Overeducated? The Impact of Higher Education Expansion in Post-Transition Mongolia

by

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ABSTRACT

OVEREDUCATED? THE IMPACT OF HIGHER EDUCATION EXPANSION IN POST-TRANSITION MONGOLIA

Satoko Yano

After the fall of the Soviet Union and its transition in the 1990s towards a democratic form of government, Mongolia was forced to embark upon a complete series of reforms within society, including within its education sector. Mongolia's higher education sector was significantly affected by this change. Private higher education institutions mushroomed and the number of university graduates increased significantly. At the same time, the rapid expansion of the sector had serious implications for the quality of education in the country. The declining quality of higher education in Mongolia has now become a major political issue and has caused much heated public debate.

Using a mixed-methods approach, this study aims at understanding the gaps between Mongolia's educational needs and the policies the Mongolian government have implemented in response to the expansion of higher education. By analyzing the socio-political background of the expansion of higher education in Mongolia, it is hoped that some light may be shed on (1) the existence and magnitude of overeducation and its impact on individual earnings, (2) perceptions of overeducation among key stakeholders (e.g., government officials, employers and university deans) and (3) related policy interventions in Mongolia. It is also hoped that this study contributes to deepen understanding of overeducation from a policy borrowing/education transfer perspective.

Quantitative analyses were conducted using datasets from the Living Standards Measurement Survey (2002/2003) and the Household Socio-Economic Survey (2007/2007). Qualitative analyses were conducted using information collected through 14 individual interviews with key stakeholders (senior officials, university personnel, private employers and staff from international organizations) as well as from key policy and project documents from the Government and development agencies.

In this study, overeducation and undereducation are defined as having a level of education higher (or lower) than the modal value of the years of education observed in respective occupational categories (ISCO-88). With this definition, the percentage of overeducated/undereducated workers for Mongolia was approximately 27% in 2007/2008. This falls within the range of existing studies on the incidence of overeducation using definitions, mostly from developed countries. The findings also show that rates of return to each year of overeducation are positive, but smaller than those to adequate education, is consistent with existing studies. This supports my assumption that overeducation can happen even in a small country with a relatively small economy that heavily relies on resources and agriculture. The study also found that more women are overeducated and people in urban areas are overeducated. However, after controlling other factors, such as education, marital status, and types of job, being male actually increases the odds of being overeducated, while living in urban areas decreases the odds. This suggests that the Government may need to provide skills training targeting men in rural areas for improving their education-job match and create more opportunities for men in rural areas. Interviews

with key stakeholders also showed their concern to improve the quality of higher education and address the mismatch between education and labor market's demands.

The overall findings from the study's qualitative analysis suggest that people in Mongolia support the expansion of education in the country, since they see human capital as an important source of national development. However, the perceived low quality of higher education is a major concern and voices were unanimous among interviewees that serious policy measures should be taken in order to improve the quality of higher education. The study also found that the higher education reform policies introduced after the transition to a market-based economy and democratic system of government were part of a "reform package," implemented similarly in other former Socialist countries, linked with financial and technical support from international development partners. Technical and financial dependency on external resources continues to this day, though the focus may be shifting from financial resources to technical resources (i.e., foreign experts and "best practices"). Mongolia voluntarily and actively adapts "international standards" in higher education, sometimes without a rigorous-enough analysis of their appropriateness in the Mongolian context. To some stakeholders, such reliance is a source of concern.

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DEFINITIONS OF TERMS

Accreditation	A process to certify legitimacy and quality of academic institutions and/or programmes
Deregulation	Reduction or elimination of government control over a particular industry (i.e., liberalization)
Developed countries	High income countries (GDP per capita of more than USD 12,276)
Developing countries	Low to middle-income countries (GDP per capita of less than USD12,275)
Education transfer	Situation where an education policy in one country is introduced to another country even without explicit intention from "receiving" country
Higher education	Programmes with an educational content more advanced than what is offered at ISCED levels 3 and 4: ISCED 5 and 6
Market economy	Economy in which productions and investment, as well as pricing are determined by a market force
Mass higher education	Higher education that is open to people, often measured in participation rate in higher education
Overeducation	The state where one holds education qualification that exceeds the level required by the job
Overemployment	The state where one holds a job without an education qualification required by the job (=undereducation)
Planned economy	Economy in which production and investment are made based on plans developed by authorities
Policy borrowing	Situation where a policy in one country is introduced in another country, usually with clear intention of "borrowing"
Privatization	Transfer of ownership of government-owned property or enterprises to private entity
Small and medium-sized enterprises	Independent firms that employ fewer number of employees. Cut-off points varies among countries

Stakeholders	Individual having an interest in the policy issue and is a player in the policy arena either sub-nationally, nationally, and internationally
Transition countries	Countries in transition from centrally planned to market economies
TVET	A range of learning experiences relevant to the world of work, both within and outside of school
Undereducation	The state where one holds education qualification that is below the level required by the job
Underemployment	The state where one holds a job with an education qualification higher than the required level by the job (=overeducation)
Unemployment	Situation where a person is actively seeking employment is unable to find work
Youth	Individuals between 15 and 24 years of age (UN definition)

ACRONYMS

ADB	Asian Development Bank
AE	Average Education
CV	Curriculum Vitae
DCU	Democratic Union Coalition
EGSPRS	Economic Growth Support and Poverty Reduction Strategy
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GER	Gross Enrollment Ratio
HDI	Human Development Index
HE	Higher Education
HEI	Higher Education Institution
HIES	Household Income and Expenditure Survey
HSES	Household Socio-Economic Survey
IIEP	International Institute of Education Planning
IMF	International Monetary Fund
JA	Job Assessment
LSMS	Living Standards Measurement Survey
MD	Modal Education
MECS	Ministry of Education, Culture and Science
MNCEA	Mongolian National Council for Education Accreditation
MPRP	Mongolian People's Revolutionary Party
NSO	National Statistics Office
OBE	Outcome-based Education
OE	Overeducation
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PPP	Public-Private Partnership
PRC	People's Republic of China
SABER	System Assessment and Benchmarking for Education Results
SD	Standard Deviation
SR	Self Report
TVET	Technical and Vocational Education and Training

UE	Undereducation
UK	The United Kingdom
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	The United States of America
USD	United States Dollars
WB	World Bank

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Satoko Yano

DEDICATION

Dedicated to my husband,
Damon Lee Perry,
and our sons,
Yuki Lee Perry and Lyoto Aden Perry

CHAPTER I: PROBLEM STATEMENT AND BACKGROUND

1.1 Problem statement

During Mongolia's transition from a planned to a free-market economy in the 1990s, the higher education sector experienced substantial changes. The sector, once reserved for a limited number of students, expanded rapidly, while the curriculum became more diverse. In addition, alternative funding, mostly from student fees, was introduced and all public and private higher education institutions (HEIs) are now mandated to collect fees.

As a result of the changes in the sector, the number of HEI students has skyrocketed. In 2008, enrolment in HEIs (universities, colleges and post-secondary technical institutions) was 160,000, double the number in 2000. In 2006, the gross enrolment ratio for higher education was 47 percent, which is considerably higher than the average for developing countries (UNESCO, 2009).

There has been much discussion in Mongolia regarding the impact of the changes in the higher education sector. According to Steiner-Khamsi and Stolpe (2006), the relevance of graduates' degrees to the job market has been debated heatedly in the Mongolian media. In 2008, out of the 30,000 graduates that year, only 10,000 were able to find employment relevant to their qualifications (Ministry of Education, Culture and Science, 2009). This indicates that the remaining graduates were forced to take jobs that do not require their level of academic qualifications or expertise (or are unemployed). Thus, many graduates can be considered to be "overeducated". In European and other developed

countries, it has been found that overeducation has a negative impact on individual productivity. A similar situation could be the case in Mongolia.

There are currently debates in Mongolia on whether higher education should be regulated through an accreditation system, whether expanded higher education is simply deferring unemployment, and whether higher education has become a business. This study will shed light on these debates by analyzing the socio-political background of the higher education expansion. In particular, this study will examine (1) the existence or magnitude of overeducation and its impact on individual earnings, (2) perceptions of overeducation among key stakeholders (e.g., government officials, employers, and university deans) and (3) related policy interventions in Mongolia.

1.2 Background

1.2.1 Geo-political situation in Mongolia

Mongolia is a vast, landlocked country of approximately 1.56 million square kilometers with a population of 2.7 million. Around two thirds (60.1 percent) of the population lives in urban areas (Asian Development Bank, 2008). Mongolia is bordered by the Russian Federation in the north and the People's Republic of China (PRC) in the south. Mongolia is classified by the World Bank as a lower-middle income country, with GDP per capita of USD 2,252 in 2010 (in current USD)[1]. Mongolia is also a "country in transition", which shifted from communism and a planned economy to capitalism and a market economy in the 1990s.

[1] World Bank. World Development Indicators (accessed on 2 September, 2011)

With the Soviet Union's collapse in 1989, countries that had been closely allied with it, such as Mongolia, embraced capitalism and democracy. In 1990, the Mongolian People's Revolutionary Party (MPRP) won the first multi-party election and launched a new set of policies including (1) the abolition of state ownership of land, (2) the liberalization of the market, and (3) advancing democracy, the freedom of information, and the protection of human rights. In the following election, in 1996, the Democratic Union Coalition (DUC) gained power and moved forward with the further democratization, liberalization and decentralization of the society and the economy. In 2000, the DUC was defeated by the MPRP, putting the latter back in power. The MPRP continued most of the reforms initiated by the DUC, focusing on social welfare issues.

The political transition from a communist state to a democracy was relatively smooth. No attempt to overthrow the government materialized and political conflicts were largely resolved through negotiation and compromise (Ginsburg, 1995, p. 459). Although there were some incidents, such as the murder of S. Zorig, then Minister of Infrastructure, in 1998, and corruption allegations (Severinghaus, 2000), it is considered that Mongolians enjoy more political freedom than the populations of any other former communist country in the Central Asian region, many of which have kept their authoritarian regimes (e.g., Uzbekistan). Only Eastern European countries are comparable to Mongolia in this sense (Fish, 2001).

Currently, Mongolia has a multi-party democracy supported by a vibrant civil society (Landman, Larizza and McEvoy, 2005). The political situation is not entirely stable, however, and a violent riot following the general election in 2008 killed five people and

injured many, and left the Mongolian people deeply divided. Prospects for long-term political stability in Mongolia therefore remain unclear.

1.2.2 Mongolia's economic development and the remaining challenges

1.2.2.1 Initial "shock" of transition

The Mongolian economy prior to transition was heavily capital-intensive with technologies imported from the Soviet Union and Eastern European countries. The economy was also heavily dependent on the Soviet Union. Aid from the Soviet Union was between 25 and 30 percent of GDP by the end of 1980 and trade with the Soviet bloc was more than 90 percent of all imports and exports (Lee, 1993). Mongolian products were therefore extremely uncompetitive in the global market and Mongolia was highly vulnerable to external shocks. The worst shock came with the collapse of the Soviet bloc in 1989. Funds from the Soviet Union stopped completely in 1991 and the deficit was financed simply by printing money – which resulted in 100 percent depreciation of Mongolia's currency (*tugrik*) and triggered inflation, with the annual rate skyrocketing from an already high figure of 120 percent in 1991 to 320 percent in 1992 (Goyal, 1999). At the same time, GDP fell by more than 9 percent annually in 1991 and 1992 (Asian Development Bank, 2008).

In response to this economic near-collapse, Mongolia quickly proceeded to privatize state assets. Other aspects of reform that are complimentary to privatization, such as the legal system, market liberalization, and macroeconomic stabilization, proceeded

slowly, however. The collapse of the Soviet economy as well as Mongolia's lack of experience in managing a market economy hampered developmental progress.

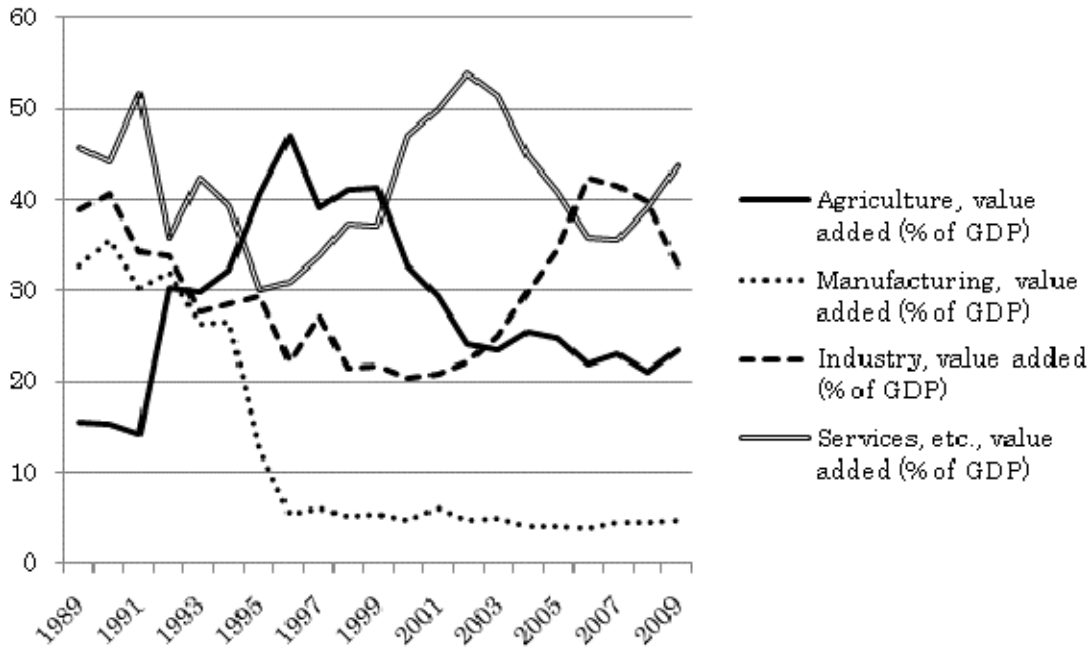
The early years of transition saw a high level of unemployment, (NSOa, 2009) which exacerbated poverty. Underemployment was a further problem, though it was not quantified (Goyal, 1999). In addition, food and other necessities were in extremely short supply due to Mongolia's inability to import. Furthermore, real wages and values of pensions and social benefits declined drastically due to stark inflation (Goyal, 1999). Lee (1993) points out that the situation was further exacerbated by disruptions in production, caused by the privatization of the transport system and some key industries. The initial "shock" was further aggravated by "Mongolia's admission to the IMF, the World Bank and the Asian Development Bank" (Steiner-Khamsi & Stolpe, 2006) and the structural adjustment that was required in order to receive their grants and loans.

1.2.2.2 Economic development after transition: a changing industrial structure

Recovery from the initial shock was not easy, but Mongolia fared better compared to many other former communist countries (Cheng, 2003). Cheng (2003) states that the relatively low share of heavy industry in the pre-transition economy, relatively peaceful and smooth political and social environment during the transition, and more importantly, early adoption of "appropriate adjustment policies and market-based reforms" are key factors in Mongolia's early recovery and sustained growth. The country's rich mineral resources potentially enable Mongolia to become financially independent of foreign aid, and mining of its resources has already changed the structure of the Mongolian economy.

As shown in Figure 1, the share of agriculture has declined significantly since 2000, after jumping from 15 percent in 1990 to 47 percent in 1996. This is a reflection of the economic changes in the transition period, during which other sectors (especially manufacturing and industry, which were dependent on the Soviet system) suffered. In recent years, the Mongolian economy has become more diversified, with sectors such as service gaining the top share of the economic output, over agriculture. At the same time, continuous price rises in natural resources are benefiting Mongolia. Mining had a share of approximately 20 percent of GDP in 2008 (NSOb, 2009).

Figure 1: Share of Economic Output (1989-2009), by Industry (% of GDP)

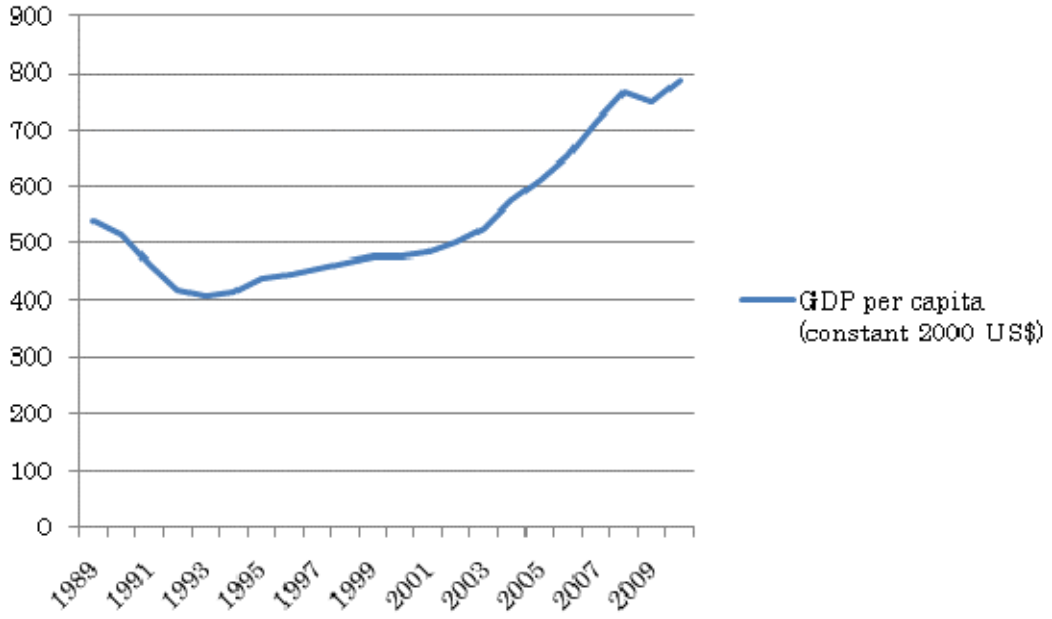


Source: World Development Indicators, World Bank[2]

[2] Data downloaded on 2 September, 2011

Economic recovery can be seen in the improvement of per capita GDP (Figure 2). As a result of the economic shock caused by the collapse of the Soviet Union, per capita GDP declined from USD 542 (2000 prices) in 1989 to USD 405 in 1993. The negative trend reversed in 2004 and in 2010 per capita GDP was almost double of that of 1993 (in 2000 prices).

Figure 2: Per Capita GDP, 1989-2009



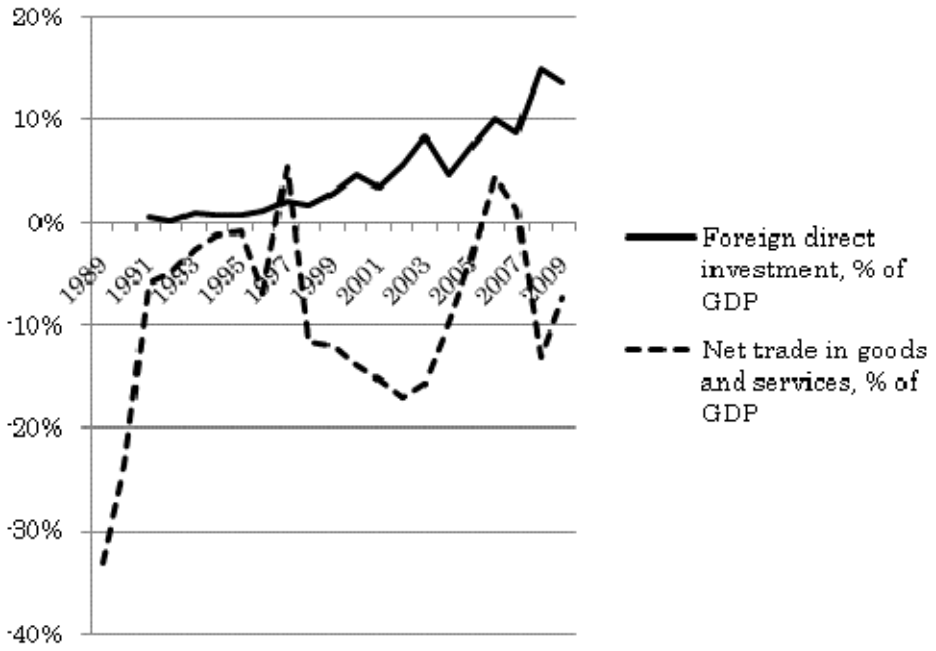
Source: World Development Indicators, World Bank[3]

The Mongolian economy is rapidly becoming connected to international markets. The total inflow of foreign direct investment (FDI) has increased consistently since the transition. In the beginning of the 1990s, FDI was virtually negligible, but by 2008, it accounted for 15 percent of GDP (Figure 3), driven by major investments in the mining sector. This trend is also apparent in the area of trade deficit and surplus. Between 1981 and 1989, before the transition, when Mongolia's economy was heavily reliant on the Soviet

[3] Data downloaded on 2 September, 2011

block, the trade deficit was around 30% (World Development Index, 2011). Since then, Mongolia's trade deficit has narrowed significantly and in some years a trade surplus was recorded (also in Figure 3).

Figure 3: Foreign Direct Investment (total inflow) and Trade Surplus/Deficit, % of GDP



Source: World Development Indicators, World Bank[4]

These economic improvements have positively affected the well-being of the Mongolian people, as reflected in the Human Development Index (HDI), which is calculated annually by the United Nations Development Programme (UNDP).[5] Mongolia hit its lowest point on the index in 1992, falling to 0.626 (maximum 1) following the

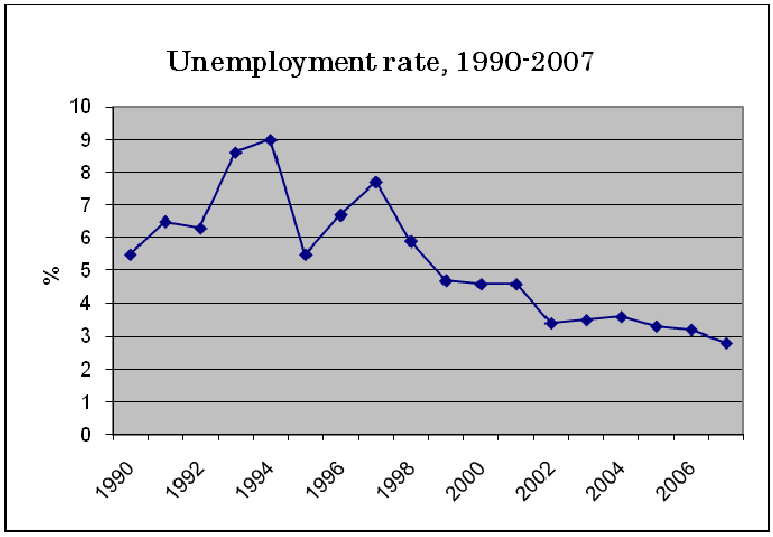
[4] Data downloaded on 2 September, 2011

[5] The HDI is calculated based on (1) life expectancy at birth, (2) adult literacy rate, (3) combined primary, secondary and tertiary gross enrolment ratio (4) GDP per capita.

collapse of the economy, mainly due to the sharp decline in school enrolments and GDP per capita. Since then, however, it has steadily increased and in 2007 it reached 0.7, exceeding, for the first time, the pre-1990 level.

