private sector and USA is 43 years. While remaining physicians in the public sector are with the mean age of 35 years. The mean age for physicians employed in private sector and USA is 42 and 45 years respectively. This shows that physicians who are remaining in the public sector are younger than physicians who already emigrated.

Gender

From the total respondents, 25 (23.8%) respondents were female while 79 (76.7%) were male. Again segregating gender of the respondents by place of employment, the remaining physicians in the public hospital comprises 25.4 % female and 74.6% male. Emigrating physicians in the

private hospitals comprises 15% female and 85% male. 72.7% of the emigrating physicians in USA were male while the remaining 27.3% were female. From the total physicians emigrated 21.4% were female and 78.6% were male.

Martial Status

Out of the total respondents 35.9% were unmarried while 64.1% were married. The proportion of married and unmarried was equal in the remaining physicians in the public sector. While martial status of the total emigrating physicians shows that 14.6% of the physicians were unmarried and 85.3 % were married.

Motivating factor to choose medical field

Most (31%) of the respondents acknowledged that they choose the medical field because it is a well respected field. 27% of the respondent choose the field because they wanted to serve the nation and 8% of joined the medical field for both reasons.16% wanted to be physicians because the field is their special aptitude and 2% of the respondents said that they want to be a physician for three reasons. These reasons are special aptitude, the profession is a well respected career and to serve the nation. While 10.6% give other reason like family influence, by luck, high score of ESLCE, job opportunity etc., for their decision to be a physician.

Educational Qualification

Breakdown by educational qualification shows that from the total respondents 45 (43.7%) were specialists and above, while 58 (56.3%) were general practitioners. Out of the remaining physicians in the public hospital 36.5% have a qualification of specialists and above and 63.5% were general practitioners. In contrast to this, from the emigrating physicians 57.1% were specialists and above while 42.9% were general practitioners. This indicated that the emigrated physicians have better qualification than the remaining physicians.

Work Experience

The work experience of the total respondents range from 2 to 29 years, and the average year of experience is 10 years. Classifying the respondents based on who is remaining in public hospital

private hospitals comprises 15% female and 85% male. 72.7% of the emigrating physicians in USA were male while the remaining 27.3% were female. From the total physicians emigrated 21.4% were female and 78.6% were male.

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and who has already migrated indicates that the remaining physicians on average have 8 years of experience while the total emigrated physicians have a work experience of 13 years on average. These facts pointed out more experienced physicians fly out from the public health sector. The physicians who migrated to USA had a work experience abroad between 2 and 16 years and on average they had 9 years of work experience outside Ethiopia.

5.1.2. Trends of Physicians' Migration

There is no documented evidence that shows what the trend of physicians' migration looks like. The author of this thesis tried to calculate the attrition rate of physicians but due to lack of registered data, which shows the inflow and outflow of physicians', calculation of attrition rate could not be realized. Hence in this thesis only rough estimate is made based on the information gathered from respondents.

According to private sector respondents the migration of physicians from private to public sector is increasing. Out of 20 physicians 18(90%) confirmed this fact. Only 2(10%) of them revealed that the trend is decreasing.

Data gathered from physicians working in USA shows that the migration of physicians to USA generally increased. Among 22 respondents from USA, 16 of them indicated this fact. In terms of degree of increase, 72.7 percent of the respondents affirmed the migration of physicians increasing at an increasing rate while 27.3 percent of the respondents said that it is increasing at a decreasing rate.

Similarly, the information collected from the remaining physicians in the public hospitals indicates the number of physicians who had migrated to private as well as abroad is increasing from time to time.

In the questionnaire the remaining physicians were asked to roughly estimate how many of their colleagues lost from the public sector. For this question 12.7 percent of the respondents could not estimate but said a large number of their colleagues left the public sector. The rest 87.3 percent

of the respondents estimated the number of physicians drained out from the public sector ranging from 1 to 40. The total number of physicians who emigrated was put at more than 750 as estimated by the remaining physicians.

Attempt was made to relate the number of years of experience the remaining physicians worked in the public hospital and the number of their colleagues who left the public hospital. The remaining physicians work experience in the public sector runs from 2 up to 29 years. But for analysis purpose the years of experience was divided into five groups. The first group includes years of experience less than or equal to 5 years, the second group comprises years of experience between 6 and 10 years, the third group contains years of experience between 11 and 15 years, the fourth group incorporates years of experience between 16 and 20; and the fifth group includes years of experience greater or equal to 21 years. The following table; table 5.1 shows the remaining physicians' service year in public hospital and the estimated number of their colleagues who left the public sector by range and average.

Table 5.1 Rough estimate of number of physicians who emigrated

Public sector service year of the remaining physicians	No. of respondents	Total number of emigrated physicians	Range	Average
			Number of physicians left the public sector	Number of physicians left the public sector
Group 1 (<=5 years)	23	234	Between 1 and 20	10
Group 2 (6 to 10 years)	13	184	Between 5 and 35	14
Group 3 (11 to 15 years)	8	65	Between 5 and 16	10
Group 4 (16 to 20 years)	7	135	Between 5 and 35	19
Group 5 (>= 21)	5	132	Between 20 and 40	26

Source: Own computation from the survey

Most of the respondents fall under group one. This group estimated that physicians who left the public sector ranging from 1 to 20. The average number of physicians that departed from the sector was 10. This indicates on average a physician who serves the public sector between 2 and 5 years has lost 10 of his/her colleagues. Group two's estimated number of physicians quitted from the public sector was between 5 and 35. On average a physician in this group has missed 14

of his/her colleagues. In the third group there are eight respondents who estimated the number of their emigrated colleagues. According to their estimation, the number of physicians who left the public sector range from 5 to 16 and on average they have lost 10 of their colleagues. The respondents in the fourth and fifth group revealed that the estimated physicians who left the public sector fall between 5 -35 and between 20 - 40 years, respectively. On average a physician who serves the public sector from 16 to 20 and greater or equal to 17 years has lost 19 and 26 of his/her colleagues, respectively.

Out of the respondents who could not estimate 60 percent of them belong to group one. And the rest 40 percent belong to third group. Most of the Respondents in group one explained that it is difficult to estimate the number of physicians who left the public sector since the turnover of physicians is very high in public setting currently.

Generally, all respondents confirmed that the attrition and turnover of physicians from the public sector reach on its peak especially for the last three years. It is also indicated in table 5.1 out of the total 750 emigrated physicians estimated by the remaining physicians 234 of them left the public sector during the last five years.

5.1.3 Causes of Migration

5.1.3.1 Motivating Factors for Internal Migration

For identifying the push and pull factors behind the internal migration and movement of physicians, the respondents (20 physicians from private hospitals and 63 from public hospitals) were asked to rate various factors which have been included in the questionnaire. The responses are recorded on a five-point scale, provided to the respondents, to weigh the relative importance of each factor. Weights were given to each factor according to the following pattern. 'Very high' for factors that played an extremely important role in internal migration, 'high' for factors which played important role for migration, 'medium' for factors contributing moderately important role, but not having enough intensity/capacity to make substantial alteration in the decision to migrate,

'low' for factors that do not have any influence for physicians migration, and 'no idea' for factors not identified by physicians whether they have contribution for migration or not.

Moreover, the respondents were asked to identify and explain factors that they considered important for migration but not included in the list of the questionnaire.

Table 5.2 and Table 5.3 provide a list of push and pull factors along with the respondents' inclination in terms of importance (weight) given to each factor.

Push factors

Most (74.7%) of the respondents, 62 out of 83, stated that low salary and remuneration played a 'very high' role for physicians' migration, and 13 (15.7%) revealed it has a 'high' importance. This implies low salary and remuneration is a major motivating factor for internal migration. As the respondents made clear the monthly salary for a physician working in a government hospital was very low compared to that of private. Even a diploma holder in other medical discipline working in private institutions earns much higher. So it is hard to take this fact for granted for the physician studying for 7 years in undergraduate and carrying a huge responsibility in saving human lives.

**Table 5.2 Rating of push factors significance for migration by respondents
(Number and Percentage)**

Push factors in Public Sector	Level of significance											
	Very High		High		Medium		Low		No Idea		Total	
	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age
Low salary and remuneration	62	74.7	13	15.7	4	4.8	3	3.6	1	1.2	83	100
Heavy workloads	9	10.8	7	8.4	26	31.3	35	42.2	6	7.2	83	100
Lack of professional resources	14	16.9	28	33.7	18	21.7	17	20.5	6	7.2	83	100
Unavailability of the supply of drugs and equipments	13	15.7	28	33.7	21	25.3	18	21.7	3	3.6	83	100
Poor quality of management	20	24.1	17	20.5	21	25.3	20	24.1	5	6.0	83	100
Lack of promotion opportunities	21	25.3	9	10.8	13	15.7	33	39.8	7	8.4	83	100

Even though heavy workloads in the public hospitals seem to be a factor that highly contributes for physicians' migration, the survey doesn't confirm this assumption. Large proportion (42.2%) of the respondents stated that heavy workloads has 'low' contribution for physicians migration, 31.3% said it has 'medium' importance. In contrast to this 10.8% and 8.4% of the respondents affirmed that heavy workload has 'very high' and 'high' role for physicians' migration. The 'low' weight given by the respondents for heavy workloads may arise from the existence of proportional number of patients in both public and private settings around cities like Addis.

Lack of professional resources is considered to be 'very high' contributing factor for physicians' migration by 16.9% of the respondents. 33.7 % of the respondents revealed that lack of professional resources is a 'high' push factor for physicians' migration. Contrary to this, 20.5% of the respondents considered lack of professional resources have a 'low' involvement in physicians' migration.

Unavailability of the supply of drugs and equipments is also one of the significant factors for migration. In the study, 33.7% and 15.7% the respondents disclosed this factor is a 'high' and 'very high' pushing factor, respectively. But 25.3% of physicians stated it is a 'medium' pushing factor and 21.7% declared that unavailability of supply of drugs and equipment played a 'low' role for migration.

Respondents explained in public sectors, despite all their high level of training and capacity, most of the time became incapable to help the needy mainly because of lack of supplies and equipment. This damages their career and forced them to migrate.

As it is presented in Table 5.2, the proportion of physicians who rated poor quality of management as a 'very high', 'high', 'medium' and 'low' push factor is almost equivalent. 24.1% of the respondents ranked it is a 'very high' contributing factor, 20.5% rated 'high'. While 25.3% and 2% declared that it played a 'medium' and 'low' role for migration respectively. 6% of the respondents did not have any idea about the influence of this factor. Those who claimed that poor

quality of management is the 'very high' and 'high' pushing factor explained in public sector there is absence of right to change place of work and unfair work assignment

Lack of promotion opportunities in public health system were considered has 'low' contributing factor for physicians' migration by 39.8% of the respondents. This factor rated as a 'medium' pushing factor by 15.7% of the respondents. On contrary to this, 25.3% of the respondents revealed that lack of promotion opportunities have played a 'very high' role for physicians' migration and 10.8% of the respondents confirmed the role of this factor for migration is 'high'.

Apart from the above listed factors the respondents stated other factors. The main other factor stated is ignorance and low outlook given for the public health sector and its physicians. The respondents stressed the public health system is given little attention by the government and physicians in public health system are not respected and acknowledged by the government officials. They stressed that the government has negative attitude towards physicians. Next to this factor, the respondents revealed that in public sector there is lack of opportunity for postgraduate training, upgrading and other training. As the respondents explained opportunity of getting postgraduate studies which are practiced and not practiced in Ethiopia is very little. Moreover, there is absence of professional training to follow the current development. The other pushing factor mentioned by the respondents is the negative propaganda on government run mass-media.

Pull factors

Pull factors for migration in the private health sectors are merely the opposite of push factors mentioned above. In the following table, the respondents have rated the significance of these factors for migration.

**Table 5.3 Rating of pull factors significance for migration by respondents
(Number and Percentage)**

Pull factors in Private Sector	Level of significance											
	Very High		High		Medium		Low		No Idea		Total	
	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age
Better salary and remuneration	62	74.7	13	15.7	4	4.8	3	3.6	1	1.2	83	100
Reasonable workloads	10	12.0	6	7.2	29	34.9	32	38.6	6	7.2	83	100
Improved professional resources	14	16.9	28	33.7	19	22.9	16	19.3	6	7.2	83	100
Better supplies of drugs and equipments	16	19.3	27	32.5	20	24.1	17	20.5	3	3.6	83	100
Better promotion opportunities	15	18.1	10	12.0	15	18.1	36	43.4	7	8.4	83	100

Source: Own computation from the survey

Likewise low salary and remuneration found to be the most important pushing factor for physicians' migration the better salary and remuneration is the major pulling factor. As it is observed in table 5.2, 74.7% of the respondents rated better salary and remuneration in the private sector is the 'very high' pulling cause for migration. 15.7% of the respondents revealed that this factor has 'high' significance for causing migration.

In the same way, heavy workloads in the public sector couldn't be a considerable factor for physicians' migration; reasonable workloads in the private sector were not the great pull factor. Rather 38.6% of the respondents confirmed that it has a 'low' input for physicians' migration and 34.9% of the respondents also indicated its role for pulling physicians is 'medium'.

The pulling capacity of improved professional resources in the private sector is rated 'very high' by 16.7% of the respondents and 'high' by 33.7% of the physicians. While, 22.9% and 19.3% of the respondents ranked this factor as 'medium' and 'low' respectively.

Better supplies of drugs and equipments in the private sector is ordered a 'very high' attracting factor by 19.3% of the respondents and 32.5% of the respondents ranked the part of this factor is 'high'. Whereas 24.1% and 20.5% of the respondents revealed that involvement of this factor to pull physicians is 'medium' and 'low' respectively.

The respondents also indicated that professional resources, drugs and equipments in the private sector are better than public. Hence has pulling capacity but, according to the respondents, the availability of professional resource, drugs and equipment in private sector cannot be considered the best one.

As it observed from table 5.2, 43.4% of the respondents acknowledged that better promotion opportunities has 'low' role to attract physicians and 18.1% of the respondents confirmed its contribution is 'medium'. But 18.1% and 12% of the respondents ranked the role of this factor 'very high' and 'high' respectively.

The other pulling factors mentioned by the respondents, which were not in the list, are the existence of private hospitals in big cities, excellent patient and physicians' relationship, flexible working hours and better workflow.

5.1.3.2 Motivating Factors for Out-migration

This section tries to find out the causes of out-migration. It provides a detailed analysis about the causes of out-migration based on the information gathered from respondents. Basically factors motivated physicians to migrate are divided in to two, push and pull. Further these factors classified as endogenous push-pull factors and exogenous push-pull factors.

The same manner in section 5.3.1 respondents were asked to rate a series of potential motivating factors for physicians out-migration on a five-point scale. And also they were required to explain the role of these factors for migration.

Push factors

Endogenous push factors

Endogenous push factors are factors that exist in the public health sectors. The following table shows these endogenous factors and the corresponding rates given by the respondents.

Table 5.4 Rating of endogenous push factors significance for migration (Number and Percentage)

Endogenous Push Factors	Level of Significance											
	Very High		High		Medium		Low		No Idea		Total	
	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age
Low salary and remuneration	75	88.2	8	9.4			2	2.4				
Feeling de-motivated by poor health care infrastructure, resources and facilities	41	48.2	32	37.6	9	10.6	2	2.4	1	1.2	85	100
Poor management of the health service	50	58.8	23	27.1	9	10.6	3	3.5				
Unprotected working environment but high occupational risk	35	41.2	19	22.4	21	24.7	10	11.8			85	100
Heavy workloads	31	36.5	14	16.5	17	20.0	20	23.5	3	3.6	85	100
Decline in health service	34	40.0	27	31.8	10	11.8	6	7.1	8	9.4	85	100
Lack of provisions of incentives	62	72.9	18	21.2	2	2.4	2	2.4	1	1.2	85	100
Lack of promotion	30	35.3	19	22.4	22	25.9	12	14.1	2	2.4	85	100
Lack of opportunities for education, upgrading and training	46	54.1	18	21.2	15	17.6			6	7.1	85	100

Source: Own computation from the survey

As it is presented in Table 5.3 low salary and remuneration in public health sector is found to be the most influential factor for physicians' migration. Similar to internal migration, out of the total 85 respondents 75 (88.2%) of them confirmed that low salary and remuneration is the 'very high' push factor and 9.4 % of the respondents rated the degree of significance of this factor as 'high'. But only 2 (2.4%) respondents revealed that this factor persuading physicians to migrate is 'low'. The respondents revealed that most physicians couldn't fit in the 'middle class' of the population after years of hard work both at school and then at the public hospital. The salary paid in the public sector is insufficient to fulfill basic needs such as owing of house. They also pointed out that people in other professions get better than physicians in the public sector.

The other factor considered as a main pushing factor by the respondents is feeling de-motivated by poor health care infrastructures, resources and facilities in the public health system. Forty-one respondents, 48.2%, acknowledged that this factor played a 'very high' role to motivate physicians for migration. Moreover, 32(37.6%) respondents rated this factor as a 'high' influential factor for the exodus of physicians. While 10.6% of the respondents ranked this factor has a 'medium' power to force physicians to migrate. Respondents stated that because of lack of these infrastructures, resources and facilities physicians become handicapped and lack of hope to serve their patients. They said that in public centers helping the poor patients 100 percent is impossible. Hence, become dissatisfied with the incomplete treatment they rendered to patients and finally forced to migrate.

Poor management of the health service is considered to be a 'very high' and 'high' contributing factor by 58.8% and 23% of the respondents respectively. These respondents stressed that there is the intensification of bad or poor management in the public health systems. This is expressed in terms of unethical experiences around the hospitals, very poor bureaucratic administration, favoritism for the well connected and abandoning the poor, no order, no accountability for negligence, etc. In general the public sector is not well planned and lacks follow up. Where as the factor's influence for migration rated as 'medium' and 'low' by 10.6% and 3.5% of the respondents respectively.

Unprotected working environment but high occupational risk is regarded as a 'very high' contributing factor for emigration of physicians by 35(41.2%) of the respondents and as 'high' by

19(22.4%) of the respondents. Whereas 21(24.7%) of the respondents rated the position of this factor as 'medium' and 10(11.8%) as 'low'. Those who attached higher value for this factor revealed that because of the nature of their occupation they are exposed to different types of diseases. Especially with the advent of HIV/AIDS many physicians were exposed to this disease while there is no protection mechanism provided by the public health system. The system didn't provide them a safe working condition and a risk transfer schemes like health insurance and life insurance.

Unlike the response we have got in section 5.2.1, for out migration heavy workload is scaled as a 'very high' push factor by 31(36.5%) respondents and as 'high' by 14 (16.5%) of the respondents. Respondents revealed that there is incompatibility between the workload and the payment. Moreover because of workload they couldn't treat as per the standard. Seventeen, (20%), respondents rated this factor's position for emigration as 'medium' and 20 (23.5%) as 'low'.

The general decline in the health service also serves as a push factor for flight of physicians. Thirty-four (40%) of the respondents scaled that decline in the health service is a 'very high' pushing factor to cause emigration and 27(31.8%) of the respondents rated this factor a 'high' factor for migration. According to these respondents, from time to time the service standards (the way healthcare delivered) were deteriorating and the healthcare sector was falling. This condition is unbearable by health professionals and motivates them to migrate. But 10(11.8%) and 6 (7.1%) of the respondents ranked this factor has a 'medium' and 'low' influence to cause migration respectively. Seven (8.2%) of the respondents did not have any idea about this factor.

Lack of provision of incentives also the other push factor found in the public health system. In the survey large portion (72.9%) of the respondents revealed that the factor played a 'very high' role to cause migration and 21.2% of the respondents rated the factor has 'high' contribution for migration. In general, 95.2% of the respondents acknowledged that this factor forced physicians to migrate is snooty. Respondents stated that salary paid by government hospitals is too low. Furthermore the government did not offer any incentives like insurance and transport allowances, and did not arrange schemes in order to help physicians own car and house.

Lack of promotion for physicians as well found to be the push factor in the public health facilities. Out of the total 85 respondents 30(35.35) of them rated this factor a 'very high' root for emigration. Nineteen, 22.4%, of the respondents stated this factor has 'high' contribution for migration. In contrast to this, 22(25.9%) of the respondents scaled the factor has 'medium' power to force physicians to migrate and 12(14.1%) of them ranked the factor's ability to cause migration is 'low'. Those who attached high value for limited ladder of promotion stressed that opportunity to grow through promotion in public sector is unthinkable. This is due to the fact that for promotion connection has higher influence than hard work. Since hard work does not pay much there is little chance to move up for honest and dedicated physicians.

Lack of opportunity for education, upgrading and training is the other cause for migration. Most (54.1%) of the respondents ranked this factor have 'very high' motivation power for the flight of physicians and 21.2% rated as a 'high' factor. These respondents acknowledged that the government wouldn't allow them to join postgraduate program even they are not sponsored. The medical field is the fast growing field; to cope up with this advancement upgrading and training are important. But such opportunities are absent in the public settings. Contrary to this, 17.6% and 7.1% of the respondents rated this factor as "medium' and 'low' cause for emigration, respectively.

Exogenous push factors

The following table shows factors out side the public health system but in the country as a whole.

**Table 5.5 Rating of exogenous push factors significance for migration
(Number and Percentage)**

Exogenous Push factors	Level of Significance											
	Very High		High		Medium		Low		No Idea		Total	
	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age
Low quality of life and living condition	72	84.7	6	7.1	5	5.9	1	1.2	1	1.2	85	100
Pessimistic about the future economic situation	32	37.6	28	32.9	15	17.6	5	5.9	5	5.9	85	100
Value and respect given to physicians	33	38.8	24	28.2	10	11.8	15	17.6	3	3.6	85	100
Political repression	25	29.4	19	22.4	12	14.1	18	21.2	11	12.9	85	100
War and civil conflict	9	10.6	10	11.8	13	15.3	43	50.6	10	11.8	85	100
Violence and crime	3	3.5	3	3.5	9	10.6	57	67.1	11	12.9	85	100

Source: Own computation from the survey

Apart from push factors in the public health system the prevailing general situation in the country also forced physicians to migrate. This section deals about the degree of important of the exogenous factors to pose migration.

The first factor, which contributes a lot for physicians' migration, is low quality of life and living condition existed in the country. From the survey 72(84.7%) respondents scaled the role of this factor for migration is 'very high' and 6(7.1%) respondents rated the contribution of this factor is 'high'. Respondents revealed that the quality of life and living conditions are getting worse in Ethiopia from day to day and there is no clue for future improvement of life.

Pessimistic about the future economic situation is another exogenous push factor. Thirty-two (37.6%) respondents rated the importance of this factor for migration is 'very high' and 28(32.9%) rated as 'high'. According to these respondents, cost of living is escalating from time to time and there is no hope and future in making a change in the economic condition of the country. But 15(17.6%) of the respondents scaled the factor has 'medium' contribution for causing migration. Five (5.9%) of the respondents stated that the significance of this factor to force physicians to migrate is 'low'.

Out of the total 85 number of respondents 33(38.8%) of them revealed that the low value given to physicians is the 'very high' push factor for the flight of physicians and 24(28.2%) of the respondents also rated this factor has a 'high' weight. Contrary to this, 10(11.8%) and 15(17.6%) of the respondents rated the power of this factor for migration is 'medium' and 'low' respectively. Respondents who ranked the value given to physicians is 'very high' and 'high' factor for migration stated that the government give low attention and disgusting respect to physicians. Appropriate responses were not given different issues raised by physicians' associations. With higher workload in resource limited setting having low salary physicians try to help the needy but for their effort the reward is disrespect from the government and sometimes from the society at large.

Political repression has been given 'very high' and 'high' degree of significance for migration by 25(29.4%) and 19 (22.4%) of the respondents. While 12(14.1%) and 8(21.2%) of the respondents

rated this factor has 'medium' and 'low' significance for migration respectively. Eleven (12.9%) of the respondents revealed that they do not have any idea about the contribution of this factor for migration.

War and civil conflict in the country mentioned as 'low' pushing factor for migration by 43(50.6%) of the respondents. Thirteen (15.3%) of the respondents also rated this factor has a 'medium' influence for migration. Opposite to this, 9 (10.6%) and 10 (11.8%) of the respondents rated the level of importance of this factor is 'very high' and 'high' respectively. Ten (11.8%) of the respondents claimed that they do not have any idea about the role played by this factor for physicians' migration.

Violence and crime is also the other factor that has been considered as a little contribution for the exodus of physicians. Fifty-seven of the respondents rated the involvement of this factor for physicians' migration is 'low'. Nine physicians rated the role of this factor for migration is 'medium' and eleven physicians divulged they do not know about the importance of this factor for migration.

The other push factors mentioned by the respondents were the stagnant medical system progress in Ethiopia, mass-media harassments and hammering which pose biased information to the audience, and personal reasons.

To sum up, from endogenous push factors low salary and remuneration runs first and followed by low provision of incentives. This show for physicians' migration economic factor is more responsible. Among very influential push factors, poor health infrastructure and poor management captured the third position.

Among exogenous push factors low quality of life, pessimistic about future economic situation and low value given to physicians found to be in the first, second and third arrangement respectively.

Pull factors

Endogenous pull factors

Endogenous pull factors are factors that are found in other countries health systems. Table 5.6 shows these pull factors and the rank given by respondents according to the factors ability to pull physicians.

**Table 5.6 Rating of endogenous pull factors significance for migration
(Number and Percentage)**

Endogenous Pull Factors	Level of Significance											
	Very High		High		Medium		Low		No Idea		Total	
	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%a
Better salary and remuneration	74	87.1	8	9.4	3	3.5						
Attractive fringe benefits	51	60.0	16	18.8	6	7.1	3	3.5	9	10.6	85	1
A more pleasant and caring working environment	50	58.8	23	27.1	1	1.2	6	7.1	5	5.9	85	1
Availability of improved (sophisticated) health facilities, infrastructures and resources	52	61.2	23	27.1	4	4.7	4	4.7	2	2.4	85	1
Provision of incentives	45	52.9	21	24.7	10	11.8	7	8.2	2	2.4	85	1
Better quality and high opportunity for education, training and upgrade	61	71.8	12	14.1	6	7.1	5	5.9	1	1.2	85	1
Desire to gain experience	18	21.2	20	23.5	21	24.7	24	28.2	2	2.4	85	1
Availability of promotion	14	16.5	14	16.5	20	23.5	28	32.9	9	10.6	85	1

Source: Own computation from the survey

Better salary and remuneration in overseas health system is the major endogenous pulling factor. As per the survey the large portion of the respondents, 87.1%, ranked this factor has a 'very high' contribution for the migration of physicians. And 9.4% of the respondents labeled the role of this

factor to pull physicians is 'high'. Only 3.5% of the respondents ranked as a 'medium' factor for physicians migration. Respondents especially respondents from USA explained that the salary paid in other countries is incomparable with what have been paid in the public health sector of Ethiopia.

Attractive fringe benefits in other countries also found to be the main pulling factor. 60% and 18.8% of the respondents respectively designated the role of fringe benefits as 'very high' and 'high'. This factor rated as 'medium' by 7.1% of the respondents and 'low' by 3.5% of the respondents. In the survey 6(7.1%) of the respondent did not have any idea about the contribution of the factor for migration.

A more pleasant and caring working environment in overseas also considered being the pulling factor. Fifty (58.8%) and 23(27.1%) of the respondents leveled this factor has a 'very high' and 'high' attraction for migration, respectively. Only 6(7.1%) of the respondents claimed that the contribution of this factor for pulling physicians to migrate is 'low'. Respondents claimed that in abroad there is high respect for the profession and the physicians by the government. The relationship with the staff and the government bodies is more of to help and to facilitate the work. Patients also have a positive attitude towards physicians. Moreover the respondents revealed that there is no limit for what can dream to do and freedom to do independently. All of these made physicians to have a sense of professional satisfaction and achievements.

Availability of improved and sophisticated health facilities, infrastructures and resources in overseas ranked by 61.2% of the respondents as a 'very high' and by 27.1% of the respondents as 'high' pull factor. Respondents revealed that to give quality of service and professional satisfaction the supply of advanced and adequate resource, infrastructure, and facility is a must. The availability of this thing in the health systems of overseas attracted physicians to migrate.

According to the survey 52.9% of the respondents classified the provision of different incentives is a 'very high' pull factor for migration. Moreover, 24.7% of the respondents rated this factor as a 'high' attractive factor in overseas health system. The respondents acknowledged that in overseas the more you work the more you get, so there is high probability of owing a car and

houses within a short period of time since there are different provisions like house and car loans. While 11.8% and 8.2% of the respondents revealed that this factor has 'medium' and 'low' role for physicians' migration.

Quality and better opportunity of education, training and upgrade in the health system of overseas is found to be a 'very high' pull factor by 61(71.8%) of the respondents. Twelve (14.1%) of the respondents rated his factor has 'high' capacity to attract physicians' to migrate. In overseas as long as there is the capacity there is no limit for learning, improving, and widening the professional knowledge. Plus to this there is internationally accepted medical education and higher opportunity of getting postgraduate of sub-specialties, which are not practiced in Ethiopia. Contrary to this, 6(7.1%) of the respondents were put this factor has 'medium' contribution to attract physicians and 5(5.9%) of the respondents cited the involvement of this factor to pull physicians to migrate is 'low'.

Desire to gain experience in overseas is found to be a 'low' significant pulling factor by 28.2% of the respondents and a 'medium' significant factor by 24.7% of the respondents. While 21.2% and 23.5% of the respondents rated this factor has a 'very high' and 'high' significant contribution for migration respectively.

Availability of promotion in overseas didn't serve as a major pulling factor for migration. According to the survey, 28 (32.9%) of the respondents rated this factor has 'low' power to attract physicians to migrate. Twenty (23.5%) of the respondents also rated the role of this factor to attract physicians' is 'medium' and 6(7.1%) of the respondents revealed that they don't know about the contribution of this factor to pull physicians.

Exogenous pull factors

Exogenous pull factors are factors that are originated in other countries system as whole beyond the health system. Table 5.6 illustrates these factors with respect to the degree of their significance rated by physicians.

Table 5.7 Rating of exogenous pull factors significance for migration

Exogenous Pull Factors	Level of Significance											
	Very High		High		Medium		Low		No Idea		Total	
	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age
Wish to travel and see the world	8	9.4	8	9.4	22	25.9	40	47.1	7	8.2	85	100
To join friends and relatives abroad	2	2.4	4	4.7	26	30.6	47	55.3	6	7	85	100
Family related matters	7	8.2	11	12.9	19	22.4	33	38.8	15	17.6	85	100
Quality of life and comfortable standards of living	58	68.2	20	23.5	4	4.7	2	2.4	1	1.2	85	100
Political freedom and stability	39	45.9	11	12.9	19	22.4	6	7.1	10	11.6	85	100
A safer and peaceful social environment	28	32.9	17	20.0	16	18.8	15	17.6	8	9.4	85	100

Source: Own computation from the survey

Among exogenous pull factors wish to travel and see the world found to be the 'low' significant factor by 40(47.1%) of the respondents. Twenty-two (25.9%) respondents claimed that the contribution of this factor to attract physicians to migrate is 'medium'. The respondents who rate the role of this factor 'very high' and 'high' are 8(9.4%) and 8(9.4%), respectively.