Unemployment is showing a downward trend, as illustrated in Figure 4. Unemployment was recorded at its highest level, 9 percent, in 1994 and has stabilized at around 3 percent since 2002 (ADB, 2008).

Figure 4: Unemployment rate, 1990-2007



Source: Asian Development Bank (2008)

1.2.2.3 Remaining challenges

Despite the remarkable economic recovery in recent years, poverty persists. An estimated 32 percent of the population of Mongolia lives under the poverty line and income inequality between the haves and have-nots is widening, with the Gini coefficient increasing from 0.329 in 2002/3 to 0.380 in 2006 (UNDP, 2007). Differences in poverty

incidences among and within provinces are substantial (Coulombe and Otter, 2009). This is largely considered as a side-effect of the privatization process.

Youth unemployment and underemployment are major social problems. Mongolia has a very young population and approximately 50 percent of the total population is below 24 years of age. The unemployment rate among the youth (aged 15-29) is 14 percent, which is considerably higher than that of adults (UNDP, 2007).

In light of the expanding economy and higher education sector, this persistent youth unemployment suggests that there is a mismatch between education and the labor market. It may be interpreted that tertiary education degree holders are taking the jobs that could be performed by the secondary education graduates, resulting in underemployment of tertiary education graduates and unemployment of upper secondary education graduates.

1.2.3 Overview of educational development in Mongolia

1.2.3.1 Education before 1990 – from feudal to communist

Prior to the 1921 Revolution, education in Mongolia was provided in Lama monasteries and in one secular school, and only 1 percent of the population was literate (UNESCO Regional Office for Education in Asia, 1971). In 1921, the Soviet-style public education system started, with one school and 40 pupils. The first Constitution, adopted in 1924, proclaimed the right of workers and their children to free and secular education, while ousting the Lama schools. In 1933, the first unified curriculum was introduced, based on the curriculum in Soviet schools. By the 1950s, the number of schools had increased to more than 400, enrolling 60,000 pupils. During the Second Five-year Plan (1953-1957), the

Mongolian Government achieved universal coverage for compulsory four-year education and decided to expand it to seven years, first in urban areas and provincial centers.

The new Mongolian People's Republic gave special attention to women, who had limited rights in the feudal society that existed prior to the Revolution in 1921. The first literacy school for women was opened, for 20 students, in 1921 and by the 1930s approximately 40 percent of the children enrolled in primary schools were female. By the end of the communist era in 1989, 95 percent of females were receiving some form of education (Robinson and Solongo, 2000).

One of the main purposes of education at the time was "to bring up the rising generation in the spirit of profound respect for the principles of socialist society" (UNESCO Regional Office for Education in Asia, 1971, p.5). During this period, Mongolia achieved high literacy rates among the population, as in many other former communist countries. In 1990, the adult (aged 15 and over) literacy rate was 96.5 percent, the gross enrolment ratio (GER) for basic education (primary and lower secondary, 8 years) was 98.7 percent, the GER for upper secondary education was 40.1 percent and the GER for tertiary education was 16 percent (Ministry of Science, Education and Culture, Mongolia, 2009). These figures reflect the substantial financial investment in education made by the Mongolian Government during the communist period.

1.2.3.2 Education in Mongolia during the transition period

The collapse of the Soviet Union and the Council for Mutual Economic Assistance brought fundamental changes to Mongolia. The education sector was not an exception.

Reforms were implemented aimed at improving the efficiency and effectiveness of education through "rationalization and decentralization" (Weidman, 2002). Similar changes were introduced in other transition countries (Bray and Borevskaya, 2001).

This period was a challenging one for the former communist countries. Silova (2009) summarizes the changes and challenges faced by the former communist countries in the Central Asia region as follows:

> *The political, economic and social hardships of the transition period have made it practically impossible to provide basic education for all children, let alone to undertake a fundamental reform of the national educational systems. As a result, the capital infrastructure has rapidly deteriorated; pedagogical materials, equipment, and textbooks have fallen into short supply; and many qualified teachers and faculty have left the profession for more lucrative employment in the private sector; or have simply emigrated. (p182)*

Mongolian higher education went through a significant philosophical and pedagogical paradigm shift during that time, including the privatization of higher education institutions and the introduction of tuition fees (Bat-Erdene, Costa, and Yeager, 1996). According to Bat-Erdene, Costa, and Yeager (1996), however, the Education Ministry did not have enough capacity to implement the reforms to their full potential. In addition, the reforms introduced during this period were mostly ad-hoc and donor-driven. These factors

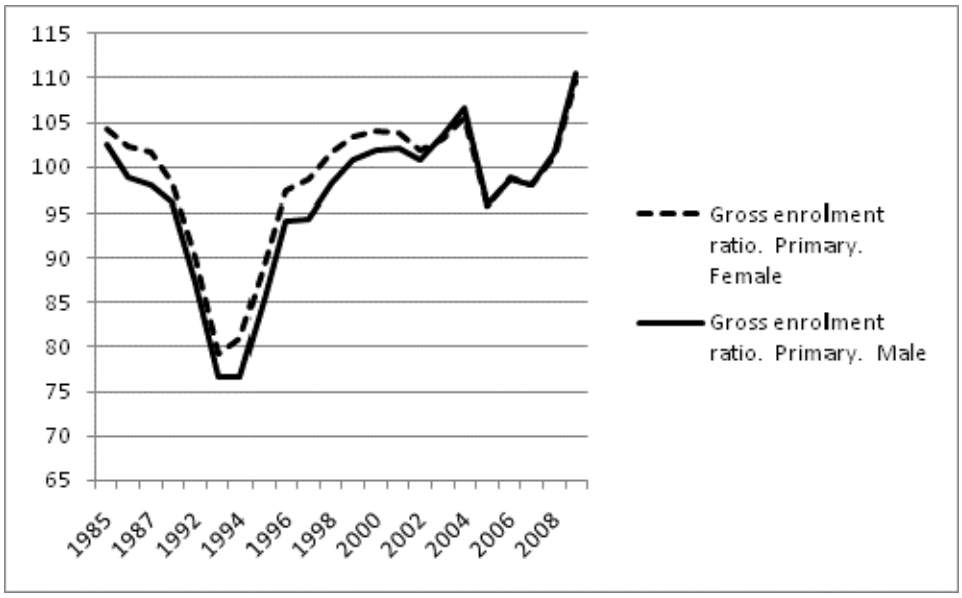
resulted in slow implementation and revision of the reform items, as mentioned in Steiner-Khamsi and Stolpe (2004 and 2006) and Steiner-Khamsi (2005).

Financing education was also difficult during this period. In 1990, education received the largest share of the government expenditure (18.5 percent, as calculated by the Asian Development Bank, 2008) and the education sector employed more than 10 percent of the workforce (Wu, 1994). This level of expenditure and labor was perceived as being too high and was heavily criticized by international financial organizations (World Bank, 2002). Then, between 1990 and 1992 real expenditure on education declined by 56 percent. According to Wu (1994), this was due to severe inflation.

It is reported that during the transition period, 50 percent of primary and secondary schools had budget deficits and capital expenditure was frozen (Nanzaddorj, 2001). At the same time, the International Monetary Fund (IMF) and development banks imposed several cost-cutting and recovery measures, including freezing capital investment, retrenching non-teaching staff, introducing partial cost recovery for kindergartens and boarding schools, and charging fees at the post-secondary and higher education levels. During this period, expenditure on books and learning materials was negligible.

During the initial stage of the transition, access to education declined rapidly. The GER for primary education fell significantly and recovered only in the 2000s. Enrolment among boys was affected more than among girls, due to the increased need for boys to work, in rural areas, to support their families. This is illustrated in Figure 5.

Figure 5: Gross Enrolment Ratios by Gender, Primary Education



Source: UNESCO Institute of Statistics Data Center[6]

The primary school drop-out rate rose as high as 8.8 percent in 1992, from its pre-1990 level of 4.4 percent (Ministry of Science, Education and Culture, Mongolia, 2009). Wu (1994) concludes that those who bore the highest cost of structural adjustment were rural children. In rural areas, enrolments in boarding schools, which were the only accessible schools for rural children from nomadic families, halved to 35,000 (between 1989 and 1993) following the closing of dormitories in rural primary schools. In addition, the government introduced dormitory fees in 1996 in order to reduce public expenditure. This had a significant negative impact on enrolment since many poor families in rural areas could not afford the fees (the policy was reversed in 2000). The quality of education also deteriorated during this period, due to declining funding for education as well as teachers' migration to cities (in search of better jobs).

[6] Data downloaded on 2 September, 2012.

1.2.3.3 Education in post-transition Mongolia – recovery, but challenges remain

The years 1992 and 1993 seem to have been the lowest point in terms of access to education in Mongolia. From 1993, enrolment started to increase and the drop-out rate decreased. By 1997, the GER for primary education was back at the 1990 level (Ministry of Education, Culture and Science, Mongolia, 2009). Enrolment in secondary education has also increased. In 1999, GER for lower secondary education was 70 percent and GER for upper secondary education was 42 percent. By 2009, GER for lower secondary education became 96 percent and GER for upper secondary education increased to 87 percent (UNESCO Institute of Statistics Data Center[7]). An effort to improve the quality of education was also made.

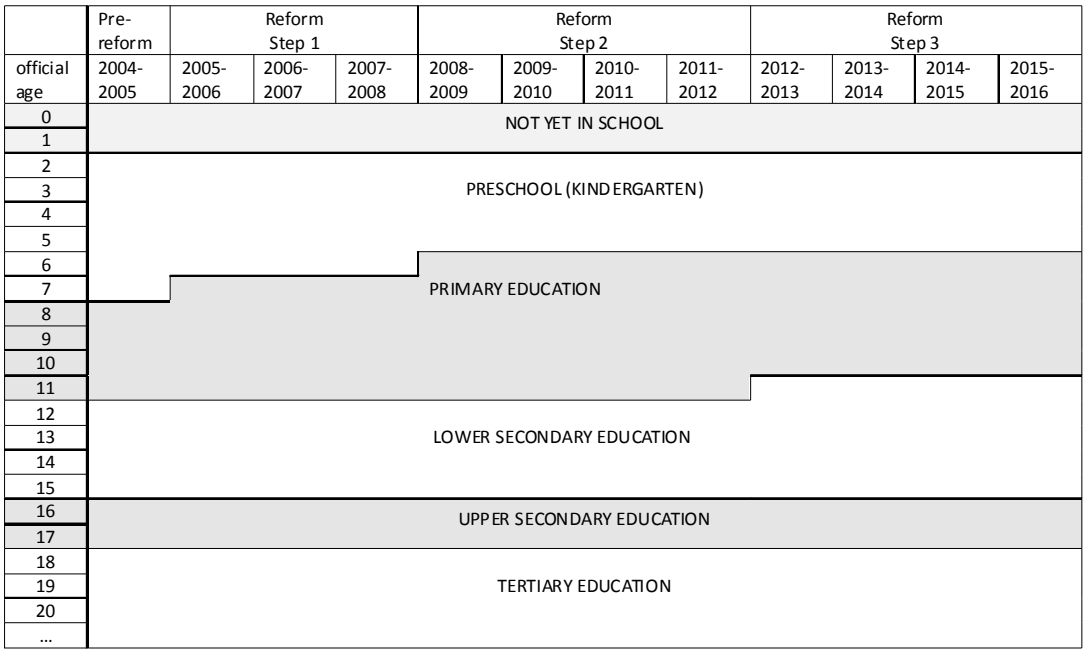
The Mongolian Constitution guarantees that every citizen, regardless of its sex, ethnicity, nationality, social and economic status, disability, and religion, has a right to free basic education. Furthermore, the Mongolian education system emphasizes "continuity" and life-long learning. In this context, it retained the tradition from the pre-transition era of supporting literacy and equivalency programs.

The current education system in Mongolia consists of preschool education, primary education, lower secondary education, upper secondary education, tertiary education, technical and vocational education provided at upper secondary and tertiary levels, and non-formal education, including adult literacy and lifeskills programs. Primary education and lower secondary education comprise "basic education", which is free and compulsory for all children. Prior to the transition, Mongolia had a 4-4-2 system, enrolling 8-year-olds in a four-year program of primary education, followed by a four-year lower secondary education program and a two-year upper secondary education program. In the 2004/5 academic year, the education cycle was increased from 10 to 11 years (5-4-2) enrolling

[7] Data downloaded on 27 April 2012.

7-year-olds in primary education, and then increased to 12 years in 2007/8 (6-4-2) enrolling 6-year-olds, bringing the Mongolian education system in line with the international standard. There is a plan to further reform the education system to a 5-5-2 system in the 2012/13 academic year. Higher education consists of colleges, universities and institutes offering diplomas of higher education (three years), bachelor's degrees (four years) and post graduate degrees (master's degree – two years, doctoral degrees – three to four years). Changes in the education system are presented in Figure 6.

Figure 6: Formal Education System in Mongolia with Recent Reforms



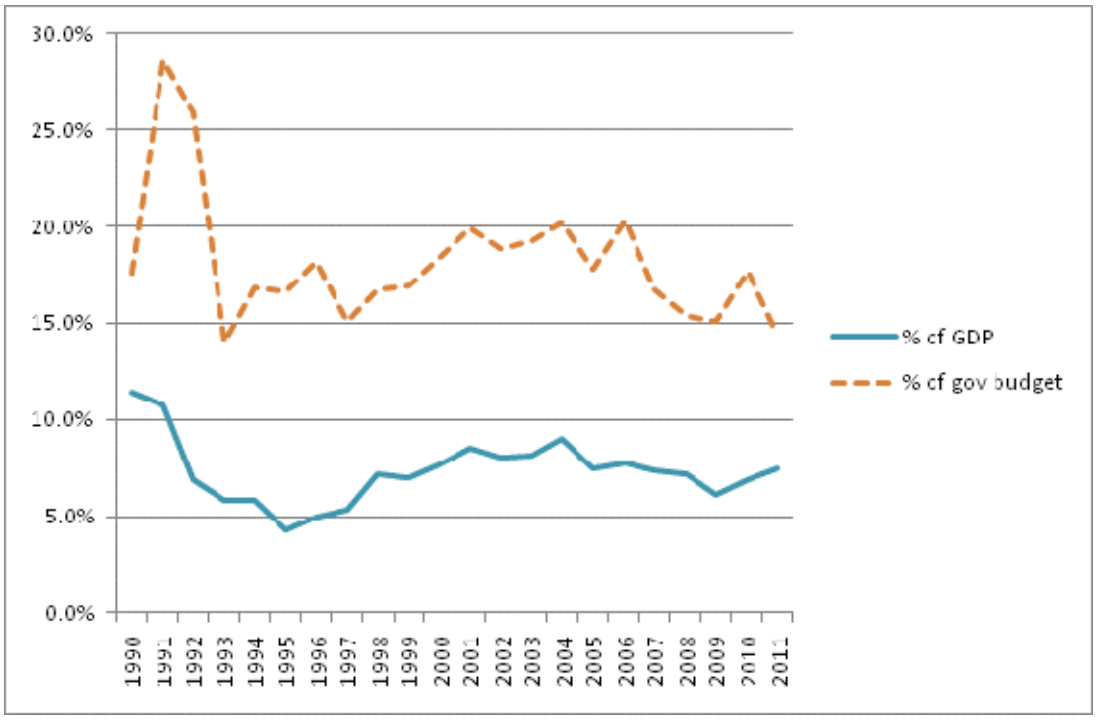
Source: UNESCO National Education Support Strategy for Mongolia, UNESCO Beijing (2008)

The central education authority for Mongolia is the Ministry of Education, Science and Culture (MECS), which is in charge of policy making, standard setting, teacher training, curriculum development, state examination, and accreditation of the HEIs. In addition to formal education, MECS also oversees non-formal education and technical and vocational education and training (TVET). The Education Departments at the local government level

(*aimag* – provincial level and *soum* – township level) are responsible for administering education in their respective areas.

Financing education remained a priority of the Mongolian Government even during the transition period. While other sectors faced severe budget cuts, the share of education in the government budget increased in 1991 (although the share of the education budget as a percentage of GDP declined until 1995). The current Education Law (1996) stipulates that at least 20 percent of the government budget must be allocated to education. This goal was achieved in 2004. In more recent years, however, the share has been around 15 percent.

Figure 7: Education budget (%) as share of GDP and of total budget, 1990-2011



Source: MECS, 2011[8]

[8] Date obtained from MECS officials in February 2011.

Despite the impressive recovery from the near collapse of the system in the early 1990s, several education issues persist. They include (1) an inverse gender gap at all levels of education due to greater demand for male labor (boys work instead of attending school), (2) insufficient consideration and access to education for vulnerable children (e.g., disabled children, minority children, children from nomadic herder families), and (3) a lack of capacity to accommodate young children (i.e., 6-year-olds).

1.2.4 Trends and challenges in the higher education sector in Mongolia

1.2.4.1 Higher education under Communism – educating industrial and ideological leaders

Prior to the transition, as in other former communist countries, higher education in Mongolia was for the selected few. Higher education during the communist period was driven by the demand for labor. The human resource needs identified by the national development plans determined the number of students to be enrolled in each department of the higher education institutions. In 1969/70, for example, the total enrolment was 8,733 and all students received state scholarships. The graduates were assigned to employment positions by the ministries in charge of the universities. This system was called "vertical" higher education.[9]

The main tasks of higher education in the Mongolian People's Republic prior to the 1990s period of transition were: "(1) to prepare highly qualified specialists brought up on the basis of Marxist-Leninist teachings and capable of making the fullest use of contemporary techniques; (2) to train scientific and pedagogical personnel; (3) to raise the qualifications of specialists engaged in various branches of the national economy, cultural

[9] This will be discussed further in "Literature Review" section

life, education and health; and (4) to disseminate scientific, cultural and political knowledge among the broad masses of the people." (UNESCO Regional Office for Education in Asia, 1971, p.18).

1.2.4.2 Higher education reforms since the transition – deregulation, privatization and expansion

According to a review of changes in the financing of higher education in 28 countries in the Asia-Pacific region (Bray, 2000), these countries are all grappling with difficult issues, including (1) the changing role of the State in higher education finance, (2) a pressure for privatization, (3) the need to create high-level manpower, and (4) the increased use of technology. Underlying these changes is "the advance of capitalist modes of operation" (Bray, 2000, p.332). Mongolia seems to be a typical case.

Post-1990 reform aimed at removing Soviet dominance and making changes to improve flexbility in the education system, largely taking American universities as the model. English became the first foreign language and the existing highly specialized and compartmentalized curricula and courses were revised (Hall and Thomas, 1999).

The funding of higher education was also reformed. During the first years of transition, the government shifted its funding priorities to primary and secondary education and the set up alternative funding sources for post-secondary education (Hall and Thomas, 2003). Student fees were introduced and private institutions were established to meet growing demand for higher education. As a result, the number of HEIs increased from one in 1990 (Hall and Thomas, 2003) to 172 in 2000 (Ministry of Education, Culture and

Science, 2009). This rapid expansion caught the public eye and higher education soon became a topic of debate. In response, regulations were tightened and institutions were merged, bringing the total number of HEIs down to 154 in 2008.

Despite the reduction in the number of HEIs between 2000 and 2008, the number of students continued to increase. The number of students doubled in only 10 years, reaching 160,000 in 2008. The GER for tertiary education increased from 14.3 percent in 1990 to 47 percent in 2006. This is much higher than the average GER of developing countries, which was 17 percent in 2006 (UNESCO, 2003 and 2009).

The majority of HEI students are female, reflecting Mongolia's "reverse gender disparity". Even though the share of female students in higher education enrolment declined from 65 percent in 1999 to 61 percent in 2007, it is still the highest among the Central Asian countries and is higher than the average in developed countries (55 percent in 2007) (UNESCO, 2009).

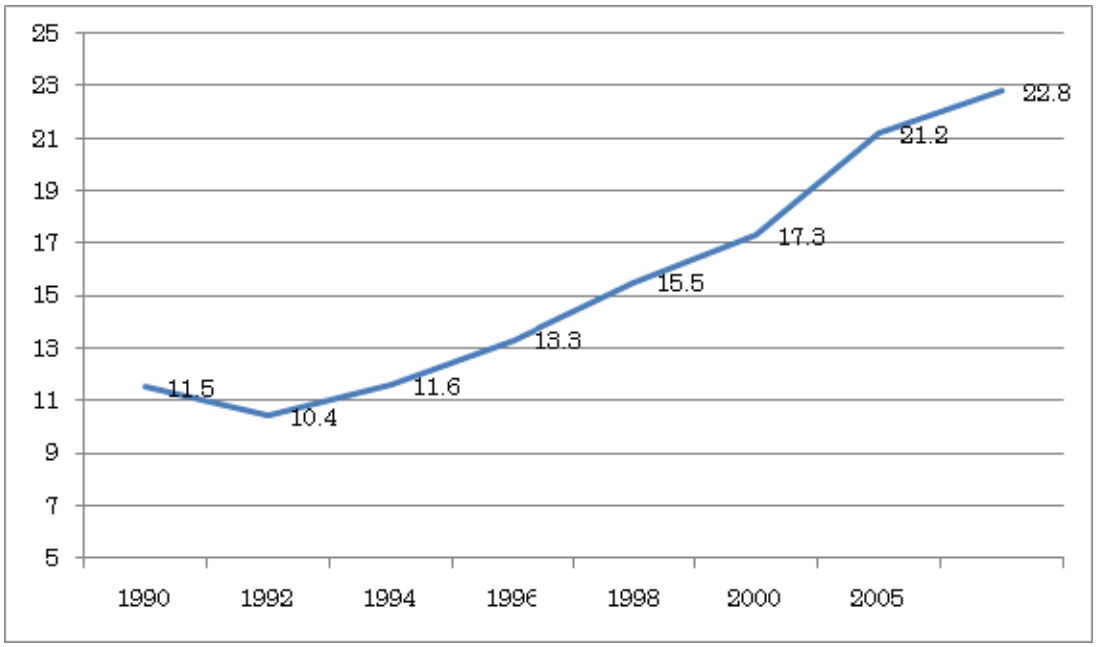
The quality of higher education and the employability of graduates are currently the major issues in higher education. Mongolian higher education has been widely criticized for being of low-quality and producing graduates with degrees not relevant to the labor market (Steiner-Khamsi and Stolpe, 2006). According to a survey conducted by the UNESCO Beijing Office (2010), 13.3 percent of the 2008 graduates are officially unemployed. At the same time, the survey found that many graduates feel that they had no other choice than applying for jobs not corresponding with their specialization, although the main reason they pursued higher education was to deepen their specialization and use it in their career paths. In addition, the same survey found that 78 percent of the companies

surveyed expressed dissatisfaction with the training provided in HEIs and with the need for "retraining and readjustment" of their new employees (p.21).

As noted earlier, prior to 1991, all HEIs were public and entirely supported by the state budget. This changed when a new diversified funding scheme was introduced. Public HEIs still receive direct state funding, but only to cover utility costs (e.g., electricity, water, and heating) and not other operational costs such as faculty salaries. For capital investment, public HEIs can submit requests for funding to MECS, which consolidates such requests from all HEIs and negotiates with the Ministry of Finance. The budget then needs to be approved by the Parliament. This procedure makes it extremely difficult for HEIs to plan any capital upgrading in the longer-term.

The rapid expansion of HEI enrolments outpaced the increase in the number of faculty members. Figure 8 illustrates the trend in the student-faculty ratio between 1990 and 2009. As the figure shows, the student-faculty ratio has risen since 1992 and it had more than doubled by 2009, at 22.8 (UNESCO Beijing Office, 2010), which is high compared to other countries.

Figure 8: Student-Faculty Ratio (1990-2009)



Source: UNESCO Beijing Office (2010)

This increase in the student-faculty ratio undoubtedly reflects the shift from higher education being only for selected elites to higher education being for the general public. At the same time, this may be one of the factors contributing to the perceived decline in the quality of higher education.

According to the World Bank (2010a), the higher education sector in Mongolia expanded with low cost and low quality. In 2007, Mongolia's per student annual public expenditure on higher education was a mere USD 339, only marginally higher than that of primary education (USD 206). This is far lower than the average amount among members of the Organisation for Economic Co-operation and Development (OECD), which is USD 11,512.

1.3. Policy response to overeducation in Mongolia

The low quality of higher education and the oversupply of graduates in some areas (e.g., medical sciences, economics, law, and business) as a result of the "uncontrolled expansion" of higher education caught the public attention and the Mongolian Government took several measures. The Higher Education Law, first adopted in 1995 and subsequently revised in 1998, 2000, 2002, and 2006, emphasizes the importance of good quality higher education that meets international standards and the learning needs of students. Through the revisions, the role of the central government was clarified as a coordination and standard-setting body. Authority was given to boards and committees at HEIs for actual institutional management, with the aim of increasing efficiency and effectiveness. In 1998, the Mongolian National Council for Education Accreditation (MNCEA), chaired by the Minister of MECS, was founded as an independent accreditation body for higher education institutions. Both institutions and programs are accredited. In 2009, a total of 88 HEIs were accredited (UNESCO Beijing Office, 2010).

The Master Plan for Education 2003-2015, which was updated in 2010, set a course for (1) rationalizing the existing higher education institutions through mergers, (2) improving the accreditation system, and (3) increasing enrolments in engineering, technology, natural sciences, education, and agriculture, while reducing enrolments in humanities, law and medical sciences. At the same time, TVET is increasingly seen by policy makers in Mongolia as an alternative to university education. With significant support from external donors such as the United States (through the Millennium Challenge

Account) and the Asian Development Bank (ADB), the government is increasing its investment in TVET and encouraging students to attend TVET institutions by providing scholarships. Private investment in TVET has also been encouraged, through the establishment of private TVET institutions and public-private partnerships.

As education is one of the biggest public sectors in Mongolia in terms of both budget and employment, the Minister of MECS has considerable political power. Some policies are developed from the top down and are often politically motivated. One such example is the "one laptop per child" policy, which was initiated by one of the ministers, only to be completely reversed by the minister from the opposing party when they won the election. Mongolia, like many developing countries, is also influenced very much by international partners (i.e., donors, consultants, and academics) and tends to accept foreign initiatives when they are financially supported, although some of them are adapted to the "Mongolian way". How education policies are imported and their impact on Mongolian education is described and analyzed in detail in Steiner-Khamsi and Stolpe (2006). This study will also examine political and economic factors, internal and external, that influence the development of policy responses to overeducation.

CHAPTER II: LITERATURE REVIEW

This section reviews the literature covering the phenomena affecting higher education expansion in Mongolia and other countries, as well as the consequences of this expansion. First, explanations for the education expansion will be reviewed and discussions on rates of return to education, a key concept in explaining overeducation, will be summarized. This will be followed by a review of higher education expansion as a means of nation building in developing countries and countries in transition, as well as a review of the rising concerns deriving from the rapid expansion of the sector. Since higher education expansion in Mongolia has been affected by imported foreign policies, the key literature on education transfer will also be reviewed in this chapter.

2.1. Explanations of the expansion of higher education

In order to understand the background of higher education expansion in Mongolia and other developing countries, it is important to understand the role of education in national development and the impetus behind education expansion. In this section, two of the most influential theories, namely human capital theory and modernization theory, will be reviewed.

2.1.1 Education and economic development

In recent decades, the world has witnessed a significant expansion of educational coverage, mostly at the primary level but also at higher levels. One explanation of this

expansion is provided by human capital theory, based on classic studies such as Schultz (1971) and Mincer (1974). In human capital theory, individual income is expressed as a function of individual characteristics (e.g., gender and socio-economic status), years of education, and work experience. The core assumption of human capital theory is that education increases knowledge and skills and therefore increases productivity. Thus, additional years of education are assumed to significantly increase individual income. Accordingly, education is not only a product to be consumed, but is an investment, contributing to higher earnings, benefiting individuals, and contributing to national economic development, benefiting society as a whole.

Numerous studies have been conducted to calculate coefficients for the additional year of education – i.e. the rate of return to education. A series of studies by Psacharolpolous (e.g., 1994, 2004), showing that investment in primary education and girls education yields high returns, and significantly influence the aid strategies of many international development partners, most notably the World Bank. Analyzing panel data from the period between 1971 and 2000 for 118 developing countries, Baldacchi, Clements, Gupta, and Cui (2008) found that spending on education has a positive and significant direct impact on education capital (i.e., enrolment) and thus indirectly supports growth. An analysis of education spending in 47 African countries by Oketch (2006) confirms the above finding. The study found that investment in human capital (measured as a percentage of GDP invested in education) is positively and significantly related to per capita growth. In addition to the quantity of education (e.g., years of education), the quality of education is also important for economic development. Jamison, Jamison and Hanushek (2007), using

data measured at 10-year intervals between 1960 and 2000 for 62 countries, found that the quality of education (measured by mathematics test scores) appears to be related to growth in income per capita. Furthermore, studies indicate that education plays a crucial role not only in economic development but also in the social and political development of a country ("externalities"). Hannum and Buchmann (2005) found that educational expansion also enhances individual well-being (i.e., health and economic welfare).

While it is now widely accepted that education increases individual income, the causal effect of education on national growth is still debated. For instance, Pritchett (2001) points out that many of the studies showing a positive correlation between education and national economic growth have serious methodological problems, which have overestimated the impact of education on growth. Using growth-accounting regressions of cross-national data, Pritchett argues that there is no association between human capital increase due to education and the rate of growth of output per worker. Pritchett presents three possible explanations of such a micro-macro paradox: (1) the possible counterproductive and/or adverse effect of the environment and context on workers' output, (2) the supply of educated workers surpassing a stagnant demand for such workers, and (3) the low quality of education not producing human capital matching the years of education. Overeducation may be understood as one of the phenomena of such a paradox. This paper further investigates this issue.

2.1.2 Rationale for expanding higher education – building the basis of a "modern" society

Another important theory that seeks to explain education expansion is modernization theory. In modernization theory, development is understood as a process of evolution from a traditional society to a "modern" society. Rostow (1960) presented one of the classic examples of this theory. In his work, stages of economic development are presented from a traditional economy to a mass consumption economy, with industrialization, internationalization, and increases in investment as necessary characteristics for economic "take-off." According to this view, in order to achieve development, a traditional society needs to acquire characteristics common to "modern" societies such as economic freedom, democracy and governance, gender equality, and above all, a healthy and educated population. Higher education is considered a critical component.

Using statistics from the World Bank in 1998, a study by El-Khawas et. al. (1998) found that higher income countries have higher tertiary enrolment ratios, hence economic development is positively correlated with higher levels of education. This finding was supported by Shofer and Meyer (2005) who analyzed the 10 decadal cross-national panel data for the period between 1900 and 2000. The study found that industrialized countries had a higher pace of higher education expansion since the 1960s than the rest of the world, though developing countries are now rapidly approaching the European countries in terms of higher education enrolment levels. The study also found that higher education expansion is positively correlated with some of the key features of "modern" society, including (1) democracy, (2) respect for human rights, (3) use of science and technology, (4) national planning, and (5) participation of NGOs. In addition, globalization and the rise of the

knowledge-based economy combined with a neo-liberal economy in recent years have been a driving force behind the expansion of higher education enrolment by governments of developing countries and individuals (Altbach, 1999; Torres and Shugurensky, 2002; and Tilak, 2009). As a result, the number of higher education students worldwide grew two-hundredfold between 1900 and 2000 (Shofer and Meyer, 2005).

Modernization theory has been criticized for indicating a linear evolutionary process for development, modeled exclusively on the path taken by Western society. One theory that challenges modernization theory is dependency theory, which argues that economic development in one country results in perpetual underdevelopment in other countries by creating a state of dependency through international trade and the "free market" (e.g., Frank, 1967). This view was further articulated by world system theorists such as Wallerstein (e.g., 1976). Under the "world system," there are "core" and "periphery" states that are interdependent in providing necessities such as basic goods and raw materials. "Core" states provide capital and "periphery" states provide labor. In such an interdependency, "periphery" (i.e., developing) countries will not be able to "take-off" to become "core" countries themselves.

Despite these criticisms, modernization theory continues to shape the policies and strategies of national governments and international development partners, as reflected in the Millennium Development Goals and "ranking" of countries by the UNDP in the Human Development Index, both focusing on issues such as health, education, and gender. Education transfer occurs, often supported by development partners, within a broader goal of modernizing the country. Understandably, there is greater education transfer from

"developed" countries to "developing" countries than vice versa. This issue will be further investigated in this study.

2.2 Trends and challenges of higher education expansion in transition countries

2.2.1 Financing mass higher education

In recent decades, almost all countries of the world have dramatically increased participation rates in higher education. "Mass higher education" was first achieved in the United States in the 1960s, followed by European countries and Japan. More recently, developing countries and former communist countries have become the major drivers of global higher education expansion. India and China, which are now the second- and third-largest academic systems respectively, after the United States (UNESCO, 2009b), are examples of this trend. However, government revenues are not keeping up with the increasing cost of higher education. Hence, financing expanded systems is a major challenge for many governments, in both developed and developing countries, especially for those countries with traditions of free access to higher education or substantial subsidies for higher education, including many European countries and former communist countries. Using a simulation model, Barr (2003) found that higher education cannot be funded only through taxes without resulting in major financial deficit, negative implications for quality, and reduction of coverage, even in a developed economy such as the United Kingdom. This financial shortfall has resulted in austerity in higher education institutions (e.g., larger class

sizes, freezes on capital investment, and increases of part-time lecturers) that is blamed for the deterioration of the quality of higher education.

It is within this context that the traditional view of higher education as a "public good" has been contested. Higher education is increasingly seen as a private good. As a result, cost-recovery, higher tuition, university-industry partnerships, and the expansion of private education dominate the current trend of financing higher education (UNESCO, 2009b). For instance, the World Bank (2010b) reported that in 2009 at least 26 countries in Africa (which had been influenced in the past by the European tradition of free higher education), charge either tuition fees or other types of fees such as examination fees, registration fees, identity card fees, library fees, and management information system fees. Despite these fees, private higher education has shown "spectacular" growth in Africa, accounting for 22 percent of all higher education students in 2006, close to that of Europe (26 percent).

Transition countries face the same challenges. In former communist countries, higher education was previously for the selected few. Higher education was free and a student stipend was provided. Most of the former communist countries suffered from significant budget cuts after the collapse of the Soviet Union and its economic bloc, resulting in a significant reduction in financial resources, which made maintaining the then existing (small) higher education sector impossible without fundamental reforms. As elsewhere, the introduction of fees and the expansion of private education were the major pillars of such reform. Johnstone (2004a) says that the magnitude of the financial devastation after the collapse of the Soviet system left countries such as Vietnam and

Mongolia with no option other than to abandon "free" higher education altogether and charge significant up-front tuition fees, while countries such as Russia and eastern European countries faced political difficulties in introducing fees, so applied more "acceptable" measures such as freezing or reducing student grants and introducing dual track tuition, which provides free higher education to selected students and charges fees for others.

In Central Asia, where Mongolia is situated, the introduction of tuition fees and the expansion of private education at the higher education level both took place during the transition. By 2004, private education was a considerable component of higher education in five of the six newly-independent countries in Central Asia (Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan and Mongolia), with only Uzbekistan not permitting the introduction of private education (Weidman, Chapman, Cohen and Lelei, 2004).

2.2.2 Shifting from "vertical" to "horizontal" higher education

The "manpower planning approach" was popular worldwide in the 1960s, when many former colonies gained independence and trained human resources ("manpower") were in short supply. The human resources required for the economic development forecasted in national plans were carefully identified and students were trained according to those plans. In Western Europe, in response to rising unemployment, this approach slowly made way to the "supply planning" approach, which focuses more on the social needs of unemployed individuals rather than the economy as a whole (Fagerlind and Sjöstedt, 1991).

In communist countries, the manpower planning approach remained essential in order to achieve core ideals of communism, including full employment, the elimination of income disparities and the improvement of the quality of life for all. Higher education was therefore a vital component of the national economic development plans. In these countries during the communist period, the structure of higher education was "vertical" (Heyneman, 2004) in that the various ministries had their own universities and produced graduates according to their development plans, as opposed to a "horizontal" system managed by the Ministry of Education (or Department of Higher Education). The "vertical" system, according to Heyneman (2004), did not allow universities and institutions to be responsive to changes in the economy and the labor market. In the transition countries such flexibility was considered to be crucial in order to recover from the shock experienced with the collapse of communism, as well as to foster democracy, human rights, a more liberal society and a market-oriented economy. In these countries it was therefore considered critical for the higher education sector to be "modernized" (e.g., Weidman, 2002) and made "horizontal", so that higher education could be more flexible and responsive to the changing needs of the market.

Countries in the former Soviet Bloc and other former communist countries therefore undertook drastic reform of the higher education sector during their transition to a market economy. The key features of this reform included: (1) decentralization, (2) the diversification of financial resources, and (3) the development of the private sector (e.g., Heyneman, 2004; McMullen, 2004; Phuong, 2006; Zajda & Zajda, 2007; Zha, 2009; Ararat,

2009; Weidman, 2002). Consequently, the number of higher education institutions and students increased rapidly in these countries.

2.2.3 Privatization – new opportunities for corruption and business?

The series of higher education reforms seemed appropriate at the time in light of the rapid liberalization of all markets, including the market for higher education. It has been argued, however, that the reforms had negative impacts. Ararat (2009) points out that while there was a reduced rate of embezzlement by the higher education bureaucracy during the 1980s and early 1990s in Russia due to declining public funds, privatization and expansion of the sector, the decentralization process, which led to delegation of authority to lower levels, opened up a new space for corruption, including the sale of academic degrees. Similar cases were also seen in Central Asia, where countries lacked the legal systems required to handle this issue, and the distinction between for-profit and not-for-profit was not defined (Heyeman 2004). For instance, opening of new private universities and institutions, at the same time that faculty salaries were in decline seems to have contributed to worsening corruption in Kazakhstan. In this country it is not unusual for families to pay faculty members to have their children admitted or to receive better grades (Caboni, 2004; also mentioned by Wiedman, Chapman, Cohen & Lelei, 2004). Similar cases are thought to have occurred in Mongolia, though none has been documented so far.

2.2.4 Equity concerns and access-quality trade-offs in higher education expansion

The emergence of for-profit private institutions is regarded as a risk to quality since private institutions are more likely to be driven by the need to meet immediate profit targets instead of maintaining the traditional value of higher education as an independent catalyst of knowledge and agent of change (Altbach, 1999; Tilak, 2009).

An analysis of HEIs in Kazakhstan by McLendon (2004) shows that private universities tend to be for-profit proprietary schools, rather than academically independent agents of change. Similarly, Li and Morgan (2008) found that private universities in China are also profit-oriented, with entrepreneurs making investments and expecting short-term economic returns. Without any incentive for companies or individuals to donate to higher education institutions, the budgets for private universities in Kazakhstan rely heavily on student tuition fees, with up to 100 percent of their budgets coming from these fees. This makes these institutes extremely vulnerable to changes in enrolment levels (Caboni, 2004) and universities and institutes are pushed to enroll as many students as possible to secure funding, regardless of the quality of education provided. Barr (1993) warned that higher education funding should not rely on any one particular source, in order to maintain education quality, but due to limited options for alternative funding, heavy reliance on student fees is prevalent in many private (and some public) universities.

In many developing countries, as most of the expansion in higher-education is happening at the “low quality” end of the system (Altbach, 1999), private higher education institutions tend to be lacking in prestige, as shown by Wilkinson and Yussof (2005) who analyzed Malaysian HEIs. Their study found that private universities are the last option for students who could not get into a public university. The available data also suggests that the

expansion of private universities has not been equitable, as students from lower-income families are largely confined to lower-quality courses and/or institutions. According to Bai (2006), the politically-driven rapid expansion of higher education in China has resulted in overcrowded, stratified institutions and aggravated unemployment among graduates. Zha (2009) warns that China is facing a resurgence of "elitism", with a university system that has private, lower-quality institutions at the bottom, enrolling mostly students from lower socio-economic backgrounds.

A trade-off between access and quality seems to be common across many of the former-communist countries that are experiencing rapid higher education expansion (e.g., Hossler, et al., 2007). The perceived declining quality of HEIs is a major concern faced in many of these countries. For example, Panfilova and Ashin (2009) fiercely criticized the "pseudoreforms" that were undertaken in the 1990s for greatly damaging the education and science sectors in Russia. Panfilova and Ashin (2009) claim that "the drastic reduction in appropriations for education and science, under the guise of reforms," led to "a catastrophic decline in the level of education" (p.85).

2.2.5 Will current trends continue?

The rapid shift from manpower planning to market-driven higher education has led to quality and equity concerns, and seems to have resulted in dissatisfaction with the current higher education systems in many former-communist countries. In Mongolia, for example, the higher education system is considered to be in a state of chaos, as there is little planning or government control.

Nevertheless, the global trend in higher education seems to be acceleration of privatization in order to achieve near-universal higher education which is believed to contribute to sustained economic growth driven by the knowledge-based economy. With continued financial instability, it is expected that governments will remain inclined to expand higher education through privatization.

At the same time, discussions on the quality and equity of higher education and the negative impact of expansion are likely to continue. Countries may tighten their regulations for accreditation or abolish or merge low-quality institutions, as happened in China and Mongolia. In any case, as long as there continues to be high demand for higher education degrees among students and families, there will continue to be pressure to further expand higher education.

2.3 Overeducation – consequences of education expansion

2.3.1 Definition of overeducation

Overeducation, also known as underemployment in some literature, generally refers to the situation where individuals are employed in jobs that do not require their current qualifications (Hung, 2008). This phenomenon typically occurs when the supply of university graduates to the labor market has increased due to increased access to higher education as well as an expansion of the youth population, resulting in an excess supply of graduates for the available jobs that require higher education qualifications.

The concept of overeducation can be traced back to the 1970s when Freeman (1971, 1976) found decreasing returns to education in the United States, raising questions regarding the excess production of graduates.

Citing Rumberger (1981), Tsang and Levin (1985) defined overeducation in the following three dimensions: (1) as a decline in the economic position of educated individuals relative to historically higher levels, explained by the increased share of higher level education graduates in the labor market; (2) as under-fulfilled expectation of the educated with respect to their occupational attainments resulting from a relatively stagnant labor market expansion compared to the expansion of the higher education sector; or (3) as the possession by workers of greater education skills than their jobs required, through expanded access to knowledge and skills (e.g., increased use of information and communication technology in education). Feldmen (1996) defines overeducation as a mismatch in employment type (full-time vs part-time) and payment (lower payment compared to a previous job or to others with a comparable educational background).

Essentially, overeducation is a mismatch between the level of education attained and the employment available in the existing job market. In the next section, the incidence of overeducation, as well as the conceptual understanding of causes of overeducation, will be reviewed.

2.3.2 Methodological and definitional issues in overeducation

2.3.2.1 Measuring overeducation

Two main methods are used for calculating the incidence of overeducation, the "objective" approach and the "subjective" approach. The objective approach includes the job analysis (JA) method, which is based on a systematic analysis of the levels and types of education required for certain jobs. Another method in this category is the realized match (RM) method, which is based on statistical analysis of the labor force. The RM approach can be divided into the "average education" (AE) method and the "modal education" (ME) method. Under these methods, workers who have higher educational qualifications than the mean or mode of workers in similar jobs will be identified as "overeducated." The subjective approach is the workers' self-report (SR) method, which is based on workers' replies to questions regarding the levels and types of education required for their current jobs. Rubb's (2003, p.624) summary of these methods is presented in Table 1.

Table 1: Four methods for measuring the incidence of overeducation

"Subjective" approach	
Self report (SR)	Estimates the level of required education by asking workers directly about the minimum education requirements necessary to perform their job.
"Objective" approaches	
Job analysis (JA)	Estimates the level of required education for a specific job based on an external (usually governmental) source (separate analysis by experts needed)
Average education (AE)	Estimates the level of required education by computing the mean of educational attainment within an occupational category.
Modal education (MD)	Estimates the level of required education by computing the amount of education that most commonly occurs within an occupational category.

The SR method is a "subjective" approach because it utilizes information provided by workers themselves through interviews and questionnaires. The types of questions asked include, "What kind of education does a person need in order to perform your job?" (Alba-Ramirez, 1993), "What was the minimum formal qualification required for (entering) this job?" (Dolton and Vignoles, 2000), and "Was the degree … a requirement in the job specification for your main employment?" (Battu et al., 2000).

The JA method, one of the objective approaches for measuring overeducation, utilizes an external and professional analysis of jobs, which provides a detailed list of the required qualifications and skills for specific jobs. Such information is available in some developed countries, such as in the *Dictionary of Occupational Titles* in the United States (US) and in the *Australia Standard Classification of Occupation*. Studies utilizing this approach include Viera (1997) from Portugal, and Kler (2005) from Australia.

The AE and MD methods, both in the category of the RM (realized match) method under the objective approach, utilize statistically computed values for required education. AE takes the mean of educational attainment within a specific occupational category while MD utilizes the amount of education most commonly held by the workers of a specific occupational category. Verdugo and Verdugo (1989) is one of the pioneers of using the AE approach (defining overeducation as one standard deviation above the average years of completion) and many studies followed, including Hung (2008); while MD was proposed by researchers such as Kiker, Santos and Mendes de Oliveira (1997) and Mendes de Oliveira, Santos and Kiker (2000).

Each method has advantages and disadvantages and produces different figures. Hartog (2000) perceives that the JA method is the most desirable method because it can match required skills and the skills acquired through various levels of education and therefore provides an objective reference point for overeducation and undereducation. The external analysis data required for using the JA method is not always available, however, especially in developing countries. Another potential problem with this method is that it may not be sensitive to recent changes in the labor market since such analysis cannot be undertaken often. In this regard, the SR method has the advantage as it captures local, up-to-date information. It relies on individuals' subjective opinions, however, so may not be reliable.