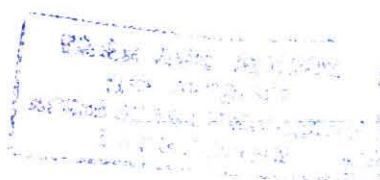
To join friends and relatives abroad also considered insignificant by the majority of the respondents. As it is indicated in Table 5.7, 47(55.3%) of the respondents ranked this factor has 'low' role to pull physicians and 26(30.6%) of the respondents rated the role of the factor to drug physicians to overseas is 'medium'

Family related matters designated as a 'low' exogenous pull factor by 33(38.8%) of the respondents. Nineteen (22.4%) of the respondents rated the role of this factor is 'medium' to attract physicians to flight. Eleven (12.9%) of the respondents claimed they don't have any idea about the role of this factor to pull physicians to migrate. While 7 (8.2%) of the respondents put the contribution of this factor as 'very high' and 11(12.9%) of the respondents rated the involvement of the factor to pull physicians is 'high'.

Quality of life and standards of living in overseas regarded as a 'very high' role for pulling physicians to migrate by 58(68.2%) of the respondents. This factor considered a 'high' pulling capacity by 20(23.5%) of the respondents. In contrast to this, 4(4.7%) and 2(2.4%) of the respondents rated this factor significance to pull physicians' 'medium' and 'low' respectively.

Political freedom and stability in overseas were judged a 'very high' pull factor by 39(45.9%) of the respondents and 'high' by 11(12.9%) of the respondents. While 19(22.6%) of the respondents rated this factor has 'medium' contribution to pull physicians and 6(7.1%) of the respondents ranked the factor's role to pull physicians is 'low'. Nine (10.6%) of the respondents expressed they don't have any idea about the role played by this factor to attract physicians to migrate.

A safer and peaceful social environment was ranked as a 'very high' pulling factor by 28 (32.9%) respondents and 17(20%) of the respondents rated the role of this factor to attract physicians to migrate is 'high'. Opposing to this 16(18.8%) 15(17.6%) of the respondents acknowledged that



the role of this factor to pull physicians is ‘medium’ and ‘low’, respectively. Eight (9.4%) of the respondents revealed that they don’t have any idea about the level of importance of this factor to pull physicians.

The additional pull factors brought up by the respondents were better opportunity and future for children’s education and; better opportunity to grow in every aspects of life.

In general, among endogenous pull factors better salary and availability of improved health facilities were found to be the first and second most attracting factors, respectively. Both pleasant working environment and better education opportunity seize the third position.

From exogenous pull factors quality of life in overseas was the first most important attracting factor. Followed by, political stability (freedom) and safer social environment.

5.1.4. Intentions to Migrate, Return, and Stay

The aim of this section is to discuss about:

- The intention of the remaining physicians to stay in the public or to migrate
- The intention of private hospital physicians to return to the public sector or to stay in private sector
- The intention of USA physicians to return to the Ethiopia health system or to stay in USA

Moreover, the section deals with the reason/s behind the intention to migrate, return, or stay.

Intention of the remaining physicians in the public sector

The intention to migrate by the remaining physicians in the public hospitals was also sought so as to establish the likelihood of physicians leaving the public sector in the near future. The result of

the survey indicates that most of the respondents (61.9%) are considering leaving the public sector to work elsewhere. The rest 38.1% want to stay in the public sector.

The mean age of the respondents who want to migrate is 32 years while the mean age of the respondents who need to stay in the public sector is 41 years. This indicates that the younger the physician is the higher the probability to migrate.

With reference to marital status, 59% of the respondents who desire to migrate were unmarried and the rest 38.5% were married. In contrast to this, from those who need to stay in the public health system 33.3% were unmarried and 66.7% were married. This marital status of the respondents showed that the married physicians most likely want to stay in the public sector than the unmarried ones. Conversely, the unmarried physicians have high probability of migration compared with the married ones.

For those who intend to migrate, the most preferred destination for migration is USA. From the total respondents who want to migrate 56.4% of them cited USA is their favorite place to migrate. A sizeable number of respondents (12.8%) revealed that they are considering leaving the country to work anywhere in the world. 7.6% of the respondents stated the likely destination they want to move is the private health sector. Other fairly popular destinations cited by the respondents include Europe (5%), Africa and Middle East (5%), Scandinavian countries (5%), Canada (2.5%), and anywhere except the public sector (2.5%).

The study established that the major reasons for the intention to migrate are almost similar to the causes of migration that has been described in section 5.1.3a and 5.1.3b.

The major stick factor mentioned by those who didn't want to migrate is having job satisfaction by service to the nation. As respondents indicated they have honor and love for their country hence they are satisfied by serving the people of Ethiopia. They also stated that they don't want to join the private sector because their primary interest is not money rather helping the poor. The respondents also mentioned that they get job satisfaction by just working in public health sector. Because they believed that in public sector there is no force to do illegal works, medical ethics is

better in public hospitals, medical science works in public sector, and the profession is well respected the public sector.

Next to job satisfaction, a family related matter is the other stick factor. Respondents revealed that since they have stable family in Ethiopia they don't want to migrate, especially abroad.

Optimistic thought for the future public health system also the other reason cited by the respondents. They don't decide to migrate because they want to face the challenge hoping there will be improvement in the future.

The other factors reported by the respondents were the possibility to work both in public and private (on part-time bases), no access to migrate, and no money especially to go overseas.

Intention of private sector physicians

The intention to return by physicians who are working in the private hospitals also needed in order to know the probability of physicians who will join the public sector nearly.

Among 20 physicians in the private hospital only 2(10%) want to return to the public sector. While, 18(90%) of them don't want to return to the public sector. This implies that majority of the physicians who are working in the private sector do not have any interest to come back their previous employer (the public sector).

The reasons declared by the physicians to stay in the private sector rather than return to the public are quite similar to that of the causes of internal migration discussed in section 5.1.3a. The reasons disclosed by physicians who want to return are to serve the needy poor and the existence of ethical medical practice in the public sector than the private sector.

Intention of USA physicians

Out of 22 physicians 14(63.6%) of them have the intention to return. But 8(36.4%) of them want to stay in the USA health care system.

Overall the reasons to return given by the respondents categorized under four groups. These reasons are personal, national feeling, for teaching and for investment. National feeling outweighs all of the other three reasons. Next to national feeling return to for teaching seizes the second place. Personal and investment reasons are found in the third position.

Those who put national feeling is their primary reason to return stated that they want to pay back to the Ethiopian people who paid for their education. That is, they have high interest to pay their debt by serving the public especially the needy poor and people who reside in the underserved area of the country. Moreover, they would like to contribute their own part for the development of the country particularly on improving the existing health system.

USA physicians who desire to return to the Ethiopian health care system for teaching purpose stated that they have high aspiration to transfer learnt skills to local physicians. They said that in USA they acquired different knowledge; hence they need to transfer this knowledge through participating in the training of young health professionals and in the improvement of the healthcare education system of the country.

Physicians who wish to return to because of personal reason stated that they want to come back Ethiopia due to their need to be a link for their children and the Ethiopian people and also want to see their children grow up with their family. The other personal reason stated by the respondents is to support their families and friends by their profession and otherwise.

Those physicians who are longing to come back Ethiopia for investment purpose stated that they want to invest in healthcare business in terms of opening their own private practice and providing consultation services for different medical cases.

More or less the reasons provided by the physicians to stay in USA are similar to factors that have been discussed under section 5.1.3b.

5.1.5. Effect/Consequence of physicians' migration

In the questionnaire respondents were asked to describe the possible effects of migration of physicians on the remaining staff in the public hospitals.

The major effect mentioned by the respondents is work overload. Due to migration the numbers of physicians who serve the patient decrease in number this causes overwhelming burden on the existing physicians. Which in turn lead to physical and psychological stress and a burnout syndrome.

The other effect is the feeling of frustration, discouragement, demoralization, de-motivation, and dissatisfaction. As the respondents explained medicine is teamwork hence losses of some best skilled physicians from the system de-motivate them not to perform their work effectively and develop loss of work discipline.

The psychological instability is also another effect reported by the respondents. The loss of their colleagues from the system confuses the remaining physicians. According to the results of the survey, the remaining physicians develop personality problem, loss of self-esteem, inferiority complex, consider remaining in public sector is their weakness, etc. This psychological instability causes loss of interest and carelessness in health care delivery.

All of the above effects in turn stimulate the remaining physicians to migrate further. As it is indicated by the respondents, because of physicians migration the public health system is deteriorated and miserable so the remaining physicians do not have a moral boost mentally to stay; rather they wait time and opportunity to be out of this misery, i.e., migration.

The provision of health care may be affected by the internal and international migration of physicians in terms of quantity, quality, effectiveness and equity. The study shows there is a

strong association between the migrations of physicians and the decline in the performance of the public health care system.

In the survey respondents were asked to rate the factors associated with quantity, quality, effectiveness and equity of health service delivery by saying ‘substantially increased, increased, average, decreased, substantially decreased and don’t know’. Table 5.8 shows the rate given by respondents to each effect of physicians’ migration on service delivery.

**Table 5.8 Proportion of respondents rating the level of service delivery
(Quality, Quantity, Effectiveness and Equity)**

Impacts on Health Service Delivery	Level of Intensity													
	Substantially Increased		Increased		Average		Decreased		Substantially Decreased		Don't Know		Not Stated	
	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age	NO.	%age
Physicians to patient attendance ratio	86	81.9	10	9.5	1	1.0	4	3.8			1	1.0	3	2.9
Waiting time	72	68.6	24	22.9	2	1.9			6	5.7	1	1.0		
Attention and respect given to patients	5	4.8	4	3.8	6	5.7	32	30.5	54	51.4	3	2.9	1	1.0
Workload per person	81	77.1	16	15.2			4	3.8	1	1.0	1	1.0	2	1.9
Non-qualified personnel performing duties	56	53.3	36	34.3	2	1.9	3	2.9	3	2.9	4	3.8	1	1.0
Number of referrals	44	41.9	37	35.2	3	2.9	1	1.0	2	1.9	18	17.1		
Death attendance	41	39.0	38	36.2	7	6.7	6	5.7	2	1.9	10	9.5	1	1.0
No. hrs that facilities remain open	9	8.6	13	12.4	12	11.4	30	28.6	30	28.6	11	10.5		
Services availability in weekends and public holidays	2	1.9	12	11.4	12	11.4	40	38.1	30	28.6	8	7.6	1	1.0
Patient resorting to other means of health care	39	37.1	41	39.0	8	7.6	2	1.9	1	1.0	13	12.4	1	1.0
Under the counter fees	7	6.7	27	25.7	8	7.6	7	6.7	4	3.8	46	43.8	6	5.7
Inequity of access to care to the poor	73	69.5	18	17.1	4	3.8	6	5.7	3	2.9	1	1.0		

Physicians to patient attendance ratio

The migration of physicians from the public health sector adversely affected the quantity of physicians who provide service to the nation. As indicated in chapter three the physician- to- population ratio has been worsening from year to year. This may be due to the fact that physicians' migration has led to further deterioration to the already dearth of physicians available to meet the health care needs of the society, i.e. the number of physicians who serve the society is decreased

As it is observed from table 5.8, majority of the respondents revealed that due to migration the physician-to-population ratio is increasing. Out of 105 respondents 86 (81.9%) of the respondents confirmed the ratio is 'substantially increased' and 10(9.5) of them said it is 'increased'.

Workload per person

It is obvious to expect that the major outcome of diminished physicians' numbers due to migration is higher workloads for those remaining in public health system and more unlikely to perform duties successfully. In the survey it is reported 79 percent and 13 percent of the physicians stated workload per person 'substantially increased' and 'increased' respectively. As it indicated in HSDP-III, the population growth in the country is 2.9% per year while the output of trained physicians per annum is found to be lower than the population growth. These incompatible supplies of trained physicians further worsen by migration. Hence, the number of physicians decreased and caseload per physicians who remain in the public sector increased. Because of stress and higher workloads public sector physicians be inclined to overlook public responsibilities and rather prefer to work in the private sector or migrating abroad. This adds fuel the existing problem and the associated effects on service delivery.

Attention and respect given to patients

Physicians themselves stressed out the overall decline in circumstances that had emanated from migration, in terms of such qualitative factors as attention and respect given for patients. As per the survey, 52 percent of the respondents revealed that attention and respect given to patients

‘substantially decreased’ and 29 percent rated that attention and respect given to patients is ‘decreased’. This falling standard of care mainly attributed to stress in excessive caseload. This is, because of high workload physicians become de-motivated, frustrated and developed the habit of uncaring behavior for their patients. Hence, there is low ability to get medication especially physiological treatment to patients effectively.

Moreover, because of workload a time a physicians should spent with his/her patient will decrease. As the respondents stated as a standard a physicians should diagnosis and discuss with his/her patients for thirty to forty minute on average. But this standard couldn’t be applied in busy public health institutions. Thus compromises the attention given to patients-quality service.

Waiting time

Due to migration of physicians there is a decline in the number of physicians available for service in the public health sector. This decline has significant change in the quality and quantity of service provided such as waiting time. That is, understaffing of public health care institutions means patients should wait long before they get medical attention and treatment.

According to the survey, 69 percent of the respondents claim that the waiting time ‘substantially increased’ and 22 percent of the respondents rated that the waiting time is ‘increased’. In total 91 percent of the respondent reveled the waiting time for patients to get medical attention is high. This longer waiting time has its own implication on high opportunity costs of medical care, and may also result in patients get medical attention and treatment overdue. The delayed medical attention may lead to unnecessary death, i.e. patients may die before they get the right treatment even for very curable conditions.

Number of Referrals

Migration of physicians may mean the drain of qualified personnel who have some specialization. According to the survey 55 percent of the physicians who have already migrated had a qualification of specialization and sub-specialization. This means that cases, which need some specialized treatment, may not get treatment because of the absence of those specialists. The absence of specialists also mean patients could not obtain the medical treatment from the

remaining physicians. Moreover, due to the absence of specialists and experienced physicians some departments had been closed. Hence patients are referred to go abroad, private health institutions, or from one public hospital to the other. As the information gathered from the survey 44 percent of the respondents confirm that the number of referrals ‘substantially increased’ and 33 percent reported it is ‘increased’. The high number of referrals especially for poor means inaccessibility of health care service, since care expenses in private and abroad health institutions is not affordable by that group of society.

Non-qualified personnel performing duties beyond their scope of practice (Inappropriate treatment)

With the presence of limited number of physicians with a given area of specialty and experienced physicians have been lost from the system, the remaining staffs (physicians and other medical workers) are forced to perform activities beyond their capacity and scope of practice. For example a young and inexperienced general practitioner may perform the task of specialist or a nurse may perform the duties of physicians. According to this research, 55 percent of the respondents claimed that practice beyond scope is ‘substantially increased’ and 32 percent rated that practice beyond scope is ‘increased’. The non-qualified personnel performing duties beyond their scope of practice mean that patients have got misdiagnoses or prescribing inappropriate treatment. Which in turn decreases the quality of health services provided to users of the public health sector-the poor patients; hence endanger the lives of patients.

Death attendance

In the study 39 percent of the respondents reported that the death attendance of patients ‘substantially increased’ and 35 percent of the respondents revealed that death attendance has ‘increased’. The raise in death attendance may originate from uncaring behavior of the remaining physicians in the public health system, inappropriate treatment and/or the longer waiting time. Because of high workload physicians in public health system adopt uncaring behavior to their

patients. Hence, physicians are unable to provide the right diagnosis at the right time or committed medical errors that finally lead to the death of patients. Due to the unavailability of the right physicians for a given treatment non-qualified personnel may perform duties that are beyond their scope of practice so patients may lose their life by unqualified persons. Moreover, because of the increasing waiting time to be seen by a physician patients may lose their life before accessing the treatment.