Both the AE and MD methods generate the incidence of overeducation from a large number of observations, which gives on-time and objective definitions of overeducation. Both the AE and MD methods classify a worker as overeducated or undereducated when he/she has years of schooling that deviate (positively or negatively) from the standard for the given occupation. The AE method utilizes average years of education among the occupation as the standard, and the MD method utilizes the distribution mode as the standard. As Hartog (2000) has noted, however, the AE and MD methods show distribution of degrees within a given occupation rather than actual skills and degrees required for the particular occupation. Another weakness of the AE/MD methods is that it is not possible to distinguish educational mismatch and skills mismatch, unlike the SR method which can formulate questions that assess two kinds of mismatches. Education and skills mismatches are related, but one does not necessarily imply the other.

Many workers with "matching" jobs in terms of education still feel skills mismatches, and a substantial proportion of "overeducated" graduates report higher-than-average level of skills utilization and few skill shortages (Allen and De Weert, 2007). The advantage of the AE/MD methods is their objectivity and timeliness. The SR approach relies on the workers' subjective evaluation of overeducation while the AE and ME methods utilize data-based criteria.

Studies have shown that findings from the JA and SR methods may be inflated compared to findings of the AE/MD methods. From a meta-analysis of 25 studies conducted utilizing different definitions of overeducation, Groot and van den Brink (2000) found that using the average years of education within an occupation as a definition of overeducation, the AE method lowers the incidence of overeducation by 12 percent compared to the studies using the JA method. The SR method also tends to provide a higher value of overeducation compared to the AE method. This tendency was confirmed in studies such as Kler (2005) and Hung (2008) that compared the approaches using the same dataset and showed that RM methods (AE/MD methods) produce a lower incidence of overeducation.

From the above findings, it can be concluded that the AE and MD methods will provide the most conservative values for overeducation among all methods, which would be a good starting point for further research. In addition, because the AE and MD methods do not rely on a subjective interpretation of overeducation (as with the SR method, which requires a standard set of questionnaires that cannot vary between countries), these methods allow an international comparison of findings. The AE and MD methods are also

cost-effective alternatives to the SR and JA methods, which is an advantage in many developing countries where detailed job analysis data or separate survey data that includes questions related to overeducation are not available or would be expensive to obtain. The AE and MD methods can utilize existing labor survey data, which expands the potential geographic coverage of research beyond the set of countries that are currently heavily studied. By using the AE or MD methods, therefore, the results of a study can be a basis for further studies in other developing countries.

2.3.2.2 Assessing impact of overeducation on wages

There are two empirical specifications in the existing literature to assess the impact of overeducation on wages, both deriving from human capital regression models such as the one presented below.

$$ln\ W_i = \alpha_0 + \alpha_z E_i + \alpha_{ex} ex + \alpha_{ex} ex^2 + Z_i\gamma + \varepsilon_i$$

$ln\ W_i$ is the dependent variable that signifies the log value of wages for an individual, I; E represents educational attainments; ex and ex^2 signify returns to labor market experience and its square; Z is a vector of other explanatory variables (e.g., gender, age, industry and sector of employment, occupation); and ε is an error term.

The first specification is called the ORU specification (Over-Required and Undereducation Model) (e.g., Hartog, 2000), or the "Duncan and Hoffman model – DH model". The model is written as:

$$ln\ Wi = \alpha 0 + (\alpha 1 Eri + \alpha 2\ Eoi + \alpha 3\ Eui) + \alpha 5 ex + \alpha 5 ex^2 + Zi\gamma + \varepsilon i$$

where

$Ei = Eri + Eoi - Eui,$

$Eoi = Ei - Eri$ if $Ei > Eri,$ or $Eoi = 0$, otherwise,

$Eui = Eri - Ei$ if $Ei < Eri,$ or $Eui = 0$, otherwise

ln Wi denotes the log of wages of an individual, *i*; *Eri* indicates the years of education required for an occupation of the individual; *Eoi* represents years of surplus education (overeducation) while *Eui* represents years of deficit education (undereducation); years of working experience and its square is described by *ex* and ex^2.

Using this model enables users to decode the total rate of return to education to two components attributed to required education and over/undereducation. This is particularly useful when the research interest is in comparison of the people with the same job but different education levels, identifying rates of return to a year of required education, overeducation and undereducation. This model has produced consistent findings in previous studies: the returns to required education ($\alpha 1$) and the returns to overeducation ($\alpha 2$) are both positive but $\alpha 1$ exceeds $\alpha 2$. This implies that overeducated workers earn more than their colleagues with the required education, but earn less than workers with the same education and matching jobs.

Another empirical specification is called the "dummy model" or the "Verdugo-Verdugo model – VV model":

$$ln\ Wi = \alpha 0 + \alpha 1 Ei + \alpha 2 OVi + \alpha 3 UNi + \alpha 4 ex + \alpha 4 ex^2 + Xi\gamma + \varepsilon i$$

ln Wi denotes the log of wages of individual, *i*; *Ei* is the years of education actually attained; *OVi* (overeducated) and *UNi* (undereducated) are dummy variables that will be 1 if the individual *i* is classified as overeducated or undereducated; years of working experience and its square are described by *ex* and ex^2; *Xi* is a vector of other explanatory variables and εi is an error term.

Coefficients to *OVi* and *UNi* should not be considered as rates of return to overeducation or undereducation. Unlike the Duncan-Hoffman model, this model will compare overeducated and undereducated workers with workers with the same level of education, but with adequately matching jobs. This model measures either a premium or a penalty for being overeducated or undereducated. For instance, this model tends to produce a negative coefficient to overeducation ($\alpha 2$). This negative coefficient can be interpreted as a penalty for not utilizing one's education most efficiently. On the other hand, the coefficient of the dummy variable for undereducation tends to be positive, suggesting that undereducated workers have skills and knowledge that are not measured by education or experiences (e.g., intellectual ability) which allowed them to work in a job for which they are not academically qualified. This model will be useful when the research interest is in comparing people with matching and non-matching jobs who have the same level of education.

2.3.3 Incidence of overeducation

A number of studies, mainly from Europe and North America, have sought to estimate the percentage of the labor force that is overeducated (the incidence of

overeducation). Frenette (2004), for example, found that 30 percent of Canadian graduates were overqualified for their jobs. Similarly, Karakaya, Plasmam and Rycx (2007) found that between 22 and 24 percent of the workforce is overeducated in Belgium. Bauer (2002) found that as high as 30 percent of men in Germany were overeducated.

According to a meta-analysis conducted by Groot and Maassen van den Brink (2000), using 25 studies conducted between 1981 and 2000, the incidence of overeducation ranges from 10 percent (women) to 40 percent (combined samples). The average incidence of overeducation for these 25 studies was 23.3 percent, and declined slightly over the years (28.7 percent in the 1970s, compared to 21 percent in the 1990s). The meta-analysis also found that the United States (26.3 percent) had a higher incidence of overeducation than Europe (21.5 percent).

Table **2** summarizes some findings from selected recent studies on the incidence of overeducation and undereducation. It is clear that no matter which method is utilized to define overeducation, quite a significant proportion of the labor force is overeducated. In spite of the variation in figures, it can be said that overeducation exists in Europe and North America and has been a persistent problem in recent decades. Studies from developing or newly industrialized countries and developing countries are scarce, but show similar findings. For instance, Quinn and Rub (2006) found that the overall incidence of overeducation in Mexico is 17.2 percent, using the mean definition of required education for men, but this figure increases to 39.9 percent when modal value is used as required education. In Taiwan, the incidence of overeducation is as high as 45.8 percent using the SR approach, although this number drops sharply to 17.31 percent when the AD approach is used (Hung 2008). In Hong Kong, approximately 38 percent of men and 32 percent of women were overeducated in 1986, and those numbers remained almost unchanged in 1991 (37 percent for men and 31 percent for women) (Cohn and Ng, 2000).

Studies that use the model value for required education (MD) tend to produce higher figures than the AD method, but similar results to those produced by the SR method. The JA method seems to produce figures that are in between the figures produced by the SR method and AD method. There is no clear difference in the figures between developed countries (i.e., North America and Europe) and other countries and regions (Hong Kong, Taiwan, and Mexico), although studies outside Europe and North America are rather scarce and it is therefore difficult to make a comparison.

Table 2: Results of selected recent studies (incidence of overeducation)

	Frenette, 2004	Hung, 2008	Karakaya, et. al., 2007	McGuinnes & Bennett, 2007	Quinn & Rubb, 2006	Robst, 1995	Van der Meer, 2006	Bauer,2002	Cohn & Ng, 2000
Country	Canada	Taiwan, China	Belgium	UK	Mexico	USA	Netherland	Germany	Hong Kong, China
Data year	1982, 1986, 1990	1997, 2002	1995	1999	1987-1999	1976, 1978, 1985	1994, 1996, 1998	1984-1998	1986, 1991
Sample	28,103	1,606	80,464	927	4,945	560 (individuals) 1,372 (observations)	2,248 (1994) 2,431 (1996) 2,473 (1998)	4,344 (individuals) 26,902 (observations)	269,343 (1986) 300,666 (1991)
Method	SR	SR & AE	JA & MD	SR	AE & MD	SR	JA	AE & MD	MD
Incidence of Overeducation	30.4-36.4%	SR: 45.83% AE: 17.31%	JA: 24.1% MD: 21.9%	32.3% (first employment)	17.2% (AE) 39.9% (MD) 13.5% (OLS)	44.68%	20.9% (1994) 24.3% (1996) 28.3% (1998)	AE: 12.3% (male) 10.7% (female) MD: 30.8% (male) 29.9% (female)	1986: 38% (male) 22% (female) 1991: 37% (male) 31% (female)
Incidence of undereducation	Below 5%	SR: 11.89% AE: 14.13%	JA: 25.8% MD: 32.4%	N/A	19.4% (AE) 30.9% (MD) 13.8% (OLS)	11.3%	25.7% (1994) 25.4% (1996) 14.3% (1998)	AE: 10.4% (male) 15.6% (female) MD: 20.6% (male) 37% (female)	1986: 28% (male) 24% (female) 1991: 28% (male) 25% (female)
Note	Only post-secondary graduates included			Among the UK graduate labor market	Men only		Panel data analysis	Panel data analysis	

The incidence of overeducation varies not only across countries but also within countries and between HEIs. McGuinness and Bennett (2007) concluded from data from Northern Ireland that the incidence of overeducation is heavily concentrated amongst the lower segments of the wage distribution, although it is not exclusive to them. A study by Frenette (2004) found that the incidence of overeducation varies among academic programs, among degrees obtained, and among industries of employment. Battu, Belfiled and Sloane (2000) report similar findings. Robst (1999) found that individuals attending higher quality HEIs are less likely to be overeducated.

2.3.4 The impact of overeducation

Studies suggest that overeducation exists in many countries, both in developed countries in Europe and North America, and also in developing countries, although little is known about overeducation in developing countries. But what are the consequences of overeducation?

The impact of overeducation has been studied in many areas. Labor and education economics focuses on economic returns (income) to surplus education compared to returns to required education. Hartog (2000) reviewed studies from five countries (Netherlands, United Kingdom, United States, Spain, and Portugal) and concluded that the returns to overeducation are positive, but smaller than the returns to required education. Furthermore, Hartog estimated that the returns to overeducation are approximately half to two-thirds of the returns to required education. According to Groot and Maassen van Brink (2000), the rate of return to required education is 7.8 while the rate of return to overeducation is 3.0. Rubb (2003) conducted a similar meta-analysis, but analyzed the studies using the DH model for wage estimation. Rubb criticized Groot and Maassen for combining studies using the DH model and the VV model since it potentially biases the average returns to surplus education downward and the average returns to deficit education upward. Examining 23 studies from eight countries, Rubb found that the average return to overeducation is 5.2 while the average return to required education is 9.6. Table 3 summarizes results of the selected recent studies.

Table 3: Results of selected recent studies (rates of return to required education, overeducation, and undereducation)

	Frenette, 2004	Hung, 2008	Korpi & Tahlin, 2009	Quinn & Rubb, 2006	Van der Meer, 2006
Country	Canada	Taiwan, China	Sweden	Mexico	Netherland
Data year	1982, 1986, 1990	1997, 2002	1974, 1981, 1991, 2000	1987-1999	1994, 1996, 1998
Sample		1,606	2,828 (1974) 3,135 (1981) 3,207 (1991) 2,877 (2000)	4,945	2,248 (1994) 2,431 (1996) 2,473 (1998)
Method of defining overeducation	SR	SR & MD	SR	AD, MD, and OLS	AD & MD
Methods of estimating earning functions	VV	DH	DH	DH	
Required or adequate education	N/A	WA: 0.0859 (21.69) RM: 0.1107 (19.50) (by year)	0.068 (0.001)	0.085 (mean) 0.076 (mode) 0.049 (OLS)	0.071 (34.4) (1994) 0.068 (29.9) (1996) 0.075 (29.4) (1998)
Overeducation	College: -0.111 Bachelors: -0.194 Masters: -0.034 Doctorate: 0.057 (2 years after graduation)	WA: 0.0627 (11.25) RM: 0.0646 (7.01) (by year)	0.027 (0.002)	0.043 (mean) 0.048 (mode) 0.049 (OLS)	0.041 (34.4) (1994) 0.035 (8.60) (1996) 0.047 (12.0) (1998)
Undereducation		WA: -0.0688 (-6.08) RM: -0.0583 (-0.76)	-0.026 (0.003)	-0.03 (mean) -0.036 (mode) -0.039 (OLS)	-0.028 (8.64) (1994) -0.029 (8.80) (1996) -0.036 (7.30) (1998)
Note					

*VV: Verdugo & Verdugo model (VV)
*DH: Duncan & Hoffman model (DH)

	Bauer,2002	Cohn & Ng, 2000	De Oliveira et al., 2000	Wu, 2008
Country	Germany	Hong Kong, China	Portugal	China
Data year	1984-1998	1986, 1991	1991	1995
Sample	4,344 (individuals) 26,902 (observations)	269,343 (1986) 300,666 (1991)	23,306	Not specified
Method of defining overeducation	AD & MD	MD	MD	Not specified
Methods of estimating earning functions	VV DH	VV DH	DH	DH
Required or adequate education	VV: N/A DH: 0.012 (male, mean) -0.005 (female, mean) 0.085 (female, mode)	VV: N/A DH: 0.14 (male, 1986) 0.14 (female, 1986) 0.17 (male, 1991) 0.19 (female, 1991)	0.1015 (12.31)	0.058
Overeducation	VV: -0.028 (male, mean) 0.006 (female, mean) -0.01 (male, mode) -0.009 (female, mode) DH: -0.01 (male, mean) -0.019 (female, mean) -0.086 (male, mode) 0.084 (female, mode)	VV: -0.10 (male, 1986) -0.08 (female, 1986) -0.17 (male, 1991) -0.29 (female, 1991) DH: 0.11 (male, 1986) 0.1 (female, 1986) 0.11 (male, 1991) 0.08 (female, 1991)	0.043 (21.01)	0.012
Undereducation	VV: 0.01 (male, mean) -0.009 (female, mean) 0.005 (male, mode) -0.027 (female, mode) DH: -0.013 (male, mean) -0.019 (female, mean) -0.092 (male, mode) -0.088 (female, mode)	VV: 0.03 (male, 1986) 0.08 (female, 1986) 0.11 (male, 1991) 0.05 (female, 1991) DH: -0.13 (male, 1986) -0.10 (female, 1986) -0.12 (male, 1991) -0.14 (female, 1991)	-0.0131 (-1.03)	-0.029
Note	Unobserved individual differences controlled, only results from fixed effects model presented			Controlled for industries of employment, gender and geographical region

The impact of overeducation goes beyond individual earnings, however. Using several labor-market models, Tsang and Levin (1985) show that being overeducated is related to lower job satisfaction, which directly and negatively affects production. Similarly, Tsang (1987) found that a one-year increase in overeducation was related to an 8.35 percent drop in firm outputs for 22 Bell companies in the United States in 1981 and 1982.

Although not directly analyzed in relation to firm outputs, various studies have been conducted on the impact of overeducation on individual behavior, from organizational psychology and management perspectives. Studies such as those by Tsang, Rumberger, and Levin (1991) applied a model to describe individual productivity as a function of individual characteristics (e.g., ethnicity, age, sex, and selected psychological characteristics) and job

characteristics (i.e., required level of education) and individuals' surplus (or deficit) education compared to the required level of education. Using cross-section data of 1,500 American workers from the 1960s and 1970s, the study found that workers with more surplus schooling were less satisfied with their jobs and indicated a higher level of intention to change jobs, especially among the men. Although this study did not directly measure the impact of surplus education on productivity, it is reasonable to assume these differences negatively affected individual productivity. More recent studies such as Verhaest and Omey (2006) also found that overeducated workers are less satisfied with their jobs, tend to change jobs more frequently, are less motivated to participate in training, and earn less than adequately educated workers. In addition, Agut, Peiro and Grau (2009) found, among young Spanish workers, that there are negative relationships between being overeducated and extra-role behaviors (i.e., job content innovation and career-enhancing strategies) although the negative effect seems to be buffered by other factors such as personal initiative and intrinsic work values. Similar findings are reported in other studies, mainly from developed economies in Europe and North America, including Frenette (2004), and Maynard, Joseph and Maynard (2006).

One exception is a study by Buchel (2002) which found that overeducated workers in Germany are no less satisfied with their jobs, and found that they are healthier, more strongly career-minded, more likely to participate in training, more productive, and tend to have longer tenure than their "correctly allocated" peers, although his study only covers those who work in low-skilled jobs.

From the above review, it can be said that most studies have found that overeducation tends to have a negative impact on individuals' attitude towards their job, and results in lower individual earnings, as well as lower productivity, although the impact may be affected by individual characteristics and job types.

2.3.5 Trends in overeducation

Some studies have examined whether overeducation is a long-term phenomenon. Dolton and Vignoles (2000) found that in the United Kingdom (UK), the incidence of overeducation decreased between 1980 (36 percent for men and 41 percent for women) and 1986 (29 percent for men to 31 percent for women), showing a slight improvement of job-qualification match over time. Daly et al (2000) analyzed data from the United States and Germany and found that work experience is significantly and negatively related to the incidence of overeducation, indicating that overeducation can be "corrected" over time during a career. According to Frenette (2004), however, in Canada the incidence of overeducation over time (3 year interval) has remained steady. Battu, Belfield and Sloane (2000) found that in the UK the proportion of job-degree match actually declined over the period of 11 years.

The incidence of overeducation declined from 28.7 percent in the 1970s to 21 percent in the 1990s according to Groot and Maassen van den Brink (2000), who analyzed 50 estimates on the incidence of overeducation from 25 studies. Hartog (2000) concluded, however, that for three countries in Europe included in his review (Netherlands, Spain and Portugal) the incidence of overeducation actually increased over time (when using only SR

and JA approaches). Van der Meer (2006) reports that the incidence of overeducation increased among the Dutch workers between 1994 (27.8 percent or 20.9 percent depending on the method used) and 1998 (33 percent or 24.3 percent).

It is clear that there is a persistent presence of overeducation in many countries that negatively affects productivity of workers as well as rates of return to investing in higher education. But the issue of the persistence of overeducation requires further research. In the next section, theoretical explanations of overeducation will be reviewed.

2.3.6 Theoretical explanations of overeducation

There is substantial evidence to show that education is positively and significantly related to better employment opportunities and higher earnings. The reasons for this are still debated, however. Similarly, how much education is needed to have optimal effect on employment is not clear.

The causes of overeducation have been analyzed from many perspectives, including human capital theory deriving from the neo-classical economics perspective, which primarily concerns rates of returns to education. According to this theory, by investing in one's own human capital through education and training, an individual can increase his or her future earnings.

A classic study by Mincer (1974) presents individual earnings as a function of years of schooling and years of experience at work. The coefficient to the years of schooling in this function is known as the rate of return to education, which is the central concept of human capital theory. As discussed in the above section, rates of return to

surplus education tend to be positive but are smaller than rates of return to required education. From the human capital theory perspective, overeducation can be understood as a deliverable choice because starting one's career from a low-level is a good investment opportunity (Hartog, 2000). Findings from studies, such as Dolton and Vignoles (2000) indicate that overeducated workers will eventually "move up" to the job that they are appropriately qualified for.

Findings from studies such as Robst (1999), Frenette (2004) and McGuinness and Bennett (2007) suggest that (1) workers with lower ability, (2) workers who studied subjects that are not directly related to business or science, and (3) workers who attended lower quality HEIs tend to be more overeducated. This fits with the human capital theory explanation of overeducation. From this perspective, students with lower abilities and/or enrolled in low quality HEIs require more years of education to acquire the skills necessary for jobs, and this appears as a higher incidence of overeducation.

There is a problem, however, with explaining overeducation purely through the human capital theory. According to the neoclassical view of economics and human capital theory, overeducation is a short-term problem in the labor market, when there is a temporary mismatch between the supply of and demand for educated workers, and the market corrects itself (i.e., individuals realize negligible or negative return to investing in higher education, hence fewer students want to go to universities). Considering the persistence of overeducation in many countries, it seems that other factors may be affecting the incidence of overeducation (Tsang & Levin, 1985).

In the labor market, major challenges occur due to imperfect information. The buyer (employer) does not know capacity and potential of the seller (candidates). Given the situation of imperfect information, employers and candidates need to seek additional information in order to make the most economically sensible decisions. Employers will screen their candidates, while candidates are inclined to "signal" their capacity. The level of education is one of the most important characteristics to increase employment opportunities, as stated in Thurow (1975). A higher level of educational attainment can signal positive characteristics unobserved from interviews and CVs such as good health, diligence, and punctuality. The implication of this model for overeducation is that potential workers may be involuntarily continuing their education in order to remain competitive in the job market. From this perspective, taking a job that does not require the attained educational qualification is not an investment choice, as understood in the human capital theory. Rather, it is an outcome of a failed attempt to enter the job market at the desired level.

Overeducation may be caused or exacerbated also by socio-political factors. Lindley (2009) found that, in the UK, immigrants and non-White natives are more likely to be overeducated. For men, the incidence of overeducation among White UK natives is 22.47 percent while it is 45.9 percent among African immigrants. For women, native UK citizens of Indian, Pakistani, or Bangladeshi descent tend to be more overeducated. This indicates that, though there is a risk of overgeneralization, non-White UK workers are required to have more education in order to signal their competencies vis-à-vis their White counterparts, resulting in higher incidence of overeducation for the former group. Tsang,

Rumberger and Levin (1991) also found that in the 1960s and 1970s non-White populations in the US also had significantly higher incidence of overeducation.

Muysken and ter Weel (2000) found, from analyzing data from the Netherlands, that job competition encourages potential workers to increase their level of education. This fits with the phenomena observed in the Netherlands and in other European countries – a rise of the education level of graduates without a rise of real wages. It was also pointed out that competition will occur between skilled (qualified) workers and unskilled (less qualified) workers for unskilled jobs, pushing unskilled workers out of such jobs. Overeducation therefore trickles down to lower skilled job segments.

Although written almost three decades ago, Carnoy and Levin (1985) continue to provide a useful insight as to causes of overeducation, especially in democratic states. According to them, education serves two contradicting values: the "reproductive" dynamic and the "democratic" dynamic (p.144). The reproductive dynamic focuses on preparing students for capitalistic production. It focuses on hierarchy and efficiency, and often encourages segregation by gender, race, and class. Democratic dynamic, on the other hand, aims to prepare students for democratic participation in the society. It emphasizes, among others, social equality and social mobility. Democratic dynamic (and individual desire for social equality and mobility) drives the expansion of education beyond the absorption capacity of the labor market for educated workers, resulting in overeducation.

The works reviewed above suggest that education expansion can be driven by the labor market when the economy is growing. However, with stagnant economic growth or a shrinking economy, graduates can no longer expect the levels of employment that used to

be related to a higher level of education (e.g., a managerial job). In such conditions, people continue to pursue further education as they see education's function as a tool for social mobility. As more people are educated for scarce job opportunities, people will be forced to pursue more education to compete against their peers and signal their capacity for the job, creating a cycle of overeducation. In this context, overeducation is not only about skills mismatch and imperfect information, or failed investment. Rather, overeducation is a natural phenomenon in democratic societies. This is particularly relevant to Mongolia and other former communist countries, where higher education was considered a symbol of democratization and where they experienced rapid expansion in order to fulfill people's demand for social equality and social mobility.

2.4 Dynamics of developing policy responses: in the framework of education policy transfer

In addition to the incidence and impact of overeducation, this study aims to analyze the dynamics of policy making in response to overeducation in Mongolia. This section reviews some selected literature, focusing particularly on education policy transfer.

Education policy change is a complex process. Different interests from different interest groups, sometimes from outside the education sector (e.g., national priorities) influence the process and outcomes of the policy change. Policies are also often "borrowed" or "imported" from other countries. Education transfer – how and why education policies of one particular country are exported and imported beyond borders – has attracted many

comparative educationalists' attention. The investigation in education transfer has been driven by key questions revolving around causes, process, and key actors of such transfer (e.g., Steiner-Khamsi, 2000).

Policy transfer is not a new phenomenon, but the incidence of policy transfer has increased in recent years due to technological advancements that have made communication among policy makers easier and faster (Dolowitz and Marsh, 2000). As a result, due to increased education transfer - mostly unidirectional from high-income countries to low-income countries - education systems around the world seem to be converging into an "international norm." For instance, Marginson (2000) points out that after decades of the quantitative expansion of education, driven by international politics of "equality of opportunity," pressure from globalization is bringing education back to center of the national programs designed to maximize economic competitiveness. Building a "knowledge-based economy" or "knowledge-based society" through good quality education seems to have become a mantra for every country, either developed or developing, and international development partners (both financial and technical) are actively pursuing education transfer in this area. Similar policies were introduced under the flag of "improving the quality of education," including learner-centered curricula and pedagogy, increased governance and accountability through decentralization and school-based management, and better linkages between education and the world of work. These policy packages are called "traveling reforms" (e.g., Steiner-Khamsi and Stolpe, 2006, p.1), transferred from one country to another often through international development partners. System Assessment and Benchmarking for Education Results, or SABER

reported in Patrinos (2012), a recent endeavor by the World Bank which was pilot tested in partnership with UNESCO in the Asia-Pacific Region, aims at developing an "international benchmarking" tool to assess education policies that affect the quality of learning. This is clearly a showcase of the traveling reform that now is becoming an international norm.

It is probably naïve to say the policies are borrowed, transferred and/or imported just because they are better, however. Halpin and Tronya (1995) argue that policy borrowing "rarely has much to do with the success, however defined, of the institutional realisation of particular policies in their countries of origin" (p.304). Often, such transfers are motivated by factors that go beyond the intended outcomes of the policies themselves, such as political, historical and socio-cultural settings, and education transfer is "more likely when there is some synchrony between the characteristics of the different education systems involved and the dominant political ideologies promoting reform within them" (p.304). Phillips and Ochs (2003) divide such transfer processes into four main stages: cross-national attraction, decision, implementation, and internalization/indigenization. In this model, "cross-national attraction" starts with internal dissatisfaction caused by various reasons (e.g., low student outcomes) which drives the government to learn from other countries. This will then be followed by a "decision", where the government decides to borrow/import specific policies either fully or partially. The third stage is "implementation" of the policies, where the government may face resistance from stakeholders, then "internalization/indigenization" will come when the policies are adapted to the national context. The internalized policies will be evaluated, and if the outcome is not satisfactory, the process goes back to the first step, looking for another country of reference. As the

focus of education transfer is changing from transfers between economically and socio-politically similar countries to transfers from developed countries to developing countries, Johnson (2006) adapted this model to developing countries (low and middle-income countries) by adding the aspect of involuntary borrowing/transfer, either forced ("telling", such as in colonialism) or negotiated under constraint ("compelling", such as in neo-colonialism).

Although there is a large body of studies on education transfer, many of these analyses are based only on the socio-political and cultural aspects of education transfer. For instance, Dale (1999) set seven dimensions of education transfer: nature of the relationship, explicitness of the process, scope, locus of viability, process, parties involved, sources of initiation, dimension of power, and nature of effect on education. In addition, Steiner-Khamsi and Stolpe (2006) pointed out the critical role of the economic factor (i.e., availability of funds, through loans and grants from international donors) in education transfer (or education borrowing), using the example of the reforms to introduce outcome based education (OBE) in Mongolia and Kyrgyzstan. Inevitably, according to Steiner-Khamsi and Stolpe (2006), such reforms are heavily influenced by the donors or sometimes developed entirely by external "experts" hired by these donors as consultants, often with little attention given to the national context. At the same time, financial guarantees encourage national governments to actively borrow reforms and selectively implement imported policies.

The politics and economics of education transfer seem to have particular relevance in explaining higher education expansion in Mongolia during the transition period, when

higher education expansion through deregulation and privatization, often designed and funded by international development partners, was considered a symbol of democratization and devolution of authority to market forces. The concept of education transfer is further discussed in section 3.2.2 of this study on methodology of the analysis.

2.5 Areas for further research

Chapter II has so far reviewed the key literature on the incidence and impact of overeducation, as well as the dynamics of policy making in the globalized world. Although there is a substantial body of research, knowledge gaps exists in several areas, including those listed below.

(1) Overeducation in developing countries: As discussed in this chapter, most of the existing literature on overeducation is from North America and Europe, where relevant data is available. Very little is known about the situation regarding overeducation in other areas of the world, and virtually no comparable information is available, except a few studies from China, about overeducation in developing and former communist countries, even though the expansion of higher education is a global phenomenon and such expansion is currently happening mainly in developing countries. Due to this lack of information, overeducation is only anecdotally recognized in these countries. The lack of reliable household data, the non-inclusion of questions related to overeducation in surveys, and the lack of job analysis are among the challenges in conducting studies on overeducation in

developing countries. This area needs further investigation for better policy making in higher education.

(2) Understanding the dynamics of policy response to overeducation*:* As the issue of overeducation is widely recognized, several policy responses have been developed and implemented. As discussed earlier in this chapter, the policy making process is complicated and it is likely that various factors influence each step of policy making. In developing countries we cannot ignore the critical role of the "economics of policy borrowing" facilitated by the presence of international development partners. Has the response to overeducation become one of the "traveling reforms" described by Steiner-Khamsi and Stolpe (2006)? Further analysis of this is necessary in order to better analyze the dynamics of policy response development.

(3) Controlling for unobserved heterogeneity: Although figures differ depending on the methods and data used, previous studies of overeducation have generally produced consistent results. Overeducated workers earn less than workers with the same level of education in matched jobs. The rate of return to years of overeducation is positive, but smaller than that to years of adequate education. Most studies use cross-section data, however, and the findings can be biased if the incidence and impact of over/undereducation are correlated to unobserved differences among the individuals (e.g., innate ability, motivation, etc). In recent years, efforts to control for unobserved heterogeneity among the individuals have been made using panel data. For instance, Bauer (2002) found that when

unobserved heterogeneity was accounted for using the fixed-effect method, differences between adequately and inadequately educated workers become smaller or disappeared. Such findings call for further research applying panel-data analysis.

This study aims to shed light on the first and second gaps, hoping to make a contribution to understanding overeducation in developing countries, where the issue is attracting more and more political attention.

CHAPTER III: METHODOLOGY

The present research addresses the previously discussed knowledge gaps in the following three ways: first, it is one of the first studies to examine the issue of overeducation in Mongolia by employing a systemic, statistical analysis of large-scale household data (which allows for comparisons with other studies conducted on this issue); second, the study adopts mixed-methods approach that combines both qualitative and quantitative analyses. This approach enables a comprehensive understanding of overeducation as an issue and the response to this challenge in Mongolia; and third, the study places a special emphasis on how the issue of overeducation is perceived among the key stakeholders in Mongolia and how various factors affect policy decisions.

The ultimate goal of this study is to review and analyze the issue of overeducation in Mongolia. This study aims to contribute to the theoretical discussion of overeducation, especially in developing countries, as well as to enable a better understanding of policy dynamics in relation to overeducation.

3.1 Research Questions

Based on the findings of previous studies, reviewed in Chapter 2, this study will examine two overarching research questions, which can be divided into five sub-questions, as shown below.

Question 1: What is the incidence and impact of overeducation on individual earnings in Mongolia?

(1) What is the incidence of overeducation in Mongolia, and how has the trend changed over time (2002/3 to 2007/8), by individual and job characteristics?

(2) What is the impact of overeducation on individual earnings in Mongolia?

Question 2: What are the policy responses to overeducation?

(3) How do the key stakeholders (e.g., government officials, university presidents, employers, academics, and officials from donor agencies) perceive the issue of overeducation (reasons for overeducation and impact of overeducation)?

(4) What kinds of policies have been formulated by the government and donor agencies to address the issue of overeducation? Are they evidence-based? What influenced the development of such policies?

(5) What are the perceptions of the key stakeholders on the effectiveness of policies addressing overeducation?

In order to answer these questions, this study employs a combination of quantitative and qualitative analysis (a mixed-methods approach). In this study, a quantitative approach is more appropriate for the first category of questions, which are focused on quantifiable outcomes (e.g., changes in enrolment rates in higher education and rate of return to overeducation). A qualitative approach is appropriate for the second category of questions, which analyze the processes of recognizing the issues related to overeducation and

formulating policy responses among the key stakeholders in Mongolia. These two methods of analysis complement each other and hence strengthen the findings of the study. Methods of combining qualitative and quantitative analysis and the rationale are further discussed in section 3.3.3.

3.2 Theoretical Framework

This study aims at understanding the gaps between needs and policies in response to higher education expansion. In doing so, this study uses two theoretical frameworks. Firstly, the incidence and impact of overeducation (Question 1) will be analyzed using human capital theory, which understands overeducation as underutilization of human capital accumulated through a higher level of education. Secondly, existing policies and policies being discussed at the national level in Mongolia (Question 2) will be analyzed using theories on education transfer.

3.2.1 Human capital theory

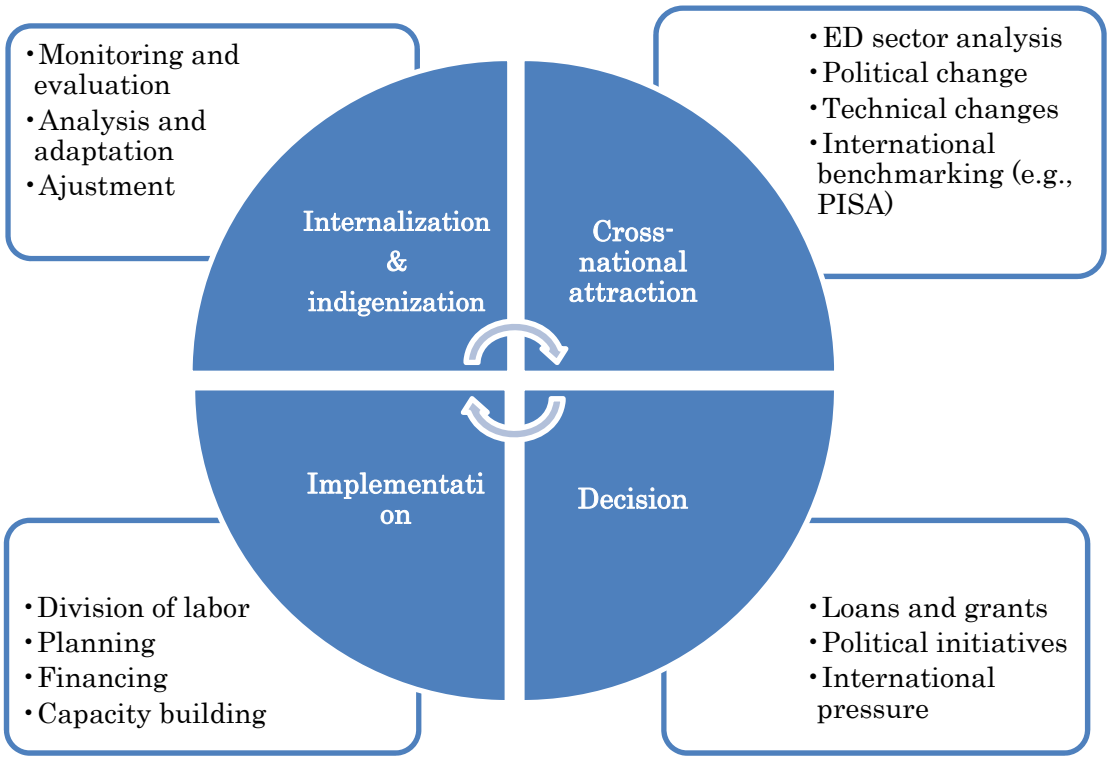
As discussed in section 2.1 of this study, human capital theory is one of the most influential theories in economics, especially in the area of economics of education and labor economics. Human capital theory suggests that individuals can increase their individual income through increasing their productivity. Productivity is improved by improving knowledge and skills (i.e., through education). Hence, investment can be made in humans (i.e., education and health) just as in physical capital. In this study, overeducation is understood mainly through human capital theory and the models used in this study follow

in the footsteps of previous studies. Put simply, overeducation can be understood as follows. As an individual increases his/her education level, income also increases, but the rate of return peaks at the level of education required by his/her job. Additional years of education (education surplus) increase income, but at a much lower pace. The study examines whether the same pattern can be found in a developing country, focusing particularly on Mongolia.

3.2.2 Education transfer

The second research question of this study examines the policy formulation process in response to overeducation and the factors involved in and influencing the process. As the world becomes smaller and "flatter" (Friedman, 2005) with the force of globalization, policy formulation is also affected. Although education policy import and transfer has been taking place for centuries, the current magnitude and speed of transfer, fueled by globalization, is unprecedented. The environment surrounding education has become increasingly complicated, influenced by global competition, international benchmarking, and financial constraints, to name a few factors. The search for "good practices" has become a major issue for all national governments as well as for international development partners, consultants, and academics. Education transfer involves many stakeholders and is influenced by various, often interlinked, political, social, cultural and economic factors, as reviewed in Chapter II. This study draws upon the analytical frameworks of Phillips and Ochs (2003) and understands education transfer as illustrated in Figure 9.

Figure 9: Cycle of education transfer



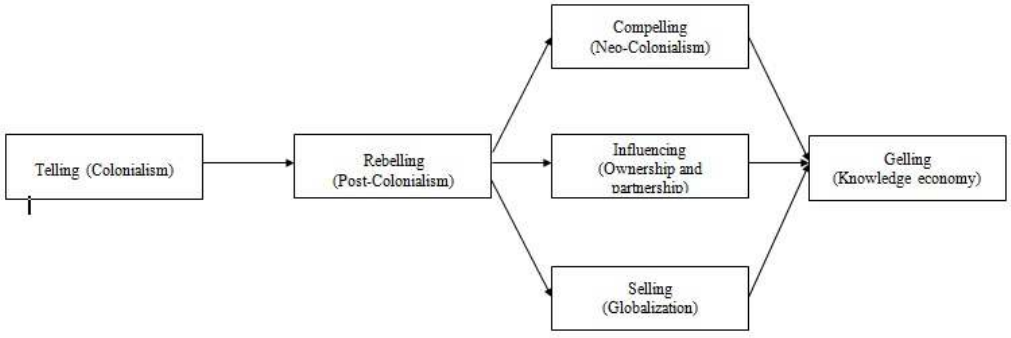
Based on Phillips and Ochs (2003)

However, socio-economic and cultural context in which a country is situated changes and so does a country's approach to education transfer. Building upon various works done by Phillips & Ochs (2004a and 2004b), Johnson (2006) proposes a conceptual model using metaphor of telling, rebelling, compelling, selling and gelling. In this model: the politics of "telling" is understood as a forced education transfer under colonialism; the politics of "rebelling" is seen as counter-reactions against colonial powers; the politics of "compelling" is by many understood as neo-colonialism where developing countries are forced to "borrow" policies brought and funded by international donors; the politics of "selling" can happen for more affluent developing countries (i.e., middle income countries) which have more control over their policy environments and policies are "purchased"

through market; the politics of "gelling" is crystallization of a new vision in education, which is in many cases in pursuit of "knowledge economy" and its implication to education. At this point, the global and the local converge.

To the original metaphor proposed by Johnson (2006), I added "influencing" as a middle way between "compelling" and "selling." This represents developing countries' voluntary acceptance of education transfers based on the influence through funding and advice by international (multilateral and bilateral, public and private) donors, as per the "economics of policy borrowing" (Steiner-Khamsi, 2006). The dynamics of internal and external relationship in different approaches to education transfer is described in the Figure **10**, inspired by Johnson (2006) and Steiner-Khamsi (2006). The second research question of this study pays particular attention to the policy formulation process in response to overeducation and factors involved in and influenced the process.

Figure 10: Adjusted metaphor of trajectory of education transfer



Based on Johnson (2006) and Steiner-Khamsi (2006)

3.3. Research Design

As noted above, this study will utilize both quantitative and qualitative data. The quantitative data was obtained from the Mongolia Household Socio-Economic Surveys conducted in 2002/2003 and 2007/2008. The qualitative data was collected through (1) key stakeholder interviews conducted between 2009 and 2011, and (2) policy document analysis. The information and data collection methods used, data sources, and analysis of each research question are summarized in Table 4.

Table 4: Summary of research questions, methods, information and data requirements

Research Questions	Information needed	Data source	Methods of data analysis
(1) Incidence of overeducation over time, difference of incidence by individual and job characteristics	• Wages, education background, age, gender, and location of residence of individual workers	• Household surveys (2002/2003 and 2007/2008)	Descriptive statistics Multinominal logit analysis
(2) Impact of overeducation on individual earnings	• Overeducation indicator • Wages, education background, age, gender, and location of residence of individual workers	• Household surveys (2002/2003 and 2007/2008)	Regression analysis
(3) Key stakeholders' perception of overeducation	• Level of understanding of overeducation among stakeholders	• Key stakeholder interviews	Content analysis
(4) Policies formulated and/or discussed in response to overeducation	• Contents and target of existing policies and policies under discussion	• Key stakeholder interviews • Policy/strategy documents	Content analysis
(5) Process and logic behind the action or non-action of the government	• Similarities and differences in strategies between the government and key donors • Political discussions held during the policy formulation and implementation	• Key stakeholder interviews • Policy/strategy documents	Content analysis

3.3.1 Quantitative analysis

Quantitative data analysis will be used to answer the first category of questions.

(1) What is the incidence of overeducation in Mongolia, how has the trend changed over time (2002/3 to 2007/8), by individual and job characteristics?

(2) What is the impact of overeducation in individual earnings in Mongolia?

3.3.1.1 Measurement of overeducation

As discussed in Chapter II, there are several methods of measuring overeducation. Each method has pros and cons, and the selection of a method generally depends on the available data. A summary of the strengths and weaknesses of each method is presented in Table 5, below.

Table 5: Strengths and weaknesses of the four methods of measuring overeducation

Methods	Strengths	Weaknesses
Self reporting (SR)	Directly measures over and under education	Subjective Risk of bias and inflation
Job analysis (JA)	Objective Directly reflect technical and skills requirement of occupation	Information not available in many countries Lack of timeliness
Average education (AE)	Objective Response to technical changes automatically incorporated Easily calculated from the basic information included in most surveys	Sensitive to outliers Not directly measuring overeducation, rather measuring distribution of workers
Modal education (MD)	Objective Response to technical changes automatically incorporated Easily calculated from the basic information included in most surveys	Not directly measuring overeducation, rather measuring distribution of workers

In Mongolia, it was not possible to use the SR method since the available surveys (Living Standards Monitoring Survey and Household Socio-economic Survey) did not include the relevant questions and it was not feasible in terms of time and funds to conduct

a new survey. It was also not possible to use the JA method, due to the unavailability of expert analysis of the skills requirement for jobs. It was therefore necessary to rely on the RM methods, using the average (AE) or the modal value (MD) as a reference point. It was decided that the MD method would be used for this study because the MD method is less sensitive to values given by outliers in the data. The mode can provide a more accurate reference point of "realized match" of job and qualification compared to that generated by the mean.

The difference of incidence of overeducation by individual characteristics, job type and industry of employment (Question 2) will be analyzed using the following multiple logit model (base category: adequately educated).

$$P_{ij} = \text{Prob}(Y_{ij} = j) = \frac{E^{\beta' jzi}}{\Sigma_k e^{\beta' jzi}}, \qquad j = \text{under, adequate, over}$$

The model is estimated using the maximum likelihood estimation method (MLE). Z_i contains variables including individual characteristics (e.g., gender and age), family background, industry and sector of employment, and occupation.

3.3.1.2 Impact of overeducation on individual wages

As reviewed in Chapter II, there are two empirical specifications in the existing literature to assess the impact of overeducation on wages, both deriving from human capital regression model.

The first specification is called the Over-Required and Undereducation (ORU) model, or the "Duncan and Hoffman model (DH model)". Using this model, overeducated

and undereducated workers are compared with colleagues whose education matches their jobs. This model enables the researcher to calculate the rates of return to required education, undereducation and overeducation, and compare the differences.

Another model used is the "dummy model" or "Verdugo-Verdugo (VV)" model. This model compares overeducated and undereducated workers with workers who have adequately matching jobs and the same level of education. Using this model, one can understand whether there is a premium or penalty for being overeducated or undereducated for the job they are holding.

This study uses the Duncan and Hohhman model to calculate rates of return to adequate education, overeducation and undereducation in the Mongolian context. As reviewed in Chapter II, it may be important to control for unobserved heterogeneity among individuals, such as innate ability. The "fixed effect" model was used in some studies and suggests that the effect of over/under education may become negligible if controlled for individual heterogeneity. For this study, however, the fixed effect model is not used since the relevant panel data is unavailable in Mongolia. This is an area for further research.

3.3.1.3 Data

The examination of the questions 1 and 2 used two household survey data sets. One is the Living Standards Measurement Survey conducted in 2002/2003 (hereafter referred to as "LSMS 2002/2003"). The other is a Household Socio-Economic Survey conducted in 2007/2008 (HSES 2007/2008).