Number of hours that facilities remain open for in-patient, emergency and surgical services

Because of unavailability of adequate quantity of physicians' number of hours facilities remain open for in-patient, emergency and surgical services are expected to decline. But in the survey, 9 percent and 13 percent of the respondents rated that the opening hours 'substantially increased' and 'increased' respectively. 11 percent of the respondents claim that the opening hours is found on 'average' and 11 percent of the respondents reported they 'don't know whether the number of opening hours decreased or increased. While 27 percent and 28 percent of the respondents confirm that the number of hours facilities remain open for those services 'substantially decreased' and 'decreased' respectively.

Outpatient and support services availability in weekends and public holidays

It is also expected that due to physicians migration availability of out-patient and support services in the weekends and public holidays will decrease. According to the survey, 37 percent of the respondents stated that the availability of these services in weekends and public holidays 'decreased' and 28 percent of the respondents reported the availability of these services 'substantially decreased'. While, 12 percent of the respondents rated the availability of these services 'increased' and 12 percent of the respondents rated 'average'.

Patients resorting to other means of health care

The emigration of skilled physicians has adverse effects on the accessibility and equitable distribution of health care service, since the exodus of physicians has a direct effect on reducing the quality of public health institutions.

Due to the exodus of physicians patients are forced to look for services from the most expensive private sector. But especially the poor have low paying ability. Hence, poor patients try to resort to other informal health care service including self-medication, since the informal health sector charge lower rate compared to the private institutions.

Out of the total of 105 respondents 39 (37.1%) respondents rated patients resorting to other means of health care 'substantially increased' and 41(39%) of them stated it is 'increased. While 13(12.4%) of the respondents said that they don't know whether it is increased or decreased.

Under the counter fees

Because of inadequate number of physicians for patients the waiting time to get treatment is longer. Hence to obtain health care service in short period of time patients may be required to provide informal gifts and under the counter fees. But in the survey, although 26 percent of the respondents stated that informal gifts and under the counter fees are 'increased' 43 percent of the respondents revealed that they don't know whether there is informal gifts and under the counter fees or not.

Inequity of access to care to the poor because of busy public health institutions, unaffordable private institutions, etc

The movement of health professionals to both the private sector and international migration has harshly underprivileged the poor, most of whom cannot afford higher private sector costs.

In most literatures it is indicated that migration of physicians from the public health system has a greater impact on the equity of access especially to the poor. This is due to the fact that being

public health institutions are busy the poor patients may not get the medical service from these institutions. If the patients want to acquire service from private health institutions they cannot access these institutions because of high charges. At least for these two reasons especially poor patients do not have access to modern health care.

As it revealed in the survey 69 percent of the respondents rated inequity of access 'substantially increased' and 17 percent rated 'increased'. This figures shows that not only has migration had a negative impact on the health system of the country as a whole but also that impact has fallen particularly on the poor segment of the society who are most dependent on the public health systems.

5.2. Econometric Analysis

This section analyzes factors that are responsible for physicians' migration. Here an attempt is made to treat decision and intention to migrate separately. The Probit model is employed to identify those factors affecting the probability of having a decision not to migrate and intention to migrate.

To check whether there is multicollinearity and heteroscedasticity problem a pre-estimation test is conducted. The test of multicollinearity among variables shows that there is no multicollinearity. On the other hand, the test result of heteroscedasticity shows that the null hypothesis which contends that there is homoscedasticity is rejected implying that there is a heteroscedasticity problem in the model. Heteroscedasticity is common in cross-sectional data and is expected from the survey data. To minimize the problem, heteroscedasticity-consistent Probit models from STATA 9 program is employed.

The likelihood ratio index (Pseudo R^2) is used to measure the goodness of fit of the model. It is equivalent to R^2 in a conventional OLS regression model. Pseudo R^2 can be computed using the following formula,

Pseudo $R^2 = 1 - \ln L_r / \ln L_o$; where

$\ln L_r$ is the value of unrestricted log-likelihood function and

$\ln L_o$ is the value of log-likelihood function. Its value lies between 0 and 1.

If the value of Pseudo R^2 is one it implies “perfect” fit. According to Greene (1993) values between zero and one have no natural interpretation but as it approaches one it shows improvement in goodness of fit. The overall significance of the model is seen from the Pseudo R^2 and chi square.

As it was done for descriptive analysis separate analysis is made for internal and out migration. Moreover, push and pull factors of migration are estimated separately.

5.2.1. Causes for Internal Migration

5.2.1. a. Push Factors

Push factors of migration are factors that are found in the public health setting and forced physicians to migrate. These factors are analyzed below.

The first probit estimation shows factors that affect the probability of the decision not to migrate (conversely factors that are responsible for decision to migrate). And the second estimation indicates factors that influence the probability of the intention to migrate.

Migration Decision

The estimation result of the push factors is displayed in Table 5.9 below. The result shows that except age the coefficients of all individual specific characteristics have the expected sign. Age is significant at 1% to explain the probability of the decision not to migrate. Marital status is also a significant (at 10%) factor to demonstrate the probability of the decision not to migrate. As it is indicated in the table, the probability of the decision not to migrate increases by 11.50 percent if the physician is married.

Low salary and remuneration and lack of professional resources are negatively associated with the probability of the decision not to migrate. They are found to be significant at 1% and 10% levels respectively. Low salary and remuneration in the public health sector decreases the probability of the decision not to migrate by 25.86 percent while unavailability of professional equipments decreases the probability by 15.63 percent. In other words, the probability of decision to migrate will increase because of earning low salary and remuneration and lacking professional resources in the public health sector. This is due to the fact that physicians will be handicapped without the resources which decrease their job satisfaction. They also will not be able to meet their demands since they are paid less.

Table 5.9 Maximum Likelihood Estimates of the Determinants of Decision not to migrate- Push factors (Probit model)

Probit regression	Number of obs = 83
	Wald chi2(9) = 33.41
	Prob > chi2 = 0.0001
Log pseudolikelihood = -26.046246	Pseudo R2 = 0.4317

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex	-.4018181	-.0696976	.06847	0.312
age***	-.0800822	-.0143085	.00504	0.002
mst*	.6077420	.1150396	.07982	0.110
edul	.3612258	.0652823	.07138	0.372
ilsal***	-1.401896	-.2586228	.08609	0.004
ihwl	.0899999	.0157428	.07302	0.832
ilpr***	-.7703975	-.1563306	.09596	0.097
iuss***	-1.563281	-.2790076	.07302	0.001
ipmgt***	-1.282503	-.2977494	.09596	0.005
cons	3.978947		.7732099	0.000

Source: Own Survey, ***Significant at 1%;**Significant at 5%;*Significant at 10%

Stand. Error is for Marg. Effect except the constant

Unavailability of drug supply and poor quality of management in the public health sector also affect the physicians' decision not to migrate negatively and significantly (1% level). The marginal effect shows that unavailability of drug supply decreases the probability of decision not to migrate by 27.9 percent; similarly, the probability of decision not to migrate decreases by

29.77 percent due to the existence of poor quality of management in the health sector. This means that poor quality of management and unavailability of drugs are among the factors that push physicians to migrate.

Heavy workload has an unexpected sign (+) while it affect decision not to migrate insignificantly. The unexpected sign may emanate from the willingness of physicians to serve their nation with in a stressed condition rather than emigrating.

Migration Intention

All of the coefficients of individual specific characteristics have the expected sign but only sex and marital status have significant impact on the probability of the intention to migrate. As it indicated in Table 5.10, sex and marital status are significant at 1% and 5%, respectively to explain the probability of the intention to migrate.

Table 5.10 Maximum Likelihood Estimates of the Determinants of Intention to migrate- Push factors (Probit model)

Probit regression

Number of obs = 63
 Wald chi2(10) = 44.41
 Prob > chi2 = 0.0000
 Pseudo R2 = 0.5626

Log pseudolikelihood = -18.313865

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex***	1.530009	.5016229	.13782	0.001
age	-.0752847	-.025315	.01682	0.134
mst**	-1.010155	-.3230894	.14587	0.044
edul	-.266636	-.0889302	.14761	0.546
ilsal***	1.799596	.5363966	.14657	0.004
ihwl	.0306788	.0102848	.14980	0.945
ilpr	.8361457	.2508022	.18110	0.229
iuss**	1.299211	.3966349	.16359	0.034
ipmgt**	2.77771	.5099646	.10525	0.025
Inverse mills ratio	3.077401	1.034799	.80796	0.212
cons	-3.874733		3.042286	0.203

Source: Own Survey, ***Significant at 1%;**Significant at 5%;*Significant at 10%

Stand. Error is for Marg. Effect except the constant

The public health sector's low salary and remuneration is positively and significantly at 1% explaining the probability of the intention to migrate. The marginal effect indicates because of this factor the probability of the intention to migrate increases by 53.63 percent. Likewise, unavailability of drug supply has positive and significant (at 5%) impact on the intention to migrate. Due to unavailability of the supply of drugs in the public health sector the probability of the intention to migrate increases by 39.66 percent.

Poor quality of management has positive and significant (at 5%) influence on the intention to migrate. The poor quality of management practice in the public health system increases the probability of intention to migrate by 50.99 percent.

Lack of professional resources and heavy workload affect the probability of the intention to migrate positively but they are statistically insignificant.

5.2.1. b. Pull Factors

Pull factors of migration are variables that existed in the private health sector and enabling to attract physicians from the public health care system.

Below the probit estimation is made to analyze the probability of the decision not to migrate and the intention to migrate due to pulling factors in the private health sector.

Reasonable workload is not only insignificant but also it has unexpected sign. The unexpected sign may be because of physicians' expectation about the degree of workload. That is, physicians may not expect there is reasonable workload in the private settings since private hospital and clinic owners run their business with limited number of physicians.

Migration Intention

All individual specific variables have the expected sign but none of them influence the probability of the intention to migrate significantly. The results of the regression analysis are demonstrated in Table 5.12

Table 5.12 Maximum Likelihood Estimates of the Determinants of Intention to migrate- Pull factors (Probit model)

Probit regression	Number of obs = 63
	Wald chi2(9) = 31.22
	Prob > chi2 = 0.0003
Log pseudolikelihood = -22.49025	Pseudo R2 = 0.4628

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex	.7724956	.2670883	.20302	0.199
age	-.0435022	-.0153691	.01629	0.355
mst	-.5534733	-.191587	.14027	0.166
edul	-.3986479	-.1390458	.16481	0.421
ibsal***	1.55348	.4963538	.14888	0.002
irwl	-.2895586	-.1043481	.14593	0.464
impr*	1.36503	.3990962	.19116	0.098
ibss**	1.068112	.3733953	.14101	0.016
Inverse mills ratio	2.192145	.7744741	.89803	0.383
cons	-2.491676		2.854003	0.383

Source: Own Survey, ***Significant at 1%; **Significant at 5%; *Significant at 10%

Stand. Error is for Marg. Effect except the constant

Availability of better salary and remuneration has positive and significant (at 1%) impact on the probability of the intention to migrate. The probability of the intention to migrate increases by 49.63 percent due to better salary and remuneration in the private health sector. Improved

professional resource is also found to be positive and significant at 10% to demonstrate the probability of the intention to migrate to the private sector. The marginal effect shows that the probability of the intention to migrate increases by 39.9 percent because of this factor.

Better supplies of drugs in the private health sector positively and significantly at 5% affect the probability of the intention to migrate. Because of the better supplies of drugs in the private settings the probability of the intention to migrate to the private sector increases by 37.34 percent.

Among pulling factors in the private sector reasonable workload has unexpected sign and has insignificant effect on intention to migrate.

5.2.2. Causes for Out migration

Here the estimation for both endogenous and exogenous push and pull factors is made. The first probit estimation in each sub-section shows factors that determine the decision not to migrate. And the second estimation explains factors that cause intention to migrate

5.2.2. a. Push-Endogenous

Endogenous push factors are factors inherent to the public health system that force out physicians to migrate.

Migration Decision

All individual specific variables have an unexpected sign and except sex all of them are significant. The unexpected sign of these variables originate from the existence of very influential pushing factors in the public health sector, physicians decide to migrate whether they are female, aged, married.

Low salary and remuneration in the public sector found to be significantly and negatively affecting the probability of decision not to migrate. The decision not to migrate will decrease by 16.32 percent because of the existence of low salary and remuneration in the public sector.

Equally, it means that because of low salary and remuneration in public hospitals the probability of physicians' decision to migrate increases.

Feeling de-motivated by poor health care infrastructure, resources and facilities is negatively and significantly (at 10%) influences the probability of decision not to migrate. That is, de-motivation by the poor health care infrastructure, resources and facilities decrease the probability of physicians' decision not to migrate by 13.22 percent. Equivalently it means that due to this variable the probability of physicians' decision to migrate increases.

Table 5.13 Maximum Likelihood Estimates of the Determinants of Decision not to migrate- Endogenous Push factors (Probit model)

Probit regression	Number of obs = 85
	Wald chi2(11) = 37.39
	Prob > chi2 = 0.0001
Log pseudolikelihood = -16.13722	Pseudo R2 = 0.6680

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex	.5142002	.0830333	.10237	0.361
age***	-.1005759	-.0135088	.00597	0.000
mst**	-.9490547	-.1358916	.07733	0.036
edul**	-1.878543	-.2298658	.09212	0.015
olsal***	-1.79081	-.163161	.0687	0.001
ophi*	-1.107196	-.1321859	.08739	0.061
opmgt	-.1095372	-.0147351	.06813	0.829
ouwen	-.2349708	-.0306895	.06898	0.672
ohwl***	2.237326	.304872	.09833	0.001
olinc**	-1.519478	-.1979758	.09518	0.020
oledu	.6549888	.0834984	.08035	0.304
cons	8.253376		1.60382	0.000

Source: Own Survey, ***Significant at 1%; **Significant at 5%; *Significant at 10%

Stand. Error is for Marg. Effect except the constant

Heavy workload is found to be positive and significant (at1%) variable in explaining decision not to migrate. The probability of physicians' decision not to migrate will increase by 30.49 percent due to the heavy workload in the public sector. The direction of the influence of this variable is

unexpectedly positive. This shows that the physician's will not be discouraged from serving their nation due to the workload. Hence not decide to migrate because of workload.

Lack of the provision of different incentives affects the decision not to migrate negatively and significantly (at 5%). The marginal effect shows lack of the provision of incentives negatively affects the probability of decision not to migrate by 19.8 percent.

Poor management, unprotected working environment, and lack of educational opportunity are found to be insignificant determinants. Poor management and unprotected working environment negatively affect the probability of decision not to migrate as expected, while lack of education opportunity has an unexpected positive sign.

Migration Intention

All of individual specific characteristics have the expected sign and all except marital status significantly affect the intention to migrate. Sex is positive and significant at 1% to influence the intention to migrate. That is, if a physician is male, the intention to migrate increases compared to his female counterpart. Contrary to sex, age has negative and significant (5%) impact. This means, younger physicians have high propensity to migrate compared with older physicians. Education level has negative and significant (at 10%) effect on the intention to migrate. General practitioner has less intention to migrate compared with specialists and sub-specialists.

The remaining push factor, lack of education opportunity, heavy workload, and unprotected working environment are insignificant variables to explain the probability of the intention to migrate. The sign of the variable lack of education is surprisingly turned out to defy the expectation. The unexpected result may stem from the hope of the physicians to get the opportunity of education in the future. Since in recent years the government is expanding the post graduate program physicians anticipate that they may have the chance to upgrade themselves in the near future. Hence, because of this variable the intention to migrate decreases.

5.2.2. b. Pull-Endogenous

Endogenous pull factors are factors that are found in overseas health care system and can attract physicians to migrate.

Migration Decision

All coefficients of individual specific characteristics except age have the expected sign. Sex and level of education are significantly explaining the decision not to migrate at 5%. That is, if the physician is male his decision not to migrate is lower compare to his male counterparts. Being a general practitioner also increases the probability of decision not to migrate.