Sampling methods and comparability of the data

The LSMS 2002/2003 was developed as a sub-set of the Integrated Household Income and Expenditure Survey conducted by the Mongolian Government in 2002/2003 (HIES 2002/2003). The HIES-LSMS 2002/2003, then one of the largest national surveys conducted in Mongolia, used the 2000 census as a sample frame and applied a multi-stage (two-stage) stratified random sampling method. It included 1,248 enumerations areas as part of the sample and four strata were used for sampling: (1) Ulaanbaatar, (2) *aimag* capitals and small towns, (3) *soum* centers, and (4) the countryside. In the first stage of sampling, a number of Primary Sampling Units (PSUs) were selected from each stratum. In the selected PSUs, enumerators listed all the households residing in the area. In the second stage of sampling, 10 households in urban areas and eight households in rural areas were randomly selected from the list of households identified in each PSU. In total, 11,232 households were selected and interviewed (in 2002). Approximately one-third of them (3,308 households), equally distributed over four quarters (calendar quarters of the interview), were re-interviewed for the LSMS component of the survey, which is used for this study. Due to the addition of the LSMS component, data collection took longer than expected. The households were re-interviewed for the LSMS questions almost one year after the HIES questions, resulting in a considerable reduction of the sample size, going from 11,232 in 2002 down to 3,308 due to various reasons, such as relocation. This may have affected the representativeness of the sample.

The HSES 2007/2008 was developed as an improved version of the HIES 2002/2003. The 2005 population figures from local offices were used as a sampling frame

in order to capture the internal migration since the 2000 Census. The survey also applied a multi-stage stratified random sampling method. Instead of the four strata used in the HIES 2002/2003, however, the HSES 2007/2008 used three strata (Ulaanbaatar; *aimag* capitals; and rural areas and small towns) although the households were recorded using the original four strata (Ulaanbaatar; *aimag* capitals; *soum* centers; and the countryside) for comparison purposes. A two-stage selection strategy was then used in urban areas (Ulaanbaatar and *aimag* capitals) and a three-stage selection strategy was used in the rural areas and small towns. In Ulaanbaatar, the first step was to select 360 *khesegs* (districts), and then 10 households were selected in each *kheseg*. In the *aimag* capitals, the first step was to select 12 or 24 *bags* (rural districts), and then 10 households were selected in each *bag*. In the rural areas, first 52 *soums* (towns) were selected, then 12 *bags* in each *soum* and finally 8 households in each *bag*. In total, 11,172 households were selected. The HSES 2007/2008 integrated the LSMS-related questions. Therefore, all households were also interviewed for the LSMS component at the same time, unlike the HIES-LSMS 2002/2003. The sampling methods for the HIES-LSMS 2002/2003 and the HSES 2007/2008 are summarized in the table below.

Table 6: Data sampling methods (HIES-LSMS 2002/2003 and HSES 2007/2008)

	HIES-LSMS 2002/2003	HSES 2007/2008
Sampling methods	Multi-stage stratified random sample	Multi-stage stratified random sample
Sample frame	2000 Census	Population figures from local registration offices, 2005
# of strata	4 (Ulaanbaatar, Provincial capitals and small cities, town centers, and countryside)	3 (Ulaanbaatar, Provincial capitals, countryside and small towns)
# of enumeration areas	1,248	1,248
Sample selection strategy	Two-step stratified random sampling	Two-steps in urban areas and three-steps in rural areas
# of households	11,232 (3,308 of them re-interviewed for LSMS)	11,172

Although both samples are nationally representative, using similar sampling methods, it is not entirely clear whether the samples were drawn from the similar population groups. In order to assess the comparability of the two datasets, the profiles of the households that were included in both surveys were checked. It was found that, compared to HIES-LSMS 2002/2003, the HSES 2007/2008 sample includes considerably more households from Ulaanbaatar and less from the countryside, as shown in Table 7.

Table 7: Weighted distribution of the sample households, by strata

Stratum	HIES-LSMS 2002/2003	HSES 2007/2008
Ulaanbaatar	29.64%	35.51%
Aimag capitals/small towns	25.03%	21.93%
Soum centers	15.8%	17.31%
Countryside	29.54%	25.25%

Next, the regional representativeness of both samples was checked and it was discovered that HSES 2007/2008 has fewer households from the Highlands, Central and Eastern regions and more from Ulaanbaatar, as shown in Table 8.

Table 8: Weighted distribution of the sample households, by region

Region	HIES-LSMS 2002/2003	HSES 2007/2008
West	15.76%	15.76%
Highland	25.19%	22.96%
Central	20.33%	17.67%
East	9.083%	8.103%
Ulaanbaatar	29.64%	35.51%

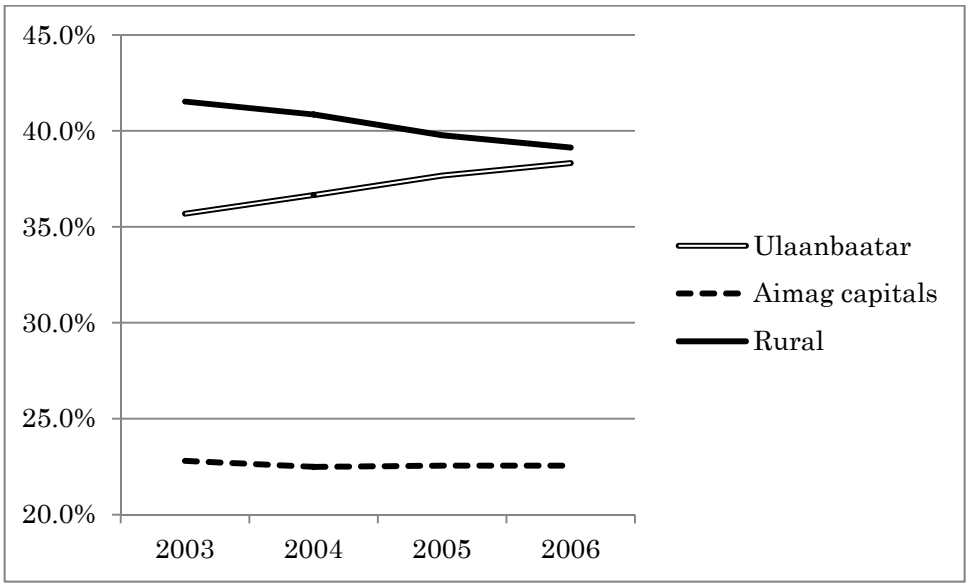
In line with the findings above, HSES 2007/2008 had slightly more households from urban areas compared to HIES-LSMS 2002/2003 (see Table 9).

Table 9: Weighted distribution of the sample households, by area of residence

	HIES-LSMS 2002/2003	HSES 2007/2008
Urban	54.66%	57.44%
Rural	45.34%	42.56%

This seems consistent with the general trend in terms of population distribution during this period. The population of Ulaanbaatar, as a share of the total population, increased from 35.7 percent in 2003 to 38.3 percent in 2006, while the rural population declined from 41.5 percent to 39.1 percent in the same period (see Figure 11, calculated from the data cited in OECD, 2008).

Figure 11: Population Composition of Mongolia, 2003-2006



Source: National Statistics Office cited in Asian Development Bank (2008)

It could be assumed that the differences in the samples between HIES-LSMS 2002/2003 and HSES 2007/2008 mostly reflect the internal migration trend in Mongolia during that time. However, the question remains regarding the representativeness of the HIES-LSMS 2002/2003 since there was a significant drop in the number of observations, which therefore affects the comparability of the two data sets. It was therefore not appropriate to pool the data and statistically analyze the trends between 2002/2003 and 2007/2008. In this study, the findings are therefore presented in two steps: first, presenting detailed findings using the 2007/2008 survey; second, presenting the 2002/2003 findings for comparison.

Data preparation

In total, 14,789 and 44,510 individuals were included in the LSMS 2002/2003 and the HSES 2007/2008, respectively. Among them, only workers between the ages of 15 and

60 were selected for analysis in this study (14,803 for LSMS 2002/2003 and 45,832 for HSES2007/2008). When workers had multiple jobs, only the main job was included for the analysis. Although agriculture, fishing, mining and quarrying industries are excluded in many previous studies (e.g., Cohn & Ng, 2000; Kiker, et. al., 1997), these industries are included in the analyses for this study since they represent a large share of the Mongolian economy.

Two datasets for each year were created for the quantitative analysis of this study: datasets for the incidence of overeducation and datasets for the impact of overeducation on wages. For analyzing the incidence of overeducation, all workers who were in the age group of between 15 and 60 were included. This included those involved in household farming and herding as well as the self-employed, although these workers do not have reported cash wages. On the other hand, for analyzing the impact of overeducation on wages, only those reported having a job with a cash wage (in both the formal and informal sectors) at the time of the interview were included. Self-employed and informal sector workers were included, but the majority of the observations were from the formal sector. This is probably because informal sector workers tend not to have cash wage information.

Individuals with missing data in indicators used in analyses such as: (1) urban/rural, (2) gender, (3) age, (4) highest level of education attained (5) occupation code, and (6) latest wages (for impact of overeducation on wages) were excluded from the analyses. The observations that had values either less than “mean – 3xSD” or greater than “mean + 3xSD” were considered as outliers and were also excluded from the analyses. After data cleaning, the size of the valid dataset for analyzing the incidence of overeducation was 5,192 from

the LSMS 2002/2003 and 17,719 from the HSES 2007/2008; and the size of the valid dataset for analyzing the impact of overeducation on wages was 2,271 from the LSMS 2002/2003 and 7,997 from the HSES 2007/2008. Profiles of the key variables for observations dropped and included for the analyses are provided below (*Number of individuals dropped from the analyses is different since they include cases with missing data). Weights provided in the data set were used for all analyses, unless otherwise indicated.

Key profiles of datasets for analyzing the incidence of overeducation

Table 10: Comparison of the observations, urban/rural

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=9,597)	Included (n=5,192)	Dropped (n=28,117)	Included (n=17,715)
Urban	59.73%	47.37%	60.48%	50.64%
Rural	40.27%	52.63%	39.52%	49.36%

Table 11: Comparison of the observations, gender

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=9,597)	Included (n=5,192)	Dropped (n=28,117)	Included (n=17,715)
Male	51.97%	50.31%	47.29%	50.63%
Female	48.03%	49.69%	52.71%	49.37%

The included observations, as shown in the above Table 10 and Table 11, are equally represented by urban/rural as well as men/women. The final datasets for analysis included more individuals from rural area compared to the original datasets. This implies that substantial employment is in rural areas, most likely in farming and herding.

Table 12: Comparison of the observations, mean age (SD)

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=9,597)	Included (n=5,192)	Dropped (n=28,055)	Included (n=17,715)
Age	21.01 (19.00)	35.10 (12.43)	23.37 (20.52)	35.47 (10.80)

The individuals included in the final datasets are substantially older than those dropped, as shown in Table 12. This is because the final data only included those aged between 15 and 60 years of age. Mongolia has a very young population with a median age of 26.2[10], which resulted in a young average age.

Table 13: Comparison of the observations, mean years of education (SD)

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=9,597)	Included (n=5,192)	Dropped (n=28,117)	Included (n=17,715)
Years of education	4.35 (4.59)	9.39 (3.88)	5.04 (4.72)	9.51 (3.47)

[10] 2011 estimated from the CIA World Factbook (https://www.cia.gov/library/publications/the-world-factbook/geos/mg.html) accessed on 22 December 2011

Table 14: Comparison of the observations, highest education level attained

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=7,224)	Included (n=5,192)	Dropped (n=22,729)	Included (n=17,715)
None	22.2%	3.91%	22.64%	3.53%
Primary	30.39%	12.96%	24.75%	9.92%
Some secondary	18.25%	26.39%	15.12%	21.72%
Complete secondary	17.27%	21.95%	24.22%	32.35%
Vocational	3.69%	9.16%	5.69%	11.77%
Degree/higher education diploma	4.47%	14.07%	4.07%	9.37%
Bachelor	3.64%	10.99%	3.35%	10.55%
Postgraduate	0.09%	0.56%	0.16%	0.78%

For both years, the individuals included for analysis are substantially better educated than those dropped, as shown in the above Table 13 and Table 14. For 2002/2003, the most common education level attained was “primary” for dropped individuals while it was “some secondary” for individuals included for analysis. Similarly, for 2007/2008, the most common education levels attained were “primary” and “complete secondary” for dropped and included, respectively.

Key profiles of datasets for analyzing impact of overeducation on wages

Table 15: Comparison of the observations, urban/rural

Impact of overeducation on wages	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=12,515)	Included (n=2,274)	Dropped (n=37,853)	Included (n=7,997)
Urban	51.54%	76.95%	52.07%	77.71%
Rural	48.46%	23.05%	47.93%	22.29%

Table 16: Comparison of the observations, gender (weighted) *

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=12,515)	Included (n=2,274)	Dropped (n=37,835)	Included (n=7,997)
Male	48.92%	47%	48.81%	47.51%
Female	51.08%	53%	51.19%	52.49%

In contrast to the datasets for analysis of the incidence of overeducation, which included those who are involved in household farming and herding, the observations included for the analysis of the impact of overeducation on wages were those earning cash wages so were predominantly from urban areas, reflecting the urban-rural disparity in availability of paid work (see Table 15). There was not a large gender difference between the dropped and included observations. This implies that both men and women are equally represented in the labor market for paid work (see Table 16).

Table 17: Comparison of the observations, average age (SD)

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=12,515)	Included (n=2,274)	Dropped (n=37,773)	Included (n=7,997)
Age	24.27 (18.63)	37.27 (9.76)	26.18 (19.29)	36.38 (10.05)

Table 18: Comparison of the observations, mean years of education (SD)

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=12,515)	Included (n=2,274)	Dropped (n=37,835)	Included (n=7,997)
Years of education	5.26 (4.65)	11.70 (2.73)	5.80 (4.63)	11.02 (2.71)

The average age and the mean years of education of the individuals included for the analysis of the impact of overeducation on wages was higher than those of the dropped individuals for both years (see Table 17 and Table 18), as was the case for the datasets for analysis of the incidence of overeducation. Compared to the datasets for analysis of incidence of overeducation, the average age of the individuals included for the analysis of the impact of overeducation on wages was slightly higher. Also, the mean years of education was higher for those included for analysis of the impact of overeducation on wages than for those included for analysis of the incidence of overeducation. This implies that younger and less-educated individuals tend to be in non-cash-paid jobs such as household farming and herding.

Table 19: Comparison of the observations, highest level of education attained

	LSMS 2002/2003		HSES 2007/2008	
	Dropped (n=7,224)	Included (n=5,192)	Dropped (n=22,729)	Included (n=17,715)
None	22.2%	3.91%	22.64%	3.53%
Primary	30.39%	12.96%	24.75%	9.92%
Some secondary	18.25%	26.39%	15.12%	21.72%
Complete secondary	17.27%	21.95%	24.22%	32.35%
Vocational	3.69%	9.16%	5.69%	11.77%
Degree/higher education diploma	4.47%	14.07%	4.07%	9.37%
Bachelor	3.64%	10.99%	3.35%	10.55%
Postgraduate	0.09%	0.56%	0.16%	0.78%

As with the individuals included for the analysis of the incidence of overeducation, the individuals included for the analysis of the impact of overeducation on wages had a higher level of education compared to the dropped ones (see Table 19). This indicates that better educated individuals are more likely to be involved in paid work.

Dependent variables

Distribution of individuals with adequately educated (**ADED**), overeducated (**OVERED**) and undereducated (**UNDERED**) was calculated, employing the modal education approach (MD) following Kiker et al, as described in Chapter III. First, the most frequently appeared years of education (modal value) were identified for each of the occupation categories. Individuals with education longer than the modal value in respective occupation category was considered overeducated, while the individuals with education corresponding to the modal value of years of education in the occupation category was

considered adequately educated, and those with less years of education that the modal value were considered undereducated. In addition, the probability of an individual having OVERED/UNDERED status will be used as a dependent variable.

The natural log of monthly cash income from the main job (**LnWAGE**) was used for the analyses. LSMS 2002/2003 provides data on the previous month's income while HSES 2007/2008 provides the previous 12 months' income. Data from HSES 2007/2008 was therefore divided by 12 to calculate the average monthly cash income.

Independent variables

Since information on the actual number of years of schooling (education) an individual completed is not available in the HSES 2007/2008, the number of years of schooling completed (**SCHOOL**) is derived from the highest level of educational qualification. Although actual years of education are provided in LSMS 2002/2003, the number of years of schooling was calculated from the highest educational attainment in order to ensure comparability of the two data sets. This was necessary so as to reflect the series of changes in the school years in Mongolia since 1990.

The years of education were calculated based on Dairii and Suruga (2006), which analyzed the data from 2003. The values given to each level of education are as follows:

- 0, when worker's educational attainment is none;
- 3, for the workers born before and in 1978, when educational attainment is primary;
- 4, for the workers born after 1978, when educational attainment is primary;

- 8 when educational attainment is incomplete secondary;
- 10 when educational attainment is complete secondary;
- 10.5 for the workers born in and after 1973 with educational attainment of vocational and technical
- 11 for the workers born before 1973 with education attainment of vocational and technical;
- 13 when educational attainment is diploma for the workers born in and after 1970;
- 14 when educational attainment is diploma for the workers born before 1970;
- 14 when educational attainment is bachelor for the workers born in and after 1970;
- 15 when educational attainment is bachelor for the workers born before 1970;
- 16 when educational attainment is post-graduate for the workers born in and after 1970; and
- 17 when educational attainment is post-graduate for the workers born before 1970

Since actual experience is not available in these data sets, potential experience (**EXP** = Age – SCHOOL-8) is used in the regression instead.

Years of adequate education (**ADESCH**), overeducation (**OVERSCH**) and undereducation (**UNDERSCH**) were calculated for each job type. Details of the methodology used for the calculation are provided in Chapter V (Findings). The individuals' occupations were recorded using the International Standard Classification of Occupations 88 (ISCO-88) with three-digit job codes for the HSES 2007/2008 and four digit codes for the LSMS 2002/2003. The jobs were divided into 10 categories following the ISCO-88

grouping, including: (1) legislators, senior officials and managers, (2) professionals, and (3) technicians and associate professionals.

Similarly, industries of employment were categorized using the International Standard Industrial Classification of All Economic Activities, Rev. 4 (ISIC 4.0). ISIC Rev.4 codes were used for the 2007/2008 data. This corresponds to the 2002/2003 data which used ISIC Rev. 3.1. Dummy variables were created for each job and industry type.

For **MALE**, males were coded 1 and females were coded 0. **AGE** (in years) is provided both in the LSMS 2002/2003 and HSES 2007/2008. Individuals from urban areas including the capital, Ulaanbaatar, were coded 1 while the rest were coded 0 to distinguish the impact of overeducation in urban and rural areas (**URBAN**). The **QUARTER** (quarter of a calendar year in which the interviews were conducted) was also included since income may vary significantly within a year (e.g., winter is usually a slow season for many industries such as tourism, construction and mining).

In order to calculate the impact of the economic and social transition experienced in the 1990s, the **PRE_REFORM** variable was included in the analysis. Individuals who were older than 18 in 1990 were coded 1 while those who were younger than 18 were coded 0. All variables and their definitions used in the analyses of this study are provided in Appendix 3.

3.3.2 Qualitative analysis

The qualitative analysis of this study utilized two the commonly used techniques in obtaining information: in-depth individual interviews and document analysis in order to answer the second category of questions listed below.

(1) How do the key stakeholders (e.g., government officials, university presidents, employers, academics, and officials from donor agencies) perceive the issue of overeducation (reasons for overeducation and impact of overeducation)?

(2) What kinds of policies have been formulated by the government or donor agencies, to address the issue of overeducation?

(3) What are the perceptions of the key stakeholders on the effectiveness of policies addressing overeducation?

3.3.2.1 Data

Some of the data for the qualitative analysis in this study were obtained through in-depth and semi-structured interviews with four distinct groups of "key stakeholders" identified through discussions with Mongolian experts during the process of research design. The qualitative analysis of this study also included analysis of policy documents. Since this study primarily concerns policy development in response to the perceived issue of overeducation, the "beneficiaries of education" such as students and parents were not covered. However, representatives of the private sector (i.e., officials from employers' associations and a human resources officer of a leading private company in Mongolia) were included as a lobbying group. A summary of the interviewees is provided in Table 20.

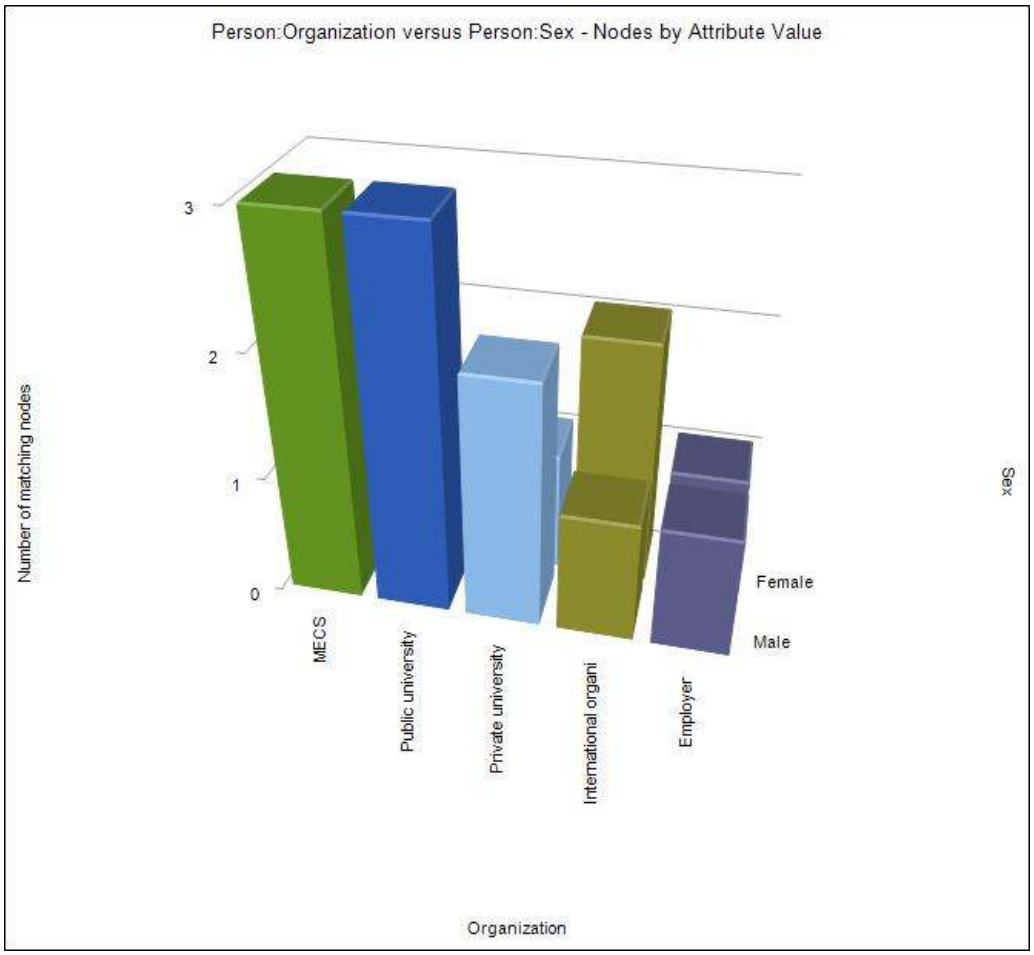
Table 20: Summary of the interviewees

Categories	Number of individuals interviewed	Criteria for selection
Senior government officials	3	Senior officials involved in higher education policies
University staff members	6	Senior staff including deans and presidents from both public and private, prestigious and less prestigious, small and large
Private company employees	2	Leading private company and Employers' Federation
Development agency staff members	3	International and national staff members of development agencies active in higher education
Total	14	

Interviewees were selected on the basis of their current roles and responsibilities in respective organizations. In-depth individual interviews, each lasting between 30 minutes to 1 hour, were chosen as a method of information collection over other methods, such as focus group discussions. This was partly because some of the topics may be sensitive, especially for government officials who may feel uncomfortable to disclose their genuine thoughts in front of other colleagues with different political associations. Interviews were used also because they offered a practical solution, since senior government officials or university deans are extremely busy and it is difficult to set up a meeting for all of them to participate. Due to the small number of the individuals involved in higher education policy development, the total number of the interviewees was low (14 individuals).

The interviews were conducted with five groups of individuals: (1) three senior officials from MECS, (2) three presidents/senior staff of public universities, (3) three presidents/senior staff of private universities, (4) two representatives of the employers, and (5) three staff from development organizations involved in higher education. The composition of the interviewees is presented in Figure 12, below.

Figure 12: Composition of the interviewees



The interviews were semi-structured, following a set of questions. The protocols for each category of interviewees, in Mongolian and English, are listed in Appendix 2 (Interview Protocols). The questions were slightly different for the different groups. The

interview protocols were designed to collect information on three broad topics: (1) major changes since the transition, (2) current challenges of higher education, and (3) responses to policy directions. Information collected through these interviews provides insights specifically into investigation of research questions 3 and 5 (Table 21).

Table 21 Topics covered by the interviews and corresponding research questions

Topics	Corresponding research question
Major change in higher education since the transition	(3) How do the key stakeholders (e.g., government officials, university presidents, employers, academics, and officials from donor agencies) perceive the issue of overeducation (reasons for overeducation and impact of overeducation)?
Current challenges of higher education	
Responses to policy directions	(5) What are the perceptions of the key stakeholders on the effectiveness of policies addressing overeducation?

The term "education policy document" is defined as a publicly available document that covers either the whole sector of education or sub-sectors (e.g., higher education and TVET) and is created by national authority as well as international organizations. Such policy documents were collected through (1) the internet, (2) meetings with MECS officials, and (3) meetings with staff from international organizations. The types of documents analyzed include: (1) national development plans, (2) education sector development plans, (3) education laws, and (4) strategic planning documents and recommendations from donors. This document analysis is the main source of information for Research Question 4 ("What kinds of policies have been formulated by the government or donor agencies, to address the issue of overeducation?).

Data collection

As noted previously, some of the qualitative data was collected through in-depth individual interviews. As noted above, interviews were held with stakeholders from the Ministry of Education, Science and Culture; key development agencies in higher education (Asian Development Bank and UNESCO); universities and colleges; and private organizations (i.e., employers). All interviews were conducted in the capital city, Ulaanbaatar, and each lasted between 30 and 60 minutes. The first round of interviews was conducted in December 2010 and the second was conducted in February, 2011. The interviews were conducted in English, with translations to and from Mongolian, except in the case of a few interviewees who were fluent in English. In these cases, the interviews were conducted only in English. Translation was provided by two UNESCO staff from Mongolia.

The policy documents used for the qualitative analysis in this study were collected over the period between 2009 and 2011, on various occasions, mainly from MECS officials and development agency staff. An education policy analysis conducted by UNESCO Beijing (2008) provided a good overview of education policies in Mongolia, both government and international organization policies, and enabled identification of the major policy documents available.

One issue faced in designing the interview questions was how to ensure confidentiality while at the same time ensuring that candid opinions were obtained on this potentially political topic. To address this issue, interviews were recorded in writing only (no audio recording) so as to encourage interviewees to talk freely. It was also clarified

with the interviewees that their names and titles would be confidential and the study would not be written in a way that would enable readers to identify the interviewees. The interviews took place in the interviewees' offices so as to ensure they felt relaxed enough to be candid. In addition, a good rapport had been established with most of the interviewees prior to the interviews, through past working experiences in Mongolia, which helped greatly to obtain candid information in a limited time.

Data analysis

In qualitative analysis, many techniques are well established and widely used. Among those appropriate for analyzing notes from individual interviews and policy documents, "qualitative content analysis" was selected as the main technique for the qualitative analysis in this study.

Content analysis is useful as a tool to understand what people talk about most, and who talks about what most ("recurring" and "predominating" phrases), identifying themes and their implicit relationships. There are two main types of content analysis: quantitative and qualitative. Quantitative content analysis, widely used in mass communication and information and library science (ILS), focuses on numbers of textual elements that manifest in the data to identify themes and patterns. Qualitative content analysis, on the other hand, is "any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings" (Patton, 2002, p.453). One of the major differences between quantitative and qualitative content analysis is the unit of analysis. In quantitative content analysis, the unit of analysis is a physical text (e.g.,

words, sentences, phrases) while in qualitative content analysis, the unit of analysis is the themes that are presented by the text.

In this study, *qualitative* content analysis was selected for the analysis since it allows greater flexibility in coding, which is necessary for analyzing complex materials such as policy documents. Both the interview notes and the policy documents were coded using a theme as the unit of analysis.

Qualitative analyses of this study were conducted using NVivo 9 computer software. NVivo allows researchers to store, code, organize, and analyze relationships between various types of information, including interview transcripts, field visit notes, memos, books, videos, audio data files, and websites. In this study, NVivo was used to analyze the interview notes and policy documents and to code, retrieve, and reorganize the data. Its query function helped to explore connections between and among topics and concepts that emerged through the analyses. The coding scheme developed in NVivo 9 is presented in Appendix 5.

The analyses started with coding. Coding is a process of labeling and organizing information in order to reduce the amount of the data so as to facilitate analysis (Richards, 2005). Different terminologies are used for levels and types of codes including: (1) "descriptive" coding and "inferential/pattern" coding (Miles and Huberman, 1994); (2) "open" coding, "axial" coding, and "selective" coding (Strauss and Corbin, 1990); and (3) "quantitative" coding and "qualitative" coding (Richards, 2005). At the same time, these terminologies seem to converge into two main levels of coding: the first level for description and the second level for interpretation, as pointed out by Punch (2009). The

terminology selected for this study was the one used by Richards (2005), namely "quantitative" coding for description (e.g., demographic information) and "qualitative" coding for interpretation and analysis.

Throughout the process of data analysis, codes were created, deleted, merged and nested to revisit the hypothesis, confirm or challenge it, and revise it when necessary. This reflects the nature of qualitative analysis, which consists of concurrent flows of activities: data reduction, data display, conclusion drawing and verification (Miles and Hubermann, 1994). Three major topics (or themes) emerged during the process: (1) major changes in higher education since the transition; (2) current challenges of higher education; and (3) responses to policy directions. The detailed discussions of each of these three topics, including quotes from the interviews, are presented in Chapter V.

Data validity

In order to maximize the validity and reliability of the data collected for the qualitative analysis, triangulation methods were applied. Methodological triangulation (i.e. the use of multiple methods to study a single program) was used. This involved triangulating two data collection methods (document analysis and in-depth interviews). In addition, the in-depth individual interviews of four groups of key stakeholders served the purpose of triangulating information from different data sources ("data triangulation").

It is important to note that I worked for UNESCO Office in Beijing as an assistant programme specialist for education from 2003 to 2009, managing UNESCO's education projects in Mongolia. While I repeatedly explained to the interviewees that I was collecting

information for my dissertation and it is for purely individual purposes, it undoubtedly facilitated my contacts with the interviewees as well as collecting key policy documents. At the same time, possible bias in information provided during the interview is negligible. This is because that the interviewees fully understood the purpose of the interview was not work related. I also had left UNESCO Office Beijing by the time of the interviews and therefore there was no incentive for interviewees to provide false or inaccurate information because of my position at UNESCO. I was also involved in the initial stage of developing of a study conducted by UNESCO Beijing Office titled "*Current State of Higher Education in Mongolia*," which was cited several times in this study. My position at UNESCO gave me an access to its draft report, but I had no influence on the contents since I had left the office before the actual study was conducted.

3.3.3 Integrating quantitative and qualitative analyses

As discussed in previous chapters, this study combines both quantitative and qualitative analytical methods to answer the research questions. Traditionally, quantitative and qualitative methods were considered mutually exclusive and a researcher would use only one method within a study, either quantitative or qualitative. It was widely assumed that qualitative and quantitative methods use different data types (text and numbers), employ different styles of logic (inductive and deductive), and use different types of analysis (interpretive and statistical). It has often been found (e.g., Bazeley, 2004), however, that such clear distinctions are not valid. For instance, no statistical analysis is made without interpretation. Content analysis, for example, involves numbers of coded items in

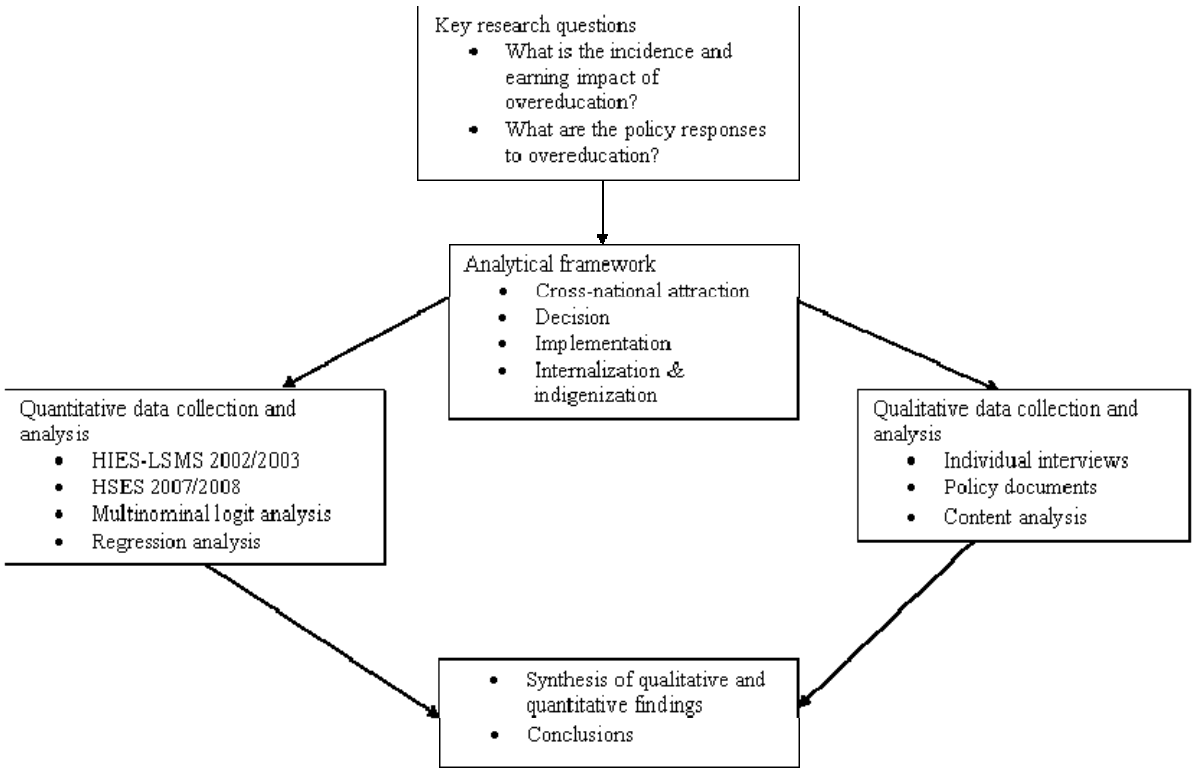
texts. These commonalities, despite the apparent differences between two methods, make it possible for researchers to combine and integrate quantitative and qualitative research methods in one study.

According to Johnson and Onwuegbuzie (2004), the mixed-methods approach "sits in a new third chair, with qualitative research sitting on the left side and quantitative research sitting on the right side". The mixed-methods approach has its philosophical roots in pragmatism (Creswell, 2003) and combines qualitative and quantitative methods to answer the research questions comprehensively. This approach recognizes that rather than being mutually exclusive, qualitative and quantitative methods complement each other and each method compensates for the weaknesses of the other.

In previous mixed-methods studies, there are three general strategies and several variations can be found within them: (1) sequential procedures in which the researcher seeks to elaborate on or expand the findings of one method with another method; (2) concurrent procedures in which the research converges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem; and (3) transformative procedures in which the research uses a theoretical lens as an overarching perspective within a design that contains both quantitative and qualitative data (Creswell, 2003). A recent work by Leech and Onwuegbuzie (2009) presents a detailed framework for categorizing various mixed-methods research designs based on (1) level of mixing (partially or fully mixed), (2) time orientation (concurrent or sequential), and (3) emphasis of approaches (equal or dominant).

Using the classification by Leech and Onwuegbuzie (2009), the method used in this study can be categorized as a "fully mixed concurrent equal status design." In this research design, quantitative and qualitative methods have equal emphasis, and quantitative and qualitative data are collected in a parallel fashion. The flow and components of this study's mixed-methods approach is presented in Figure 13.

Figure 13: Mixed-methods research design of the present study



In this study, quantitative analysis (multinominal logit analysis and regression analysis) provides a systematic and statistical review of incidence and impact of overeducation and explores possible causes of overeducation in Mongolia. This

complements the information on the "perceived" incidence and impact of overeducation among the key stakeholders, which is investigated through qualitative analysis (content analysis). Through this process, the study aims to assess the relevance of the policy responses to overeducation that are in place or in discussion in Mongolia. Each of the research questions contributes to understanding the policy-making process in response to overeducation, using the analytical framework presented in Figure 9 in section 3.2.2 of this chapter. Table 22 presents the analytical framework.

Table 22: Analytical framework for policy development in response to overeducation in Mongolia

Process	Corresponding research question(s)	Information	Methods of data analysis
1. Cross-national attraction	Questions 1 & 3	• Incidence of overeducation	• Multinominal logit analysis • Content analysis
	Questions 2 &3	• Impact of overeducation	• Regression analysis • Content analysis
	Questions 1,2, & 3	• Causes of overeducation	• Multinominal logit analysis • Content analysis
2. Decision	Question 4	• Logic behind policies • Key policy goals • Funding arrangement	• Content analysis
3. Implementation	Question 5	• Policy actions • Responses to policies	• Content analysis
4. Internalization & indigenization	Question 5	• Policy actions • Responses to policies	• Content analysis

CHAPTER IV: QUANTITATIVE ANALYSIS FINDINGS

In this chapter, key findings of the quantitative data analyses are presented in order to answer the below questions:

Question 1: What is the incidence and earning impact of overeducation in Mongolia?

(1) What is the incidence of overeducation in Mongolia, how has the trend changed over time (2002/3 to 2007/8), by individual and job characteristics?

(2) What is the impact of overeducation on individual earnings in Mongolia?

As discussed in Chapter III, the quantitative analysis conducted in this study uses four sets of data: the 2002/2003 and 2007/2008 datasets for analyzing the incidence of overeducation (all workers); and 2002/2003 and 2007/2008 datasets for analyzing the effect of overeducation on wages (wage job workers).

The first section of this chapter presents descriptive statistics of key variables for all datasets. The second section of the chapter presents the results of the multinominal logit analyses to identify the factors determining the odds of becoming overeducated or undereducated. The third section shows the results of regression analyses to understand the impact of being overeducated or undereducated on individual wages. Under each section, the study presents its findings in two steps. First, it presents detailed findings using the 2007/2008 survey. Second, it presents, where possible, the 2002/2003 findings for comparison. These comparisons of 2002/2003 and 2007/2008 findings were made to show

emerging trends. A discussion of the quantitative analyses and key findings then concludes this chapter.

4.1 Descriptive statistics

Table 23 presents the profiles of the key variables of each dataset. For both 2002/2003 and 2007/2008, there were slightly more men than women among all workers, but there were more women than men among wage workers. This may reflect that more men are engaged in non-wage jobs (i.e., household farming and herding). As expected, wage job holders are concentrated in urban areas. There is no clear trend in marital status among the four datasets. The average age of wage job holders is slightly higher than that of all workers, suggesting that young workers may be more engaged in non-wage jobs, though working experience is almost the same. This may be because wage job holders are better educated. In the 2002/2003 data, the average years of education of the wage job holders is more than two years longer than that of all workers. In the 2007/2008 data, the difference is 1.5 years. On the other hand, fewer workers are overeducated among the wage job holders compared to all workers.

Table 23: Profiles of the datasets

	Incidence of overeducation (all workers)		Impact of overeducation on wages (workers with cash wages)	
	2002/2003 (n=5,192)	2007/2008 (n=17,715)	2002/2003 (n=5,192)	2007/2008 (n=17,715)
Gender				
Male	50.31%	50.63%	47%	47.51%
Female	49.69%	49.37%	53%	52.49%
Residence				
Urban	47.37%	50.64%	76.95%	77.71%
Rural	52.63%	49.36%	23.05%	22.29%
Marital status				
Married	34.89%	33.66%	30.58%	35.43%
Not married	65.11%	66.34%	69.42%	64.53%
Age (SD)	35.10 (12.43)	35.47 (10.80)	37.27 (9.76)	36.38 (10.05)
Years of education (SD)	9.39 (3.88)	9.51 (3.47)	11.70 (2.73)	11.02 (2.71)
Working experience (SD)	17.72 (12.17)	17.98 (10.90)	17.58 (9.74)	17.29 (10.22)
Education status				
Adequate	24.01%	43.2%	28.55%	47.98%
Over	37.49%	26.78%	27.94%	22.82%
Under	38.5%	30.02%	43.51%	29.2%
Monthly wage (2002 price)			59,896 (26,837)	92,595 (62,029)

As expected, the distribution of labor differs between “all workers” and “wage job workers”. The share of agriculture and fishery workers is significantly smaller among the wage job workers compared to all workers. This indicates that most of the agriculture and fishery jobs are in the non-wage (e.g., household) sector. Table 24 shows distribution of labor.

Table 24: Distribution of labor

Descriptions and corresponding ISCO-88 codes	Incidence of overeducation (all workers)		Impact of overeducation on wages (workers with cash wages)	
	2002/2003 (n=5,192)	2007/2008 (n=17,715)	2002/2003 (n=2,274)	2007/2008 (n=7,997)
Legislators, senior officials and managers (11-13)	3.21%	4.07%	6.41%	7.05%
Professionals (21-24)	10.39%	10.9%	25.3%	22.14%
Technicians and associate professionals (31-34)	5.77%	5.10%	13.07%	9.95%
Office clerks (41-42)	2.37%	2.22%	5.94%	4.40%
Service workers and shop and market sales workers (51-52)	10.68%	13.53%	13.95%	16.93%
Skilled agricultural and fishery workers (61-62)	48.61%	34.45%	0.99%	2.57%
Craft and related trades workers (71-74)	8.35%	11.36%	15.57%	17.78%
Plant and machine operators and assemblers (81-83)	6.02%	6.87%	10.58%	9.40%
Elementary occupations (91-93)	4.61%	11.52%	8.20%	9.78%

4.2 Factors affecting the incidence of overeducation

4.2.1 Measuring the incidence of overeducation and undereducation

This analysis utilizes the MD approach to measure overeducation and undereducation. Weighted frequencies were used to determine the modal value (most frequently appearing values) for each occupational category. These values were used as cut-off points for measuring overeducation (see Table 25).

Table 25: Cut-off points for measuring overeducation (modal value)

	Descriptions and corresponding ISCO-88 codes	2002/2003 (n=5,192)	2007/2008 (n=17,715)
1	Legislators, senior officials and managers (11-13)	15	14
2	Professionals (21-24)	14	14
3	Technicians and associate professionals (31-34)	14	14
4	Office clerks (41-42)	14	10
5	Service workers and shop and market sales workers (51-52)	10	10
6	Skilled agricultural and fishery workers (61-62)	8	8
7	Craft and related trades workers (71-74)	10	10
8	Plant and machine operators and assemblers (81-83)	8	10
9	Elementary occupations (91-93)	10	10
	Total	8	10

Incidences of overeducation and undereducation were then calculated using established cut-off points for each job category (see Table 26). Thus, the study found that in 2007/2008 approximately 27 percent were overeducated, 43 percent were adequately educated, and 30 percent were undereducated. The percentage of overeducated workers falls within the range found in other studies, especially those applying the AE and ME methods.

Table 26: Incidence of overeducation and undereducation, 2007/2008

Educational status	HSES 2007/2008 (n=17,715)		
	Male	Female	Total
Adequately educated	43.62%	42.77%	43.2%
Overeducated	24.79%	28.82%	26.78%
Undereducated	31.59%	28.41%	30.02%
	Urban	Rural	
Adequately educated	48.36%	37.9%	
Overeducated	28.06%	25.47%	
Undereducated	23.57%	36.63%	

The study found that more women are overeducated than men, while more men are undereducated than women (Table 26). This seems to support the findings of other studies. Furthermore, the study found that people living in urban areas are more overeducated while people living in rural areas are more undereducated. This could indicate that urban areas have greater competition for jobs, which results in people in urban areas pursuing more education. These findings will be further analyzed in the following section.

Not only are more women overeducated than men, the average number of years of overeducation is slightly more for women than for men, as shown in Table 27.

Table 27: Means of years of adequate education, overeducation and undereducation

HSES 2007/2008 (n=17,715)	Male (n=8,960)	Female (n=8,755)
Adequate education	9.87 (1.96)	10.36 (2.29)
Overeducation	0.55 (1.15)	0.66 (1.28)
Undereducation	1.32 (2.35)	1.10 (2.09)

When incidences of overeducation and undereducation are compared across occupational categories, clear tendencies can be found (Table 28). For professionals, around 15% of the workers are overeducated while only 7.7% of technicians and associate professionals are overeducated. On the other hand, more than half of office clerks are overeducated. This may suggest education-job mismatch particularly in these areas. There may be a shortage of qualified professionals, technicians, and associate professionals, while office clerks may be providing employment for those with longer years of education but who are not able to find a professional/technical job.

Table 28: Incidence of overeducation and undereducation, by occupational categories (all workers)

Descriptions and corresponding ISCO-88 codes	Overeducated	Undereducated
Legislators, senior officials and managers (n=682)	18.16%	33.62%
Professionals (n=1,826)	14.9%	36.18%
Technicians and associate professionals (n=878)	7.72%	54.5%
Office clerks (n=387)	56.21%	8.32%
Service workers and shop and market sales workers (n=2,379)	32.86%	17.44%
Skilled agricultural and fishery workers (n=6,339)	33.54%	30.03%
Craft and related trades workers (n=1,946)	24.57%	27.03%
Plant and machine operators and assemblers (n=1,191)	28.25%	21.2%
Elementary occupations (n=2,087)	17.82%	39.2%
Total (n=17,715)	26.78%	30.02%

4.2.2. Factors affecting incidence of overeducation and undereducation

In this section, three multiple logit analyses were run to determine the factors affecting the probability of being overeducated or undereducated for each of the datasets. The independent variables are MALE, URBAN, MARRIED, SCHOOL, EXP, EXP^2, PRE_REFORM, and time interaction of all the independent variables. AGE was dropped as it is highly correlated to SCHOOL, EXP and EXP^2. All models were tested for IIA[11] (Independence from Irrelevant Alternatives) using Hauman and suest-based Hausman tests and the null hypothesis (odds are independent of other alternatives) was rejected at 5% level. Table 29 shows the results of multinominal regression for probabilities of being overeducated and undereducated, using the status of being "adequately educated" as a base.