Table 5.15 Maximum Likelihood Estimates of the Determinants of Decision not to migrate- Endogenous Pull factors (Probit model)

Probit regression

Number of obs = 85
 Wald chi2(11) = 52.93
 Prob > chi2 = 0.0000
 Pseudo R2 = 0.5418

Log pseudolikelihood = -22.268592

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex**	-1.263332	-.2098879	.09544	0.017
age***	-.1116701	-.0171264	.00719	0.002
mst	.8830697	.1002113	.06604	0.168
edul**	1.256124	.1532445	.07776	0.029
obsal	-1.1478	-.1645055	.09663	0.132
ofri	-.1625502	-.0240088	.08498	0.782
oplwe	-.044498	-.0067634	.07454	0.928
oimfa	-.2712529	-.0380487	.06514	0.591
opinc	-2.718141	-.0387491	.07301	0.607
obedu***	-2.718141	-.290171	.08715	0.002
ogexp	-.9705851	-.1149849	.07666	0.121
cons	9.35168		2.228265	0.000

Source: Own Survey, ***Significant at 1%;**Significant at 5%;*Significant at 10%

Stand. Error is for Marg. Effect except the constant

All of the pulling factors have the expected sign but except the variable better quality and opportunity for education the remaining variables are insignificant. This pulling variable has negative and significant (at 1%) impact on the decision not to migrate. Due to the existence of this factor in the overseas health system the probability of the decision not to migrate decreases by 29.02 percent. Conversely it means that because of better opportunity and quality of education in the overseas health system the decision to migrate increases.

Migration Intention

All individual specific characteristics have insignificant influence on the probability of the intention to migrate and except level of education all of them have the expected sign.

Table 5.16 Maximum Likelihood Estimates of the Determinants of Intention to migrate-Endogenous Pull factors (Probit model)

Probit regression	Number of obs =	63
	Wald chi2(12) =	41.32
	Prob > chi2 =	0.0000
Log pseudolikelihood = -17.637018	Pseudo R2 =	0.5787

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex	.007231	.0026506	.17988	0.988
age	-.0565653	-.0207427	.01351	0.121
mst	-.5328684	-.201763	.29433	0.488
edul	1.055414	.3529314	.19943	0.123
obsal*	.8333535	.3098221	.16902	0.072
ofri	.5841529	.2164741	.2291	0.354
oplwe	.6614184	.2431638	.2122	0.262
oimfa**	1.544356	.5597774	.19849	0.020
opinc**	1.094572	.3975805	.17976	0.032
obedu	.4909615	.1819916	.24818	0.461
ogexp	.5624634	.2097139	.27077	0.439
Inverse mills ratio	1.059073	.3883648	.77546	0.617
cons	-2.483444		3.34769	0.458

Source: Own Survey, ***Significant at 1%;**Significant at 5%;*Significant at 10%

Stand. Error is for Marg. Effect except the constant

The effect of better salary and remuneration on the intention to migrate is positively and significant at 10% level. The marginal effect indicates because of the existence of better salary and remuneration in the health care system of overseas the probability of the intention to migrate increases by 30.98 percent.

Availability of improved health facilities, infrastructures and resources and provision of different incentives positively and significantly explain the probability of intention to migrate. The marginal effects are 55.98 percent and 39.75 percent respectively.

The remaining pulling factors are not significant to explain the probability of the intention to migrate but all of them have the expected direction of influence.

5.2.2. c. Push-Exogenous

Push exogenous variables are variables which are found in out-side the public health care system of the country (Ethiopia).

Migration Decision

Among individual specific characteristics marital status has a positive and significant (at 10%) influence on the probability of the decision not to migrate. Level of education affects the probability of the decision not to migrate as expected but insignificantly. The remaining two variables sex and age has the unexpected effect on the probability of the decision not to migrate.

The existence of low quality of life in the country explains the probability of the decision not to migrate is negatively and significantly at 1%. Because of low quality of life in Ethiopia the probability of the decision not to migrate will decrease by 22.44. This means the probability of decision to migrate increases as a result of this variable.

Table 5.17 Maximum Likelihood Estimates of the Determinants of Decision not to migrate- Exogenous Push factors (Probit model)

Probit regression

Number of obs = 85
Wald chi2(10) = 31.93
Prob > chi2 = 0.0004
Pseudo R2 = 0.3996

Log pseudolikelihood = -29.184338

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex	.1226505	.0238539	.08126	0.778
age**	-.0462306	-.0093564	.00465	0.043
mst*	1.057576	.3176111	.23368	0.100
edul	.7273924	.1777087	.14537	0.157
olqli***	-1.071227	-.2244517	.08215	0.010
opfe	-.2733511	-.0548682	.11000	0.617
ovalp**	-.5773446	-.1045102	.07700	0.185
opol***	-1.588513	-.2868095	.10715	0.011
ovio	-.0216702	-.0043773	.09566	0.964
owar	.1652013	.0307231	.10553	0.787
cons	3.364253		1.04835	0.001

Source: Own Survey, ***Significant at 1%; **Significant at 5%; *Significant at 10%

Stand. Error is for Marg. Effect except the constant

Political repression is positively and significantly (at 5%) explains the decision not to migrate. The probability of the decision not to migrate will decrease by 28.68 percent owing to political repression. That is, because of political repression the probability of physicians' decision to migrate will be very high. Value given to physicians, being pessimistic about future economic situation, and violence have the expected sign but insignificantly affect the probability of the decision not to migrate. While the variable war and civil conflict has the unexpected sign, though this variable is insignificant to explain the decision not to migrate.

Migration Intention

Among individual specific characteristics all except level of education explain the probability of the intention to migrate in the expected direction.

Table 5.18 Maximum Likelihood Estimates of the Determinants of Intention to migrate-Exogenous Push factors (Probit model)

Probit regression Number of obs = 63
Wald chi2(11) = 29.26
Prob > chi2 = 0.0021
Pseudo R2 = 0.3214
 Log pseudolikelihood = -28.409059

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex	.4755708	.1705938	.19317	0.415
age**	-.0635445	-.0242003	.01062	0.025
mst	-.1917341	-.0709232	.25113	0.785
edul	.7001272	.2714124	.18465	0.150
olqli	.1859274	.070157	.18278	0.704
opfe	.0769818	.0292505	.17437	0.867
ovalp	.2989865	.1144921	.16551	0.490
opol	.6278356	.2345276	.22932	0.322
ovio	.5255739	.2018201	.17541	0.255
owar**	-1.00305	-.3815841	.16452	0.041
Inverse mills ratio	1.316283	.5012925	.73285	0.493
cons	.1670896		2.53919	0.948

Source: Own Survey, ***Significant at 1%;**Significant at 5%;*Significant at 10%

Stand. Error is for Marg. Effect except the constant

Among exogenous push factors war is positive (unexpected) and significant at 5% to explain the probability of the intention to migrate. In the presence of war and civil conflict in the country the probability of the intention to migrate decreases by 38.15. The unexpected sign of this variable may arise from the physicians' interest and national feeling to help their nation in bad days.

5.2.2. d. Pull-Exogenous

Exogenous pull variables are variables that are found outside the health care system of overseas and can attract physicians to migrate.

Migration Decision

All of the individual specific characteristics except level of education have unexpected sign to explain the intention to migrate. But none of these variables are significant.

Table 5.19 Maximum Likelihood Estimates of the Determinants of Decision not to migrate- Exogenous Pull factors (Probit model)

Probit regression Number of obs = 85
Wald chi2(10) = 27.22
Prob > chi2 = 0.0024
Log pseudolikelihood = -31.334851 Pseudo R2 = 0.3553

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex	.3822424	.0789116	.10529	0.521
age	-.0186304	-.0043712	.00647	0.503
mst	-.1165055	-.0259703	.10521	0.813
edul	.2762854	.0662393	.10641	0.524
owish	.2623975	.0545178	.15587	0.754
ofrie	.460052	.1201032	.14898	0.372
ofami	-.3847328	-.1004774	.19419	0.563
oqlif***	-1.114771	-.2667337	.09192	0.004
opolf**	-1.299053	-.2737734	.10259	0.012
ossen	-.5247455	-.1212816	.12238	0.329
cons	2.392896		.7386286	0.001

Source: Own Survey, ***Significant at 1%;**Significant at 5%;*Significant at 10%

Stand. Error is for Marg. Effect except the constant

Quality of life and a comfortable standard of living is negatively and significantly at 1% demonstrates the probability of the decision not to migrate. The marginal effect shows that the availability of high quality of life in overseas decreases the probability of decision not to migrate by 26.67 percent. Political freedom and stability in overseas have similar contribution but is significant at 5%. The probability of the decision not to migrate decreases due to political freedom and stability in overseas. Likewise, it means the probability of the decision to migrate increases on account of the availability of political stability in overseas.

A safer and peaceful social environment in overseas, and family related matters have the expected sign but do not significantly explain the decision not to migrate. While the variables wish to travel and to join friends and relatives abroad have the unexpected sign. These two factors positively but insignificantly influences the probability of the decision not to migrate. This means these factors don't attract physicians to migrate.

Migration Intention

Among the individual specific variables sex has positive and significant (at 5%) influences on the intention to migrate. Age affects the intention to migrate negatively and significantly at 5%. Level of education and marital status are insignificant to affect the probability of the intention to migrate.

Table 5.20 Maximum Likelihood Estimates of the Determinants of Intention to migrate-Exogenous Pull factors (Probit model)

Probit regression

Number of obs = 63
 Wald chi2(11) = 36.57
 Prob > chi2 = 0.0001
 Pseudo R2 = 0.4089

Log pseudolikelihood = -24.744872

Variables	Coefficient	Marginal Effects	Standard Error	P-Value
sex**	1.545652	.4125927	.11900	0.025
age***	-.124568	-.0456709	.01462	0.001
mst	-.5542993	-.1793455	.17673	0.384
edul	.5168962	.1926517	.20329	0.343
owish	-.79137	-.3067735	.44128	0.499
ofrie	.6310812	.2399399	.22591	0.285
ofami	-.9135175	-.3488273	.29108	0.245
oqlif	.4197219	.1492471	.26717	0.591
opolf	.7075208	.2532508	.27430	0.378
ossen	-.0091554	-.0033578	.26294	0.990
Inverse mills ratio	1.230709	.4512206	1.03935	0.665
cons	-.3985229		3.065485	0.897

Source: Own Survey, ***Significant at 1%;**Significant at 5%;*Significant at 10%

Stand. Error is for Marg. Effect except the constant

Political freedom and stability, quality of life and a comfortable standard of living, and with to join friends and relatives abroad have the expected sign but insignificantly influences the intention to migrate. While variables wish to travel and see the world, family related matters and a safer and peaceful social environment in overseas have unexpected sign though insignificantly affect the probability of the intention to migrate.

Chapter Six

Conclusion and Recommendations

1. B. I.
LIBRARY

Physicians are key personnel in the health care service delivery system. Without them health institutions could not function well. Nowadays, there is the overall health worker shortage in the world especially in African countries. Ethiopia is one of the African countries which exhibits shortage of health workers particularly physicians. According to the FMOH, in 2006/07 the physician-to-population ratio is 1:42,706. Moreover, in recent years migration of physicians has become the common phenomenon our country. This event adds fuel to the already scarce number of physicians. Hence unless and otherwise the reasons of physician migration are identified and treated well it will cause the collapse of the health system service delivery as a whole.

This study tried to find out factors that are responsible for both internal (public-private) and external (public-overseas) migration of physicians. It also attempted to see the consequences of migration on public sector health service delivery system.

Both descriptive and econometric techniques were employed to analyze the causes of migration. To have a clear picture about the determinants of migration, variables that contribute for migration decision and intention were analyzed independently using Probit model for estimation. The findings of the estimation shows that more or less factors that contribute for migration decision were similar to factors that contribute for migration intention. To find out the consequences of migration on service delivery descriptive analysis was used.

Above all factors low salary and remuneration in the public health system was found to be the major cause of internal migration. Unavailability of supply of drugs, lack of professional resources and poor quality of management in the public health system were also found to be the significant push factors for internal migration.

Unlike many literatures heavy workload does not have a significant effect on migration intention. Even for migration decision it had unexpected result; that is, with heavy work load physicians

decide not to migrate. Though it was insignificant, reasonable workload was found to be a factor which lead physicians not to migrate and do not have intention. This result is very unlikely with the empirical literature and with the expectation of the study.

Better salary and remuneration was found to be the main pull factor both in descriptive and econometrics analysis. Improved professional resources and better supplies of drugs in private sector were the major attracting factor in public health settings which lead to migration.

This study reveals that for out-migration endogenous push factors found to be more important than endogenous pull, exogenous push and pull factors. Among endogenous push factors low salary and remuneration, lack of the provision of incentives; and feeling de-motivated by poor health care infrastructure, resources and facilities were found to be the key determinants for migration decision and migration intention. Poor quality of management in the public sector was also the main contributing factor for migration intention.

For migration decisions, availability of better opportunity and quality of education in the overseas system was the most important factor. While for migration intentions overseas health system, better salary, provision of different incentive; and the sophisticated health facilities, infrastructure and resource found to be the most important pulling factors.

Low quality of life in Ethiopia and political repercussion were the most influential exogenous push factors for migration decision of physicians. But for migration intention none of exogenous push factors were influential except war and civil conflict. War (civil conflict) had the unexpected sign but found to be significant for migration intention. Contrary to empirical literatures, because of war and civil conflict the physicians' intention to migrate decreases significantly rather than increase.

Among exogenous pull factors of migration, high quality of life and comfortable standards of living in overseas was found to be the major cause of decision to migrate. Political freedom and stability in overseas was also the significant exogenous pull factor for decision to migrate.

Because of the emigrating of physicians either to private or overseas resulted in adverse effect on the service delivery of the public sector. The study revealed that because of physician migration physicians-to-patient attendance ratio, waiting time, inequity of access to care to the poor; and non-qualified personnel performing duties have increased. Moreover, attention and respect given to patients, number of hours public health facilities remaining open, service availability in weekends and public holidays were substantially decreased.

Policy Recommendations

Knowing the root cause of migration is important to draw policy which is crucial to curb the migration problem. Hence, based on the findings of the study the following policy recommendations were drawn.

- The salary of physicians should be raised: Although the government tried to revise the salary scale, the revised salary is not comparable even with what has been paid in the private health sectors, as the respondents acknowledged. The package of remuneration should also include raising duty payment. The government should calculate in terms of money (to educate physicians) and service (the population should get from physicians) that the country is losing with every physician's migration. Hence, the raise in salary should be thought in terms of the cost of the country incurred by losing its physicians.
- Different incentives should be provided for physicians: Physicians expend at least seven years of their lives at school and the country spends a huge amount of money to train them. Hence their devotion and hard work should be compensated and the country should also benefit from their service. In order to gain these returns physicians should be retained through the provision of incentives like housing and importing tax free cars.
- Improvement in public health facilities, resources and infrastructures: Physicians can not apply their knowledge without appropriate professional resources and facilities. With the presence of lack of these facilities, resources and infrastructures physicians become de-

motivated to work in public settings. Hence the improvement in this factor will increase the retention of physicians.

- Improvement in the availability of the supply of drugs and medicine: Physicians get job satisfaction when their patients are healed. To cure their patients physicians need different types of medicine (drugs). Hence, the government or the responsible bodies should improve the provision of drugs in order to increase the job satisfaction of physicians.
- Improvement in the quality of management: Good working condition is facilitated if there is good management in public health sector. Hence, responsible parties should assign the right and qualified managing personnel. Moreover, the assigned personnel should have positive attitude towards physicians.
- Avoid interference and political repression: Government or politicians should avoid political interference or political repression rather should create conducive environment for physicians to do their work. By doing so they can retain physicians who serve their people.
- Improvement in quality of life: The government should work a lot on the improvement of the quality of life in the country to retain physicians that will migrate to places where they get high quality of life.

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Annex I

First and foremost I would like to express my gratitude for the consent you made to fill out this questionnaire by devoting your precious time.

The questionnaire is prepared to collect data for the preparation of a thesis for the partial fulfillment of the requirements for degree of Master of Science in Economics (Human Resource Economics). The aim of the thesis is to analyze the extent of physicians' migration (both internal and external), the determinants of migration of physicians, and the impact of physicians' migration on health care service delivery and finally to come up with some policy options depending on the findings obtained. Hence the information collected from this questionnaire has a vital role for the achievement of the intended objective of the thesis.

I want to declare that any information collected from the respondents will be used only for academic purpose and will not be disclosed for any other parties.

If you have any question please contact me at birouke_12@yahoo.com or
Tel. 0911-624838

Questionnaire for Public Hospitals Physicians

This questionnaire is designed to collect information about factors that mainly determine attrition and turnover of physicians in public hospitals in relation to internal migration (public to private hospitals) and external migration (Public hospitals to abroad). Moreover the questionnaire is intended to gather data on the impact of this external and internal migration of physicians on the public hospital service delivery.

I. Section One

This section collects personal information about the respondent such as gender, age, place of birth, marital status, qualification and work experience.

1. Gender Female _____ Male _____
2. Place of birth _____
3. Age _____
4. Marital Status Married _____ Unmarried _____
5. Educational Qualification-Medical training

Degree/ Diploma/Specialization	Name of the Institution	Year of Completion

6. What was the motivating factor which helped you in choosing this medical profession?
(Please tick the most appropriate option.)
 - Service to the nation
 - A well respected career
 - Your special aptitude
 - Desire to go abroad
 - Other(please specify) _____

7. Work Experience	Position	Duration	Place of work
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

II. Section Two

In this section respondents are required to share their view and understanding about the underlying motivating factors that lead their colleagues to move from the public to private sector.

8. According to your view which factor motivate physicians to leave public hospitals and join the private hospitals. (Please rank as per their degree of significance)

Reasons of Migration	Significance					
	Very High	High	Medium	Low	No idea	Rank
Higher remuneration rates in the private sector Vs public sector						
Reduced workloads in the private sector Vs public sector						
Improved professional recourses in the private sector Vs public sector						
Better supplies of drugs and equipment in the private sector Vs public sector						
Quality of management in the private sector Vs public sector						
Better promotion opportunities in the private sector Vs public sector						

9. Do you observe any reason which is not specified in the above list?
 Yes _____ No _____

If your answer is "yes" please specify the reason/s.

10. Please comment on the first three factors which you consider have "Very High Significance" for physicians' internal migration (Public to Private)

III. Section Three

The purpose of this section is to collect information about the main push and pull factors of physicians' out-migration. Hence you are required to share you view and information about what are the main push and pull factors which drive and attract your colleagues to migrate abroad.

11. What do you think the most important push factors within the public health system which forced physicians to migrate overseas? (Please rank them according to their level of significance)

Push factors of Migration (Within the public health system-Endogenous factors)	Significance					
	Very High	High	Medium	Low	No idea	Rank
Lower salary and remuneration						
Feeling de-motivated by poor health care infrastructure, resources and facilities (drugs, equipment, etc.)						
Poor/bad management of the health service						
Unprotected working environment but high level of occupational risks and hazard						
Heavy workload						
Decline in health service						
Lack of provisions of incentives such as housing and car loans						
Lack of promotion						
Lack of opportunities for education, upgrading and training						

12. In your view what are the push factors outside the public health system which induced physicians to migrate abroad? (Please rank them according to the factors level of significance)

Push factors of Migration (Outside the public health system-Exogenous factors)	Significance					Rank
	Very High	High	Medium	Low	No idea	
Low quality of life and living condition						
Pessimistic about the future economic situation						
Value and respect given to physicians						
Political repression						
War and civil conflict						
Violence and crime						

13. Is there any other outstanding push factor which contributes the migration of your colleagues (physicians) to overseas?
 Yes _____ No _____

If the answer is “yes” please identify the push factor/s.

14. Please comment on the first three push factors for which you attached “Very High Significance” for the migration of your colleagues.

15. What are the main pull factors within the health system of overseas which lead physicians to migrate? (Please rate the factors according to their degree of significance.)

Pull factors of Migration (Within the health system of overseas - Endogenous factors)	Significance					Rank
	Very High	High	Medium	Low	No idea	
Better salary and remuneration						
Attractive fringe benefits						
A more pleasant and caring working environment						
Availability of improved and sophisticated health facilities, infrastructures and resources						
Provision of different incentives						
Better quality and high opportunity for education, training and upgrade						
Desire to gain experience						
Availability of promotion						

16. What do you think the main attracting factors that are found outside the health system of overseas encourage physicians to migrate? (Please rate the factors according to their degree of significance.)

Pull factors of Migration (Outside the health system of overseas - Exogenous factors)	Significance					
	Very High	High	Medium	Low	No idea	Rank
Wish to travel and see the world						
To join friends and relatives abroad						
Family related matters						
Quality of life and a comfortable standards of living						
Political freedom and stability						
A safer and peaceful social environment						

17. Is there any other outstanding pull factor you observe?

Yes _____ No _____

If your answer is "yes" please specify the pull factor/s.

18. Please comment on the first three pull factors which you put them as a "Very High Significance" factor for migration.

IV. Section Four

The aim of this section is to generate information regarding the impact of migration of physicians on the public health system particularly on health care service delivery. Hence, please give your answer for the following questions based on your observation and experience.

19. How long do you stay in the public health sector?

In this hospital _____ years

In other hospital(s) _____ years

20. During your stay in the public hospital, roughly how many of your colleagues (physicians) left the public hospital.

From your previous hospital(s) _____ number of physicians

From your current hospital _____ number of physicians

21. What is the impact of those physicians migration on the remaining staff? (Please tell me major effects of the migration of those physicians on the remaining physicians).

22. Do the above effects in turn have any impact on service delivery?

Yes _____ No _____

If your answer is “yes” please identify those impacts?

If your answer is “no” please show how they don’t have any impact on service delivery.

23. How do you rate the impact of physicians’ migration on health care service delivery to the population (the users) in terms of quality, effectiveness, equity and access?

	Substantially Increased	Increased	Average	Decreased	Substantially decreased	Don't Know
Physician to patient attendance ratio						
Waiting time						
Attention and respect given to patients						
Workload per person						
Non-qualified personnel performing duties beyond their scope of practice (Inappropriate treatment)						
Number of referrals						
Death attendance						
Number of hours that facilities remain open for in-patient ,emergency/casualty and surgical service						
Out-patient and support services availability in weekends and public holidays						
Patients restoring to other means of health care such as traditional healers and self-medication						
Under the counter fees and the sale of drugs that should be free						
Inequity of access to care to the poor because of busy public health institutions, unaffordable private institutions, etc.						

V. Section Five

The main target of this section is to obtain information regarding the remaining physicians plan for the future in terms of intention to migrate or stay in the public health system.

24. Have you ever thought of migration?

Yes _____ No _____

25. If your answer is “Yes” for question No. 24, what is your most popular destination to migrate? And why you choose this destination?

Destination _____

Reason to choose this destination

26. What are your most important reasons to have intention to migrate to the private sector?

Rate the following factors according to their significance.

Reasons of Migration (push)	Significance					
	Very High	High	Medium	Low	No idea	Rank
Higher remuneration rates in the private sector Vs public sector						
Reduced workloads in the private sector Vs public sector						
Improved professional recourses in the private sector Vs public sector						
Better supplies of drugs and equipment in the private sector Vs public sector						
Quality of management in the private sector Vs public sector						
Better promotion opportunities in the private sector Vs public sector						
Reasons of Migration (pull)	Significance					
	Very High	High	Medium	Low	No idea	Rank
Higher remuneration rates in the private sector Vs public sector						
Reduced workloads in the private sector Vs public sector						
Improved professional recourses in the private sector Vs public sector						
Better supplies of drugs and equipment in the private sector Vs public sector						
Quality of management in the private sector Vs public sector						
Better promotion opportunities in the private sector Vs public sector						

27. What are your most important reasons to have intention to migrate to overseas? Rate the following push factors and pull factors according to their significance.

Push factors of Migration (Within the public health system-Endogenous factors)	Significance					
	Very High	High	Medium	Low	No idea	Rank
Lower salary and remuneration						
Feeling de-motivated by poor health care infrastructure, resources and facilities (drugs, equipment, etc.)						
Poor/bad management of the health service						
Unprotected working environment but high level of occupational risks and hazard						
Heavy workload						
Decline in health service						
Lack of provisions of incentives such as housing and car loans						
Lack of promotion						
Lack of opportunities for education, upgrading and training						
Push factors of Migration (Outside the public health system-Exogenous factors)	Significance					
	Very High	High	Medium	Low	No idea	Rank
Low quality of life and living condition						
Pessimistic about the future economic situation						
Value and respect given to physicians						
Political repression						
War and civil conflict						
Violence and crime						

Pull factors of Migration (Within the health system of overseas - Endogenous factors)	Significance					
	Very High	High	Medium	Low	No idea	Rank
Better salary and remuneration						
Attractive fringe benefits						
A more pleasant and caring working environment						
Availability of improved and sophisticated health facilities, infrastructures and resources						
Provision of different incentives						
Better quality and high opportunity for education, training and upgrade						
Desire to gain experience						
Availability of promotion						
Pull factors of Migration (Outside the health system of overseas - Exogenous factors)	Significance					
	Very High	High	Medium	Low	No idea	Rank
Wish to travel and see the world						
To join friends and relatives abroad						
Family related matters						
Quality of life and a comfortable standards of living						
Political freedom and stability						
A safer and peaceful social environment						

28. If your answer is “No” for question No. 24, what are main reasons encouraging you to stay on the public health sector?

Id. _____

Questionnaire for Overseas Physicians

This questionnaire is designed to collect information about factors that mainly determine attrition and turnover the physicians' in public hospitals in relation to external migration (Public hospitals to abroad). Moreover the questionnaire is intended to gather data on the impact of this external migration of physicians on the public hospital service delivery and users of the public hospital.

I. Section One

This section collects personal information about the respondent, such as gender, age, place of birth, marital status, qualification and work experience.

1. Gender Female _____ Male _____
2. Place of birth _____
3. Age _____
4. Marital Status Married _____ Unmarried _____
5. Educational Qualification-Medical training

Degree/ Diploma/Specialization	Name of the Institution	Year of Completion

6. What was the motivating factor which helped you in choosing this medical profession? (Please tick the most appropriate option.)
 - Service to the nation
 - A well respected career
 - Your special aptitude
 - Desire to go abroad
 - Other(please specify) _____

7. Work Experience in Ethiopia

Position	Duration	Place of work

8. Work Experience Abroad

Position	Duration	Place of Work

II. Section Two

The purpose of this section is to collect information about main push and pull factors of physicians' out-migration. Hence you are required to share your view and information about what were the main push and pull factors which drive and attract you to migrate abroad.

9. What do you think the most important push factors within the public health system which forced you to migrate overseas? (Please rank them according to their level of significance).

Push factors of Migration (Within the public health system-Endogenous factors)	Significance					Rank
	Very High	High	Medium	Low	No idea	
Lower salary and remuneration						
Feeling de-motivated by poor health care infrastructure, resources and facilities (drugs, equipment, etc.)						
Poor/bad management of the health service						
Unprotected working environment but high level of occupational risks and hazard						
Heavy workload						
Decline in health service						
Lack of provisions of incentives such as housing and car loans						
Lack of promotion						
Lack of opportunities for education, upgrading and training						

10. In your view what were the push factors outside the public health system which induced you to migrate abroad? (Please rank them according to the factors level of significance)

Push factors of Migration (Outside the public health system-Exogenous factors)	Significance					Rank
	Very High	High	Medium	Low	No idea	
Low quality of life and living condition						
Pessimistic about the future economic situation						
Value and respect given to physicians						
Political repression						
War and civil conflict						
Violence and crime						

11. Is there any other outstanding push factor which forced you to migrate abroad
 Yes _____ No _____

If the answer is "yes" please identify the push factor/s.

12. Comment on the three major factors that forced you to leave public hospital by making a comparison with your current employment overseas.

13. What were the main pull factors within the health system of overseas which encourage you to migrate abroad? (Please rate the factors according to their degree of significance.)

Pull factors of Migration (Within the health system of overseas - Endogenous factors)	Significance					Rank
	Very High	High	Medium	Low	No idea	
Better salary and remuneration						
Attractive fringe benefits						
A more pleasant and caring working environment						
Availability of improved and sophisticated health facilities, infrastructures and resources						
Provision of different incentives						
Better quality and high opportunity for education, training and upgrade						
Desire to gain experience						
Availability of promotion						

14. What were the main attracting factors that are found outside the health system of overseas encouraged you to m? (Please rate the factors according to their degree of significance.)

Pull factors of Migration (Outside the health system of overseas - Exogenous factors)	Significance					Rank
	Very High	High	Medium	Low	No idea	
Wish to travel and see the world						
To join friends and relatives abroad						
Family related matters						
Quality of life and a comfortable standards of living						
Political freedom and stability						
A safer and peaceful social environment						

15. Is there any other outstanding attracting factor within the overseas health system? If any, please identify below.

16. Comment on the three major factors that attracted you to migrate abroad by making a comparison with your previous employment in the public hospital.

17. Are there any factors outside the health service system that motivated you to leave public hospitals and migrate aboard?

III. Section Three

The objective of this section is to gather information about the possible outcomes of physicians migration (public to overseas) on the remaining staff in the public hospitals and hence on the quality, effectiveness ,equity and access of health service delivery to the users of public health system (the poor)

18. How long have you worked in the United States health care system?

_____ Number of years

19. According to your observation what is the trend of number physicians migrating from Ethiopia to the United States? (Please tick on the most appropriate option)

- a) Increasing at an increasing rate
- b) Increasing at a decreasing rate
- c) Decreasing at an increasing rate
- d) Decreasing at a decreasing rate
- e) Same level

20. According to your view what are the possible effects of the migration of physicians on the remaining staff in the public hospitals?

21. What do you think the effect of physicians' migration on the health care service delivery of the public sector? (Please rate the following effects as per their intensity).

	Substantially increased	Increased	Average	Decreased	Substantially decrease	Don't Know
Physician to patient attendance ratio						
Waiting time						
Attention and respect given to patients						
Workload per person						
Non-qualified personnel performing duties beyond their scope of practice (Inappropriate treatment)						
Number of referrals						
Death attendance						
Number of hours that facilities remain open for in-patient ,emergency/casualty and surgical service						
Out-patient and support services availability in weekends and public holidays						
Patients restoring to other means of health care such as traditional healers and self-medication						
Under the counter fees and the sale of drugs that should be free						
Inequity of access to care to the poor because of busy public health institutions, unaffordable private institutions, etc.						

IV. Section Four

The target of this section is to gather information regarding the intention of physicians abroad to return to Ethiopia or stay in the United States.

22. Have you ever thought to return the Ethiopian public health system?

Yes _____ No _____

23. If your answer is “Yes” for question No. 22, what are your reasons for the intention to return to Ethiopia?

24. If your answer is “No” for question No. 22, what are the main reasons encouraging you to stay on the United States health care system?

V. Section Five

This section is provided for the respondent to express their general opinion, suggestion, or comment on the issue under review. Moreover the respondents are encouraged to provide possible solutions for the problem at hand.

25. What do you suggest to curb the migration problem?

26. If you want to share anything please write it down here.

Thank you very much for your co-operation!

Questionnaire for private hospital Physicians

This questionnaire is designed to collect information about factors that mainly determine attrition and turnover of physicians in public hospitals in relation to internal migration (public to private hospitals). Moreover the questionnaire is intended to gather data on the possible effects of this internal migration of physicians on the public hospitals service delivery and users of public hospitals.

I. Section One

This section collects personal information about the respondent such as gender, age, place of birth, marital status, qualification and work experience.

1. Gender Female _____ Male _____
2. Place of birth _____
3. Age _____
4. Marital Status Married _____ Unmarried _____
5. Educational Qualification –Medical

Degree/ Diploma/Specialization	Name of the Institution	Year of Completion

6. What was the motivating factor which helped you in choosing this medical profession?
(Please tick the most appropriate option.)
 - Service to the nation
 - A well respected career
 - Your special aptitude
 - Desire to go abroad
 - Other(please specify) _____

7. Work Experience	Position	Duration	Place of work
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

II. Section Two

The aim of this section is to obtain information about the push factors within the public health system that lead physicians to move from public to private hospitals.

8. After you graduated from the university you join
 - a) Public health sector
 - b) Private health sector

If you join the public health sector, what were the reasons that made you to join the public health sector?

If you joined the private health sector, what were the reasons that made you to join this sector?

9. Which of the following push factors motivating you to left the public hospitals and transfer to private hospitals? (please rank as their level of importance to motivation)

Reasons of migration (push factors)	Significance				
	Very high	High	Medium	Low	Very low
Low salary and remuneration					
Heavy work loads					
Lack of professional resources					
Unavailability of the supply of drugs and equipments					
Quality of management					
Lack of promotion opportunities					

10. Is there any other outstanding factor which pushes you to leave the public hospital? If any please mention it.

11. Comment on the three major factors that forced you to leave the public hospital by making a comparison with your current employment in the private hospital.

III. Section Three

The intention of this section is to gather information about pulling(attracting) factors in the private health system that lead physicians to shift from public to private hospitals.

12. What are the key pull factors within the private health system that direct you to join the private health system?(Please rank them as the degree of their importance of motivation)

Reasons of migration (Pull factors)	Very High	High	Medium	Low	Very Low
Better salary and remuneration					
Reasonable workloads					
Improved professional resources					
Better supplies of drugs and equipment					
Better promotion opportunities					

13. Is there any other outstanding attracting factor within the private health system? If any please identify.

14. Comment on the three major factors that attracted you to join the private hospital by making a comparison with your previous employment in the public hospital.

15. Is there any other factor that motivated you to move from public to private hospitals?
(Hint: factors that categorized neither as push nor pull factor). If you have such kinds of factors please state below.
-
-

IV. Section Four

The objective of this section is to gather information about the possible outcomes of physicians migration from public to private hospitals on the remaining staffs in the public hospitals and hence on the quality, effectiveness, equity and access of health service delivery to the users of public health system (the poor).

16. As per your observation what is the trend of number of physicians migrating from the public to private health sector?

Increasing _____ Decreasing _____

17. According to your view what are the possible effects of the migration of physicians on the remaining staffs in the public hospitals?
-
-

18. Do the above effects in turn have any impact on service delivery?

Yes _____ No _____

If your answer is "yes" please identify those impacts?

If your answer is "no" please show how they don't have any impact on service delivery.

19. What do you think the effect of physicians' migration on the health care service delivery of the public sector? (Please rate the following effects as per their intensity).

	Substantially Increased	Increased	Average	Decreased	Substantially decreased	Don't Know
Physician to patient attendance ratio						
Waiting time						
Attention and respect given to patients						
Workload per person						
Non-qualified personnel performing duties beyond their scope of practice (Inappropriate treatment)						
Number of referrals						
Death attendance						
Number of hours that facilities remain open for in-patient ,emergency/casualty and surgical service						
Out-patient and support services availability in weekends and public holidays						
Patients resorting to other means of health care such as traditional healers and self-medication						
Under the counter fees and the sale of drugs that should be free						
Inequity of access to care to the poor because of busy public health institutions, unaffordable private institutions, etc.						

V. Section Five

The target of this section is to collect information regarding the intention of physicians in the private sector to return to the public sector or stay in the private health care system.

20. Do you have any intention to return to the public health sector?

Yes _____ No _____

21. If your answer is "Yes" in question No. 20, what are the reasons for the intention to return the public health system?

22. If your answer is "No" in question No. 20, what are the reasons for the intention to stay in the private health system?

VI. Section Six

This section is provided for respondents to give their general comment on the issue at hand and to furnish any possible solution for the problem.

23. What is your suggestion to curb the physicians' migration?

24. How do you compare the recent pay raise in the public hospitals with that of the private sector pay rate?

25. Do you have anything you want to share? If you have any please write it down.

Thank you very much for your co-operation!!

Annex II

Handwritten text, likely a stamp or signature, located in the bottom right corner of the page. The text is faint and difficult to read, but appears to contain several lines of information, possibly including a date and a name.



1 . probit dtmg sex age mst edul obsal ofri oplwe oimfa opinc obedu ogexp, robus
> t

```
Iteration 0: log pseudolikelihood = -48.604935
Iteration 1: log pseudolikelihood = -26.760356
Iteration 2: log pseudolikelihood = -23.316369
Iteration 3: log pseudolikelihood = -22.412601
Iteration 4: log pseudolikelihood = -22.273969
Iteration 5: log pseudolikelihood = -22.268605
Iteration 6: log pseudolikelihood = -22.268592
```

```
Probit regression                               Number of obs   =           85
                                                Wald chi2( 11)  =           52.93
                                                Prob > chi2     =           0.0000
Log pseudolikelihood = -22.268592              Pseudo R2      =           0.5418
```

dtmg	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
sex	-1.263332	.5291679	-2.39	0.017	-2.300482	-.2261821
age	-.1116701	.0353115	-3.16	0.002	-.1808793	-.0424609
mst	.8830697	.6407589	1.38	0.168	-.3727948	2.138934
edul	1.256124	.5766892	2.18	0.029	.1258344	2.386415
obsal	-1.1478	.7620468	-1.51	0.132	-2.641384	.3457843
ofri	-.1625502	.5887272	-0.28	0.782	-1.316434	.9913338
oplwe	-.044498	.4953797	-0.09	0.928	-1.015422	.9264256
oimfa	-.2712529	.5051500	-0.54	0.591	-1.261346	.7188402
opinc	-.2636745	.5124878	-0.51	0.607	-1.268132	.7407831
obedu	-2.718141	.8652459	-3.14	0.002	-4.413992	-1.022291
ogexp	-.9705851	.6267108	-1.55	0.121	-2.198916	.2577454
_cons	9.35168	2.228265	4.20	0.000	4.98436	13.719

2 . mfx

```
Marginal effects after probit
y = Pr(dtmg) (predict)
= .91662827
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
sex*	-.2098379	.09544	-2.20	0.028	-.396949	-.022827	.482353
age	-.0171264	.00719	-2.38	0.017	-.031214	-.003039	37.9059
mst*	.1002113	.06604	1.52	0.129	-.029217	.22964	.235294
edul*	.1532445	.07776	1.97	0.049	.00083	.305659	.329412
obsal*	-.1645055	.09663	-1.70	0.089	-.353901	.02489	.576471
ofri*	-.0240088	.08498	-0.28	0.778	-.190569	.142551	.670588
oplwe*	-.0067634	.07454	-0.09	0.928	-.152853	.139326	.647059
oimfa*	-.0380487	.06514	-0.58	0.559	-.16572	.089623	.741176
opinc*	-.0387491	.07301	-0.53	0.596	-.181853	.104354	.623529
obedu*	-.290171	.08715	-3.33	0.001	-.460989	-.119353	.694118
ogexp*	-.1149849	.07666	-1.50	0.134	-.26524	.03527	.717647

(*) dy/dx is for discrete change of dummy variable from 0 to 1

3 .



```
1 . probit intm mymill sex age mst edul obsal ofri oplwe oimfa opinc obedu ogexp
> , robust
```

```
Iteration 0: log pseudolikelihood = -41.865292
Iteration 1: log pseudolikelihood = -21.380764
Iteration 2: log pseudolikelihood = -18.408324
Iteration 3: log pseudolikelihood = -17.743483
Iteration 4: log pseudolikelihood = -17.641087
Iteration 5: log pseudolikelihood = -17.637026
Iteration 6: log pseudolikelihood = -17.637018
```

```
Probit regression                               Number of obs =           63
                                                Wald chi2(12) =          41.32
                                                Prob > chi2 =            0.0000
Log pseudolikelihood = -17.637018             Pseudo R2 =             0.5787
```

intm	Coef.	Robust Std. Err	z	P> z	[95% Conf. Interval]	
mymill	1.059073	2.119305	0.50	0.617	-3.094688	5.212834
sex	.007231	.4907419	0.01	0.988	-.9546054	.9690675
age	-.0565653	.0364531	-1.55	0.121	-.128012	.0148814
mst	-.5328684	.7692098	-0.69	0.488	-2.040492	.9747551
edul	1.055414	.6847564	1.54	0.123	-.2866842	2.397511
obsal	.8333535	.4632236	1.80	0.072	-.074548	1.741255
ofri	.5841529	.6304104	0.93	0.354	-.6514289	1.819735
oplwe	.6614184	.5893248	1.12	0.262	-.4936369	1.816474
oimfa	1.544356	.6637757	2.33	0.020	.2433795	2.845332
opinc	1.094572	.5118978	2.14	0.032	.0912703	2.097873
obedu	.4909615	.6655032	0.74	0.461	-.8134007	1.795324
ogexp	.5624634	.7263074	0.77	0.439	-.8610728	1.986
_cons	-2.483444	3.34769	-0.74	0.458	-9.044796	4.077909

```
2 . mfx
```

```
Marginal effects after probit
y = Pr(intm) (predict)
= .65928981
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
mymill	.3883648	.77546	0.50	0.616	-1.1315	1.90823	.885223
sex*	.0026506	.17988	0.01	0.988	-.349903	.355204	.365079
age	-.0207427	.01351	-1.54	0.125	-.047217	.005731	35.5714
mst*	-.201763	.29433	-0.69	0.493	-.778647	.375121	.269841
edul*	.3529314	.19943	1.77	0.077	-.037941	.743804	.380952
obsal*	.3098221	.16902	.83	0.067	-.021454	.641098	.634921
ofri*	.2164741	.2291	0.94	0.345	-.232547	.665495	.603175
oplwe*	.2431638	.2122	1.15	0.252	-.172747	.659075	.571429
oimfa*	.5597774	.19849	2.82	0.005	.170745	.94881	.746032
opinc*	.3975805	.17976	2.21	0.027	.045252	.749909	.587302
obedu*	.1819916	.24818	0.73	0.463	-.304425	.668408	.603175
ogexp*	.2097139	.27077	0.77	0.439	-.320979	.740407	.634921

(*) dy/dx'is for discrete change of dummy variable from 0 to 1

```
3 .
```



1 . probit dtmg sex age mst edul olqli opfe ovalp opol ovio owar, robust

```
Iteration 0: log pseudolikelihood = -48.604935
Iteration 1: log pseudolikelihood = -31.917144
Iteration 2: log pseudolikelihood = -29.519373
Iteration 3: log pseudolikelihood = -29.193561
Iteration 4: log pseudolikelihood = -29.184348
Iteration 5: log pseudolikelihood = -29.184338
```

```
Probit regression                               Number of obs =           85
                                                Wald chi2( 10) =          31.93
                                                Prob > chi2 =             0.0004
Log pseudolikelihood = -29.184338              Pseudo R2 =             0.3996
```

dtmg	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
sex	.1226505	.4353097	0.28	0.778	-.7305407	.9758418
age	-.0462306	.0228468	-2.02	0.043	-.0910095	-.0014517
mst	1.057576	.6426519	1.65	0.100	-.2019988	2.31715
edul	.7273924	.5144968	1.41	0.157	-.2810028	1.735788
olqli	-1.071227	.4155159	-2.58	0.010	-1.885623	-.2568307
opfe	-.2733511	.5472937	-0.50	0.617	-1.346027	.7993249
ovalp	-.5773446	.4352843	-1.33	0.185	-1.430486	.2757968
opol	-1.588513	.6241749	-2.54	0.011	-2.811874	-.3651532
ovio	-.0216702	.4744303	-0.05	0.964	-.9515364	.9081961
owar	.1652013	.6113316	0.27	0.787	-1.032986	1.363389
_cons	3.364253	1.04835	3.21	0.001	1.309524	5.418982

2 . mfx

```
Marginal effects after probit
y = Pr(dtmg) (predict)
= .87799637
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
sex*	.0238539	.08126	0.29	0.769	-.135404	.183111	.223529
age	-.0093564	.00465	-2.01	0.044	-.018465	-.000248	37.9059
mst*	.3176111	.23368	1.36	0.174	-.140388	.77561	.917647
edul*	.1777087	.14537	1.22	0.222	-.107211	.462629	.741176
olqli*	-.2244517	.08215	-2.73	0.006	-.385464	-.063439	.482353
opfe*	-.0548682	.11	-0.50	0.618	-.270465	.160728	.529412
ovalp*	-.1045102	.077	-1.36	0.175	-.255435	.046415	.670588
opol*	-.2868095	.10715	-2.68	0.007	-.49682	-.0768	.588235
ovio*	-.0043773	.09566	-0.05	0.964	-.191875	.18312	.576471
owar*	.0307231	.10553	0.29	0.771	-.176103	.237549	.070588

(*) dy/dx is for discrete change of dummy variable from 0 to 1

3 .



1 . predict mymill
(option p assumed; Pr(dtmg))

2 . probit intm mymill sex age mst edul olqli opfe ovalp opol ovio owar, robust

Iteration 0: log pseudolikelihood = -41.865292
 Iteration 1: log pseudolikelihood = -29.195511
 Iteration 2: log pseudolikelihood = -28.441656
 Iteration 3: log pseudolikelihood = -28.4093
 Iteration 4: log pseudolikelihood = -28.409059
 Iteration 5: log pseudolikelihood = -28.409059

Probit regression

Number of obs = 63
 Wald chi2(11) = 29.26
 Prob > chi2 = 0.0021
 Pseudo R2 = 0.3214

Log pseudolikelihood = -28.409059

intm	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
mymill	1.316283	1.919318	0.69	0.493	-2.445512	5.078078
sex	.4755708	.5834743	0.82	0.415	-.6680178	1.619159
age	-.0635445	.0282562	-2.25	0.025	-.1189257	-.0081633
mst	-.1917341	.7016218	-0.27	0.785	-1.566888	1.183419
edul	.7001272	.4868832	1.44	0.150	-.2541464	1.654401
olqli	.1859274	.490241	0.38	0.704	-.7749273	1.146782
opfe	.0769818	.4605222	0.17	0.867	-.8256252	.9795888
ovalp	.2989865	.4327371	0.69	0.490	-.5491626	1.147136
opol	.6278356	.6343223	0.99	0.322	-.6154134	1.871085
ovio	.5255739	.4615582	1.14	0.255	-.3790636	1.430211
owar	-1.00305	.4901739	-2.05	0.041	-1.963773	-.0423267
_cons	.1670896	2.53919	0.07	0.948	-4.809632	5.143811

3 . mfx

Marginal effects after probit
 y = Pr(intm) (predict)
 = .61972516

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
mymill	.5012925	.73285	0.68	0.494	-.935059	1.93764	.851683
sex*	.1705938	.19317	0.88	0.377	-.208019	.549207	.206349
age	-.0242003	.01062	-2.28	0.023	-.045022	-.003379	35.5714
mst*	-.0709232	.25113	-0.28	0.778	-.563123	.421277	.920635
edul*	.2714124	.18465	.47	0.142	-.090493	.633318	.746032
olqli*	.070157	.18278	0.38	0.701	-.288091	.428405	.365079
opfe*	.0292505	.17437	0.17	0.867	-.312514	.371015	.412698
ovalp*	.1144921	.16551	0.69	0.489	-.209903	.438887	.603175
opol*	.2345276	.22932	1.02	0.306	-.214931	.683986	.47619
ovio*	.2018201	.17541	1.15	0.250	-.141972	.545612	.634921
owar*	-.3815841	.16452	-2.32	0.020	-.704038	-.059131	.079365

(*) dy/dx is for discrete change of dummy variable from 0 to 1

4 .



1 . probit dtmg sex age mst edul owish ofrie ofami oqlif opolf ossen, robust

```
Iteration 0: log pseudolikelihood = -48.604935
Iteration 1: log pseudolikelihood = -32.976886
Iteration 2: log pseudolikelihood = -31.437097
Iteration 3: log pseudolikelihood = -31.335525
Iteration 4: log pseudolikelihood = -31.334851
Iteration 5: log pseudolikelihood = -31.334851
```

Probit regression

```
Number of obs = 85
Wald chi2(10) = 27.22
Prob > chi2 = 0.0024
Pseudo R2 = 0.3553
```

Log pseudolikelihood = -31.334851

dtmg	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
sex	.3822424	.59590	0.64	0.521	-.7857061	1.550191
age	-.0186304	.0278013	-0.67	0.503	-.0731199	.035859
mst	-.1165055	.4914374	-0.24	0.813	-1.079705	.8466942
edul	.2762854	.433892	0.64	0.524	-.5741272	1.126698
owish	.2623975	.8359767	0.31	0.754	-1.376087	1.900882
ofrie	.460052	.51547	0.89	0.372	-.5502507	1.470355
ofami	-.3847328	.6657543	-0.58	0.563	-1.689587	.9201217
oqlif	-1.114771	.3854722	-2.89	0.004	-1.870282	-.3592589
opolf	-1.299053	.518194	-2.51	0.012	-2.314694	-.2834112
ossen	-.5247455	.5377227	-0.98	0.329	-1.578663	.5291717
_cons	2.392896	.7386286	3.24	0.001	.9452101	3.840581

2 . mfx

Marginal effects after probit

y = Pr(dtmg) (predict)
= .8485793

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
sex*	.0789116	.10529	0.75	0.454	-.12746	.285283	.188235
age	-.0043712	.00647	-0.68	0.499	-.01705	.008308	9.94118
mst*	-.0259703	.10521	-0.25	0.805	-.232187	.180246	.917647
edul*	.0662393	.10641	0.62	0.534	-.142324	.274803	.576471
owish*	.0545178	.15587	0.35	0.727	-.250976	.360012	.070588
ofrie*	.1201032	.14898	0.81	0.420	-.171897	.412103	.741176
ofami*	-.1004774	.19419	-0.52	0.605	-.481083	.280128	.211765
oqlif*	-.2667337	.09192	-2.90	0.004	-.4469	-.086568	.482353
opolf*	-.2737734	.10259	-2.67	0.008	-.474846	-.0727	.588235
ossen*	-.1212816	.12238	-0.99	0.322	-.36114	.118577	.529412

(*) dy/dx is for discrete change of dummy variable from 0 to 1

3 .



```
1 . predict mymill
   (option p assumed; Pr(dtmg))

2 . probit intm mymill sex age mst edul owish ofrie ofami oqlif opolf ossen, rob
   > ust
```

```
Iteration 0: log pseudolikelihood = -41.865292
Iteration 1: log pseudolikelihood = -26.549687
Iteration 2: log pseudolikelihood = -24.923268
Iteration 3: log pseudolikelihood = -24.750033
Iteration 4: log pseudolikelihood = -24.744879
Iteration 5: log pseudolikelihood = -24.744872
```

```
Probit regression                               Number of obs =           63
                                                Wald chi2(11) =          36.57
                                                Prob > chi2 =            0.0001
Log pseudolikelihood = -24.744872             Pseudo R2 =             0.4089
```

intm	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
mymill	1.230709	2.84024	0.43	0.665	-4.336059	6.797477
sex	1.545652	.6891155	2.24	0.025	.1950108	2.896294
age	-.124568	.0386373	-3.22	0.001	-.2002956	-.0488403
mst	-.5542993	.6365528	-0.87	0.384	-1.80192	.6933213
edul	.5168962	.5448279	0.95	0.343	-.5509469	1.584739
owish	-.79137	1.170488	-0.68	0.499	-3.085485	1.502745
ofrie	.6310812	.59042	1.07	0.285	-.5261331	1.788296
ofami	-.9135175	.7859592	-1.16	0.245	-2.453969	.6269343
oqlif	.4197219	.7815531	0.54	0.591	-1.112094	1.951538
opolf	.7075208	.8018774	0.88	0.378	-.8641299	2.279172
ossen	-.0091554	.7167011	-0.01	0.990	-1.413864	1.395553
_cons	-.3985229	3.065485	-0.13	0.897	-6.406762	5.609717

```
3 . mfx
```

```
Marginal effects after probit
y = Pr(intm) (predict)
= .65945476
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
mymill	.4512206	1.03935	0.43	0.664	-1.58587	2.48832	.843092
sex*	.4125927	.119	3.47	0.001	.179348	.645837	.206349
age	-.0456709	.01462	-3.12	0.002	-.074317	-.017025	8.66667
mst*	-.1793455	.17673	-1.01	0.310	-.525727	.167036	.904762
edul*	.1926517	.20329	0.95	0.343	-.205789	.591093	.634921
owish*	-.3067735	.44128	-0.70	0.487	-1.17167	.558125	.079365
ofrie*	.2399399	.22591	1.06	0.288	-.202829	.682709	.746032
ofami*	-.3488273	.29108	-1.20	0.231	-.91934	.221686	.206349
oqlif*	.1492471	.26717	0.56	0.576	-.3744	.672894	.365079
opolf*	.2532508	.2743	0.92	0.356	-.284365	.790867	.47619
ossen*	-.0033578	.26294	-0.01	0.990	-.518719	.512004	.412698

(*) dy/dx' is for discrete change of dummy variable from 0 to 1



1 . probit dtmg sex age mst edul ilsal ihwl ilpr iuss ipmgt, robust

```
Iteration 0: log pseudolikelihood = -45.831637
Iteration 1: log pseudolikelihood = -28.897492
Iteration 2: log pseudolikelihood = -26.441476
Iteration 3: log pseudolikelihood = -26.063262
Iteration 4: log pseudolikelihood = -26.046289
Iteration 5: log pseudolikelihood = -26.046246
```

```
Probit regression                               Number of obs   =           83
                                                Wald chi2( 9)   =           33.41
                                                Prob > chi2     =           0.0001
Log pseudolikelihood = -26.046246              Pseudo R2      =           0.4317
```

dtmg	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
sex	-.4018181	.3970808	-1.01	0.312	-1.180082	.376446
age	-.0800822	.0263316	-3.04	0.002	-.1316913	-.0284732
mst	.607742	.3807324	1.60	0.110	-.1384798	1.353964
edul	.3612258	.4042561	0.89	0.372	-.4311017	1.153553
ilsal	-1.401896	.4859685	-2.88	0.004	-2.354377	-.4494151
ihwl	.0899999	.4240771	0.21	0.832	-.741176	.9211757
ilpr	-.7703975	.4636275	-1.66	0.097	-1.679091	.1382956
iuss	-1.563281	.4625841	-3.38	0.001	-2.469929	-.6566327
ipmgt	-1.282503	.4615137	-2.78	0.005	-2.187054	-.3779532
_cons	3.978947	.7732099	5.15	0.000	2.463483	5.49441

2 . mfx

```
Marginal effects after probit
y = Pr(dtmg) (predict)
= .89750976
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
sex*	-.0696976	.06847	-1.02	0.309	-.203903	.064508	.566265
age	-.0143085	.00504	-2.84	0.005	-.024184	-.004433	9.99398
mst*	.1150396	.07982	1.44	0.150	-.041407	.271487	.566265
edul*	.0652823	.07138	0.91	0.360	-.074615	.20518	.518072
ilsal*	-.2586228	.08609	-3.00	0.003	-.427351	-.089895	.506024
ihwl*	.0157428	.07302	0.22	0.829	-.127375	.158861	.313253
ilpr*	-.1563306	.09596	-1.63	0.103	-.344401	.03174	.373494
iuss*	-.2790076	.09051	-3.08	0.002	-.456395	-.10162	.53012
ipmgt*	-.2977494	.13907	-2.14	0.032	-.570328	-.025171	.325301

(*) dy/dx is for discrete change of dummy variable from 0 to 1



```
1 . predict mymill
   (option p assumed; Pr(dtmg))

2 . probit intm mymill sex age mst edul ilsal ihwl ilpr iuss ipmgt, robust
```

```
Iteration 0: log pseudolikelihood = -41.865292
Iteration 1: log pseudolikelihood = -21.899945
Iteration 2: log pseudolikelihood = -18.944061
Iteration 3: log pseudolikelihood = -18.35456
Iteration 4: log pseudolikelihood = -18.314143
Iteration 5: log pseudolikelihood = -18.313865
Iteration 6: log pseudolikelihood = -18.313865
```

```
Probit regression                               Number of obs =           63
                                                Wald chi2(10) =          44.41
                                                Prob > chi2 =             0.0000
Log pseudolikelihood = -18.313865             Pseudo R2 =             0.5626
```

intm	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
mymill	3.077401	2.467751	1.25	0.212	-1.759302	7.914104
sex	1.530009	.4560886	3.35	0.001	.6360914	2.423926
age	-.0752847	.0502767	-1.50	0.134	-.1738251	.0232558
mst	-1.010155	.5018461	-2.01	0.044	-1.993756	-.0265551
edul	-.266636	.4417084	-0.60	0.546	-1.132368	.5990966
ilsal	1.799596	.61946	2.91	0.004	.5854763	3.013715
ihwl	.0306788	.4483748	0.07	0.945	-.8481196	.9094773
ilpr	.8361457	.6952963	1.20	0.229	-.5266099	2.198901
iuss	1.299211	.6129504	2.12	0.034	.0978503	2.500572
ipmgt	2.77771	1.236292	2.25	0.025	.3546221	5.200799
_cons	-3.874733	3.042286	-1.27	0.203	-9.837503	2.088038

```
3 . mfx
```

```
Marginal effects after probit
y = Pr(intm) (predict)
= .72062697
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
mymill	1.034799	.80796	1.28	0.200	-.548771	2.61837	.868536
sex*	.5016229	.13782	3.64	0.000	.2315	.771746	.555556
age	-.025315	.01682	-1.50	0.132	-.058284	.007654	8.66667
mst*	-.3230894	.14587	-2.21	0.027	-.60899	-.037189	.539683
edul*	-.0889302	.14761	-0.60	0.547	-.378234	.200374	.539683
ilsal*	.5363966	.14657	3.66	0.000	.249132	.823662	.460317
ihwl*	.0102848	.1498	0.07	0.945	-.283323	.303892	.333333
ilpr*	.2508022	.1811	1.38	0.166	-.104141	.605745	.31746
iuss*	.3966349	.16359	2.42	0.015	.076009	.717261	.428571
ipmgt*	.5099646	.10525	4.85	0.000	.30368	.716249	.222222

(*) dy/dx is for discrete change of dummy variable from 0 to 1



1 . probit dtmg sex age mst edul ibsal irwl impr ibss, robust

```
Iteration 0: log pseudolikelihood = -45.831637
Iteration 1: log pseudolikelihood = -32.224559
Iteration 2: log pseudolikelihood = -30.570595
Iteration 3: log pseudolikelihood = -30.455676
Iteration 4: log pseudolikelihood = -30.454778
Iteration 5: log pseudolikelihood = -30.454778
```

```
Probit regression                               Number of obs   =           83
                                                Wald chi2( 8)   =           23.23
                                                Prob > chi2     =           0.0031
Log pseudolikelihood = -30.454778              Pseudo R2      =           0.3355
```

dtmg	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
sex	-1.12644	.5003624	-2.25	0.024	-2.107132	-.1457472
age	-.0929325	.0259007	-3.59	0.000	-.143697	-.0421681
mst	.3844885	.325302	1.18	0.237	-.2530926	1.02207
edul	.5758759	.3933457	1.46	0.143	-.1950675	1.346819
ibsal	-1.163102	.3924554	-2.96	0.003	-1.9323	-.3939035
irwl	.4266952	.3691109	1.16	0.248	-.2967488	1.150139
impr	-1.206243	.4269492	-2.83	0.005	-2.043048	-.3694381
ibss	-.4416183	.3910658	-1.13	0.259	-1.208093	.3248566
_cons	3.296206	.8306029	3.97	0.000	1.668255	4.924158

2 . mfx

```
Marginal effects after probit
y = Pr(dtmg) (predict)
= .85916645
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
sex*	-.2317352	.08914	-2.60	0.009	-.406437	-.057033	.578313
age	-.0207682	.00551	-3.77	0.000	-.031558	-.009978	9.99398
mst*	.0883392	.07952	1.11	0.267	-.067508	.244186	.566265
edul*	.1303645	.089	1.46	0.143	-.044071	.3048	.518072
ibsal*	-.2598781	.08838	-2.94	0.003	-.433094	-.086662	.506024
irwl*	.0874575	.0715	1.22	0.221	-.052682	.227597	.313253
impr*	-.3107897	.10722	-2.90	0.004	-.520937	-.100642	.373494
ibss*	-.095757	.07763	-1.23	0.217	-.247916	.056402	.566265

(*) dy/dx is for discrete change of dummy variable from 0 to 1



1 . probit intm mymill sex age mst edul ibsal irwl impr ibss, robust

Iteration 0: log pseudolikelihood = -41.865292
 Iteration 1: log pseudolikelihood = -23.923161
 Iteration 2: log pseudolikelihood = -22.535837
 Iteration 3: log pseudolikelihood = -22.490352
 Iteration 4: log pseudolikelihood = -22.49025

Probit regression Number of obs = 63
Wald chi2(9) = 31.22
Prob > chi2 = 0.0003
 Log pseudolikelihood = -22.49025 Pseudo R2 = 0.4628

intm	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
mymill	2.192145	2.512185	0.87	0.383	-2.731647	7.115937
sex	.7724956	.6020782	1.28	0.199	-.407556	1.952547
age	-.0435022	.04708	-0.92	0.355	-.1357773	.0487728
mst	-.5534733	.3997369	-1.38	0.166	-1.336943	.2299967
edul	-.3986479	.4955701	-0.80	0.421	-1.369947	.5726516
ibsal	1.55348	.4947207	3.14	0.002	.5838455	2.523115
irwl	-.2895586	.3952084	-0.73	0.464	-1.064153	.4850355
impr	1.36503	.8253181	1.65	0.098	-.2525642	2.982623
ibss	1.068112	.4451626	2.40	0.016	.1956097	1.940615
_cons	-2.491676	2.854003	-0.87	0.383	-8.085419	3.102066

2 . mfx

Marginal effects after probit
 y = Pr(intm) (predict)
 = .68898561

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
mymill	.7744741	.89803	0.86	0.388	-.985638	2.53459	.843961
sex*	.2670883	.20302	1.32	0.188	-.130815	.664991	.492063
age	-.0153691	.01629	-0.94	0.346	-.047302	.016564	8.66667
mst*	-.191587	.14027	-1.37	0.172	-.466509	.083335	.539683
edul*	-.1390458	.16481	-0.84	0.399	-.462068	.183977	.539683
ibsal*	.4963538	.14888	3.33	0.001	.204555	.788152	.460317
irwl*	-.1043481	.14593	-0.72	0.475	-.390364	.181668	.333333
impr*	.3990962	.19116	2.09	0.037	.024421	.773772	.31746
ibss*	.3733953	.14101	2.65	0.008	.097029	.649762	.555556

(*) dy/dx is for discrete change of dummy variable from 0 to 1

3 .

Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university, and that all source of materials used for the thesis have been duly acknowledged.

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