Table 29: Factors affecting the incidence of overeducation and undereducation, 2007/2008 (Model 1)

Multinominal logit model (n=17,715)	Overeducation		Undereducation	
	Odds ratio	t-value	Odds ratio	t-value
MALE	1.065	1.50	0.751***	-6.85
URBAN	0.360***	-12.59	2.612***	12.27
MARRIED	0.921	-1.45	0.864**	-2.36
SCHOOL	1.487***	25.54	0.538***	-24.54
EXP	1.012	1.16	1.012	1.14
EXP2	1.000	-1.38	1.000	0.37
PRE_REFORM	1.467***	3.95	1.110	1.17
Prob>F	0.0000			

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

Although the study found that more women are overeducated than men (Table 28), when other factors, such as location of residence (urban/rural) and years of education are

[11] Since IIA tests cannot be run under svy command in STATA, tests were done without svy.

taken into account, the impact of gender on the odds of being overeducated is not statistically significant. Living in urban areas actually decreases the odds of being overeducated and increases the odds of becoming undereducated. Additional years of education increase the odds of being overeducated by 49 percent while decreasing the odds of being undereducated by 46 percent. Being married decreases the odds of being undereducated by 14 percent and belonging to the pre-reform generation increases the odds of being overeducated by 47 percent.

4.2.3 Incidence of overeducation and type of job (occupational categories)

Since the educational distribution of the labor force varies significantly by type of job, it is worth analyzing the impact of the types of employment on the probability of being overeducated or undereducated. For Model 2, three dummy variables were added: those with a paid job (PAID), those with an unpaid job (UNPAID), and those self-employed or working on their own account (OWN_ACCOUNT).

The results are quite different from the first model. All variables, except OWN_ACCOUNT, which was dropped, were statistically significant when explaining the odds of being overeducated compared to adequately educated. Being male increases the odds of being overeducated by 29 percent, living in an urban area decreases the odds by 40 percent, being married also decreases the odds by 22 percent. Additional years of education increases the odds by 92 percent, while years of working experience has an almost negligible but still statistically significant effect on the odds of being overeducated. Belonging to the pre-reform generation increases the odds by 42 percent. Having a paid job

decreases the odds significantly (84%) while having an unpaid job increases the odds by 120%.

For undereducation, being male decreases the odds by 42 percent, while living in an urban area increases the odds by 16 percent. Additional years of education decrease the odds by 55 percent. Belonging to the pre-reform generation does not have a statistically significant impact on the odds of being undereducated. Having a paid job increases the odds by a surprisingly high 402 percent and having an unpaid job decreases the odds by 65 percent. Table 30 shows the results of the multinominal logit analysis for Model 2.

Table 30: Factors affecting the incidence of overeducation and undereducation, 2007/2008 (Model 2)

Multinominal logit model (n=17,715)	Overeducation		Undereducation	
	Odds ratio	t-value	Odds ratio	t-value
MALE	1.292***	5.08	0.582***	-10.69
URBAN	0.594***	-7.76	1.155*	1.79
MARRIED	0.779***	-4.14	1.081	1.18
SCHOOL	1.921***	29.62	0.448***	-25.22
EXP	1.042***	4.10	0.982	-1.64
EXP2	0.999***	-3.81	1.000***	2.88
PRE_REFORM	1.424***	3.65	1.04	0.39
PAID	0.166***	-18.79	5.024***	19.74
UNPAID	2.200***	10.68	0.352***	-11.05
OWN_ACCOUNT	(omitted)		(omitted)	
Prob>F	0.0000			

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.2.4 Incidence of overeducation and gender

Most previous studies of overeducation found that the incidences of overeducation and undereducation vary between men and women, although the direction (more men overeducated than women or vice versa) differs among the studies, as summarized by Groot

and Van den Brink (2000). It is worth further investigating the impact of gender on incidence of overeducation and undereducation, so in the next model (Model 3), gender-interaction variables were added. Since two groups were being compared, an adjusted Wald test was also performed. The null hypothesis that the odds are same for both groups was rejected at the 5% level.

For the odds of being overeducated, the findings are similar to those of Model 2. Living in an urban area and being married decrease the odds by 37 percent and 24 percent, respectively. An additional year of education increases the odds by 94 percent, while an increase in years of working experience shows a statistically significant yet almost negligible impact on the odds. Belonging to the pre-reform generation increases the odds of being overeducated by 72 percent, as does having an unpaid job (by 107 percent). Having a paid job decreases the odds by 88 percent. On the other hand, being male is not statistically significant in explaining the odds of being overeducated. Among the gender-interaction variables added, only working experience and having a paid job are statistically significant. The impact of working experience increases the odds for men (statistically significantly), but, again, the increase is almost negligible. The impact of having a paid job in decreasing the odds of being overeducated increases by a large amount (73 percent) for men, indicating that once they are in a paid job, men are much less likely to be overeducated compared to women, holding everything else constant.

For the odds of being undereducated, being married significantly increases the odds, while additional year of education decreases the odds almost by half. Having a paid job increases the odds of being undereducated by 417 percent while having an unpaid job

decreases the odds by 70 percent. The impact of living in an urban area on the odds of being undereducated went from being positive to negative, showing that after controlling for gender-interactive factors, living in urban areas significantly decreases the odds of being undereducated instead of increasing it. Another major difference in the results of this model compared to other models is the impact of gender on the odds of being undereducated. Unlike the other models, being male increases the odds by 523 percent. This implies that after controlling for gender-interactive factors, being male significantly increases the odds instead of decreasing them. From the analysis of the gender-interactive variables, it can be said that men living in urban areas are more likely to be undereducated than women living in urban areas. A man with an additional year of education has significantly lower odds of being undereducated than a woman with an additional year of education, while a man with an unpaid job is more likely to be undereducated than a woman with an unpaid job.

Table 31: Factors affecting the incidence of overeducation and undereducation[12] (Model 3)

Multinominal logit model (n=17,715)	Overeducation		Undereducation	
	Odds ratio	t-value	Odds ratio	t-value
URBAN	0.626***	-5.13	0.781**	-2.45
MARRIED	0.759***	-3.60	1.222**	2.36
SCHOOL	1.936***	22.77	0.506***	-22.02
EXP	1.021*	1.72	0.982	-1.19
EXP2	0.999**	-1.97	1.001**	2.53
PRE_REFORM	1.721***	4.37	1.068	0.46
PAID	0.122***	-15.12	5.166***	14.47
UNPAID	2.067***	7.29	0.295***	-9.51
OWN_ACCOUNT	(omitted)		(omitted)	
MALE	0.876	-0.37	6.223***	4.69
URBAN_M	0.872	-1.31	2.418***	6.35
MARRIED_M	1.004	0.04	0.877	-1.07
SCHOOL_M	0.998	-0.05	0.737***	-7.06
EXP_M	1.038*	2.11	1.003	0.13
EXP2_M	0.999	-1.56	1.000	-0.14
PRE_REFORM_M	0.685	-2.41	0.868	-0.69
PAID_M	1.725***	3.37	0.967	-0.47
UNPAID_M	0.934	-0.46	2.059***	4.03
OWN_ACCOUNT_M	(omitted)		(omitted)	
Prob>F	0.0000			

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

[12] Gender-interactive variables are URBAN_M, MARRIED_M, SCHOOL_M, EXP_M, EXP2_M, PRE_REFORM_M, PAID_M, UNPAID_M, and OWN_ACCOUNT_M.

4.2.5 Comparison of 2002/2003 and 2007/2008 findings

As explained in Chapter III, the 2002/2003 survey data are not exactly the same as the 2007/2008 survey data. However, it is worth comparing the data from the two surveys to understand any general trends in the period between the two years. In this section, the key findings of an analysis of the 2002/2003 data (as compared with the 2007/2008 data) is presented, followed by an analysis of the trends that emerge from this analysis.

Overall, the incidence of overeducation and undereducation declined between 2002/2003 and 2007/2008, with the share of adequately educated people almost doubling during this period. It is also noteworthy that significantly more people were overeducated in urban areas in 2002/2003 than in 2007/2008. Table 32, below, presents the incidence of overeducation and undereducation in 2002/2003.

Table 32: Incidence of overeducation and undereducation, 2002/2003

Educational status	LSMS 2002/2003 (n=5,192)		
	Male	Female	Total
Adequately educated	25.16%	22.87%	24.01%
Overeducated	36.37%	38.6%	37.49%
Undereducated	38.47%	38.53%	38.5%
	Urban	Rural	
Adequately educated	13.76%	33.23%	
Overeducated	47.94%	28.09%	
Undereducated	38.3%	38.68%	

4.2.5.1 Factors affecting the incidence of overeducation and undereducation

A comparison of the data sets found that the general tendency regarding the odds of being overeducated is the same in both years, except for the effect of living in urban areas. In 2007/2008, living in an urban area decreased the odds of being overeducated, but

in 2002/2003 it increased the odds (by 69 percent). In 2002/2003, the number of years of education and the status of belonging to the pre-reform generation were statistically significant for determining the odds of being overeducated. An additional year of education increased the odds of being overeducated by 37 percent. Belonging to the pre-reform generation also increased the odds, in this case by 177 percent. In 2002/2003, the years of working experience were also statistically significant, unlike in 2007/2008. An additional year of working experience slightly decreased the odds of being overeducated (by 6 percent).

For undereducation, all variables except MARRIED were statistically significant. Being male decreased the odds of being undereducated (by 16 percent), while living in an urban area increased the odds (by 351 percent). An additional year of education decreased the odds by 17 percent, while an additional year of working experience decreased the odds slightly (8 percent). Belonging to the pre-reform generation also increased the odds (by 93 percent).

Due to a significant number of individuals with missing values in job types (paid: 2,326; unpaid: 14; missing: 2,852), the analysis of the 2002/2003 data could not include the job types (i.e., Models 2 & 3). In general, however, the trend was the same in 2002/2003 as in 2007/2008. In addition, it is worth noting that the impact of belonging to the pre-reform generation on the odds of being overeducated became smaller between 2002/2003 and 2007/2008. The results using Model 1 are presented in Table 33.

Table 33: Incidence of overeducation and undereducation, 2002/2003 (Model 1)

Multinominal logit model (n=5,192)	Overeducation		Undereducation	
	Odds ratio	t-value	Odds ratio	t-value
MALE	1.115	1.30	0.835**	-2.31
URBAN	1.691***	4.83	4.514***	10.59
MARRIED	1.032	0.27	0.884	-1.13
SCHOOL	1.368***	20.38	0.831***	-9.02
EXP	0.943***	-2.83	0.923***	-4.55
EXP2	1.001	1.57	1.001***	4.74
PRE_REFORM	2.766***	5.99	1.932***	4.35
Prob>F	0.0000			

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.3 Effects of overeducation and undereducation on wages

This section presents the results of the detailed analysis of the effects of overeducation and undereducation on wages. As discussed in Chapter III, 2,271 individuals from the LSMS 2002/2003 and 7,997 individuals from the HSES 2007/2008 were selected. Similarly to the analysis of the incidence of overeducation, the findings are presented in two steps. First, detailed findings using the 2007/2008 data are presented, followed by findings from the 2002/2003 data, for comparison.

4.3.1 Effects of schooling on wages

In this section, the impact of schooling (education) on wages is analyzed, with other variables controlled. The independent variables included for Model 1 are years of education (SCHOOL), a dummy variable for gender (MALE), a dummy variable for location (URBAN), a dummy variable for marital status (MARRIED), years of working

experience (EXP), square of working experience (EXP^2), and a dummy variable for the pre-reform generation (PRE_REFORM). As noted above, in Mongolia wages tend to vary significantly depending on the time of the year, especially in industries such as agriculture and construction due to the very cold weather in winter, which limit outdoor work. In order to control for this difference, a set of dummy variables showing the calendar quarter of the interviews was included in the analysis (QUARTER_1, QUARTER_2, and QUARTER_3). Age (AGE) was not included in the models due to the high correlation with SCHOOL, EXP and EXP^2.

As expected, the rate of return to an additional year of schooling is positive and statistically significant (0.136). Being a male, living in an urban area, and being married also increase wages. An additional year of working experience slightly increases wages, thus confirming the proposition of human capital theory that experience may compensate for a lack of education and vice versa. Belonging to the pre-reform generation decreases wages (-0/175). This may indicate that the skills and knowledge needed in the labor market in recent years may no longer match the education provided during the pre-reform era.

Table 34 presents the results of the regression analysis using the natural log of monthly cash wages as the dependent variable.

Table 34: Effects of years of education on wages (dependent variable" log monthly cash wage) (Model 1)

OLS	2007/2008 (n=7,997)	
	Coefficients	*t*-value
MALE	0.157***	7.38
URBAN	0.271***	7.42
MARRIED	0.087***	3.62
SCHOOL	0.136***	25.96
EXP	0.049***	9.04
EXP2	-0.001***	-7.43
PRE_REFORM	-0.175***	-4.15
Quarter_1	0.120***	2.99
Quarter_2	0.350***	9.22
Quarter_3	-0.260***	-5.86
Constant	8.78***	96.53
Prob>F	0.0000	
R^2	0.2365	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

In order to control for differences that occur due to job types, another model (Model 2) was used for analysis. In this model, in addition to the variables included in the first model, additional dummy variables for each of the nine job categories were included (base category: elementary workers).

The general trends found using Model 2 are the same as for the first model. Being male, living in an urban area, and being married all have a positive impact on wages. An additional year of education also has a positive impact on wages, as does an additional year of working experience. Belonging to the pre-reform generation has a negative impact on wages. All jobs other than skilled agriculture and fisheries have higher cash wages compared to elementary work, which is quite understandable, although service workers' cash wages are not statistically significantly higher than those of elementary workers. It is

clear that the job type has a significant impact on wages even when other characteristics (e.g., gender, education, and working experience) are the same. The results are presented in Table 35.

Table 35: Effects of years of education on wages (dependent variable: log monthly cash wage), occupational category (Model 2)

OLS	2007/2008 (n=7,997)	
	Coefficients	*t*-value
MALE	0.157***	6.94
URBAN	0.268***	7.49
MARRIED	0.069***	2.90
SCHOOL	0.100***	17.27
EXP	0.049***	9.16
EXP2	-0.001***	-7.83
PRE_REFORM	-0.170***	-4.08
MANAGERS	0.488***	9.36
PROFESSIONALS	0.368***	8.08
TECHNICIANS	0.354***	7.30
OFFICE_CLERK	0.269***	4.55
SERVICE	0.035	0.76
FARMER	-0.432***	-5.10
CRAFTSMEN	0.139***	2.68
MACHINE_OPERATOR	0.269***	5.28
QUARTER_1	0.129***	3.30
QUARTER_2	0.346***	9.26
QUARTER_3	-0.259***	-5.95
Constant	8.997***	92.96
Prob>F	0.0000	
R^2	0.2643	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.3.2 Effects of years of overeducation and undereducation on wages with occupational categories

Next, the effects of years of overeducation and undereducation on individual wages was analyzed, also using the natural log of monthly wages as the dependent variable. For this analysis, two models were considered. For both models, SCHOOL (years of education) was divided into (i) years of adequate education (ADESCH), (ii) years of overeducation (OVERSCH) and (iii) years of undereducation (UNDERSCH). Model 1 is a limited model with years of adequate education (ADESCH); years of overeducation (OVERSCH); years of undereducation (UNDERSCH); a dummy variable for gender (MALE); a dummy variable for location (URBAN); a dummy variable for marital status (MARRIED); years of working experience (EXP); the square of working experiences (EXP^2); a dummy variable for the pre-reform generation (PRE_REFORM); and dummy variables for controlling seasonal changes in wages (QUARTER_1, QUARTER_2, and QUARTER_3). Age (AGE) was not included in the models due to the high correlation with ADESCH, OVERSCH, UNDERSCH, EXP and EXP^2.

The findings related to the rates of return to education are consistent with those of previous studies. Rates of return to each year of overeducation are positive and statistically significant, but smaller than those to adequate education (0.179 for adequate education and 0.100 for overeducation). Undereducation is punished with a negative rate of return (-.106) for each year of being undereducated. Being male increases wages (0.192), as does living in an urban area (0.297). An additional year of working experience increases wages, but the rate of return is smaller than that for adequate education and overeducation. This suggests

that pursuing further education may be a better option for potential workers than beginning work immediately after obtaining education"adequate" for the job, even if they become overeducated.

Table 36: The effects of years of overeducation and undereducation on wages (dependent variable: log monthly cash wage) (Model 1)

OLS	2007/2008 (n=7,997)	
	Coefficients	*t*-value
MALE	0.192***	9.20
URBAN	0.297***	8.23
MARRIED	0.071***	2.99
ADSCH	0.179***	27.42
OVERSCH	0.100***	10.70
UNDERSCH	-0.106***	-14.19
EXP	0.050***	9.46
EXP2	-0.001***	-8.12
PRE_REFORM	-0.167***	-4.01
QUARTER_1	0.125***	3.14
QUARTER_2	0.346***	9.17
QUARTER_3	-0.260***	-5.94
Constant	8.24***	78.53
Prob>F	0.0000	
R^2	0.2532	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

Next, a set of dummy variables was added to control for different types of jobs, using the least skilled job (i.e., elementary workers) as the base category. The impact of occupational categories on wages was surprising. In this analysis, for those found statistically significant, the results indicate that workers with higher level jobs, such as professional jobs and technical jobs, tend to have lower wages compared to those with elementary jobs. The only jobs that had statistically significantly higher wages compared to elementary workers (when only years of schooling were considered) are office clerks, craft-related workers and machine/plant operators. This suggests that having higher levels

of jobs may be associated with lower wages when the effects of overeducation and undereducation are controlled, implying that education-job mismatch is more prevalent among higher-level job holders.

As discussed in the earlier section of this study (Table 28), there is a possibility of education-job mismatch in certain occupation categories: there may be shortage of qualified professionals, technicians, and associate professionals, while there may be surplus of supply of office clerks. However, this explains neither the negative impact upon wages of being professionals, technicians, and associate professionals, nor (holding everything else constant) the positive impact on wages of being office clerks. This may imply that there are other explanatory factors than human capital and education-job matching in one's choice of occupation.

While the information is insufficient to derive any conclusion at this point, it may be interesting to further investigate why there seems to be more overeducated office clerks even though being an office clerk may actually increase wages. Another possibility is that this result is caused by errors in the sample population. As discussed in section 3.3.1.3, a significant number of observations were dropped from the sample, mainly due to missing information. This may have distorted representativeness of the dataset.

Table 37: The effects of years overeducation and undereducation on wages (dependent variable: log monthly cash wage), occupational category (Model 2)

OLS	2007/2008 (n=7,997)	
	Coefficients	*t*-value
MALE	0.157***	6.94
URBAN	0.268***	7.48
MARRIED	0.069***	2.90
ADSCH	0.222***	17.57
OVERSCH	0.101***	10.35
UNDERSCH	-0.100***	-13.32
EXP	0.049***	9.16
EXP2	-0.001***	-7.82
PRE_REFORM	-0.170***	-4.08
MANAGERS	(omitted)	
PROFESSIONALS	-0.120***	-3.36
TECHNICIANS	-0.134***	-3.16
OFFICE_CLERK	0.268***	4.50
SERVICE	0.034	0.76
FARMER	-0.188**	-1.97
CRAFTSMEN	0.139***	2.68
MACHINE_OPERATOR	0.269***	5.29
QUARTER_1	0.129***	3.29
QUARTER_2	0.346***	9.25
QUARTER_3	-0.259***	-5.96
Constant	7.78***	45.63
Prob>F	0.0000	
R^2	0.2643	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.3.3 Effects of overeducation and undereducation on wages, with industrial categories

In addition to types of occupations, it can be expected that sectors of employment (industries) play a significant role in determining individual wages. In Mongolia, where the industrial composition is rapidly changing, it is worth considering the impact of industries on wages when examining the effects of overeducation and undereducation. To measure

this, 11 dummy variables were added to Model 1, representing 12 industries (base industry: public). The results of the regression analysis are presented in Table 38.

The overall trend was the same as in the other models. Rates of return to adequate and over education are positive and statistically significant, and the return to overeducation is smaller than that to adequate education. The rate of return to undereducation is negative. Being male, living in an urban area, and being married increase wages. Public sector workers seem to be better paid compared to other sectors when other factors are controlled. This is probably a consequence of the public pay policies that allowed a 30 percent increase in salaries in 2006 and an additional 20 percent rise in 2007. As anticipated by the World Bank (2007), this rise in salary may have created "a non market-based public wage premium" (p.22). Workers in all areas, except mining and information and communication technology, earned lower cash wages compared to public sector workers.

Table 38: Effects of years of overeducation and undereducation on wages (dependent variable: log monthly wage): industrial category (Model 3)

OLS	2007/2008 (n=7,997)	
	Coefficients	*t*-value
MALE	0.154***	6.86
URBAN	0.288***	8.01
MARRIED	0.068***	2.92
ADSCH	0.166***	22.70
OVERSCH	0.098***	1036
UNDERSCH	-0.098***	-13.48
EXP	0.049***	9.29
EXP2	-0.001***	-7.73
PRE_REFORM	-0.177***	-4.33
AGRICULTURE	-0.645***	-6.48
MINING	0.199***	3.00
MANUFACTURING	-0.170***	-3.54
CONSTRUCTION	-0.170***	-3.15
TRADE	-0.189***	-3.97
INFORMATION	0.140***	3.12
FINANCE	-0.032	-0,68
EDUCATION	-0.124***	-3.11
HEALTH	-0.083**	-1.96
SERVICE_JOB	-0.279***	-4.27
OTHERS	(omitted)	3.67
QUARTER_1	0.141***	9.80
QUARTER_2	0.357***	-5.47
QUARTER_3	-0.240***	72.43
Constant	8.524***	
Prob>F	0.0000	
R^2	0.2775	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.3.4 Effects of overeducation and undereducation on wages and gender

The previous sections analyzed the effect of gender on the probability of being overeducated or undereducated. The results suggest that when years of schooling and job types are controlled (Model 2), men are more likely to be overeducated. In addition, the ordinary least squares (OLS) analyses conducted in the above section show that gender is

one of the significant determining factors of wages. That is, being a male is associated with higher wages. Is there, then, any difference in rates of return to overeducation or undereducation between men and women? To answer this question, gender interaction variables for years of adequate education, overeducation, undereducation, location of residence, marriage status, and generation (ADESCH_M, OVERSCH_M, and UNDERSCH_M, URBAN_M, MARRIED_M, PRE_REFORM_M) were added to the model.

The analysis found that the rate of return to overeducation is smaller for men, and the rate of return to undereducation is larger for men (compared to women), while the rates of return to adequate education did not show statistically significant differences between men and women. This indicates that a wage increase from an additional year of education above the required level is smaller for men compared to women. At the same time, the wage penalty for an additional year of "deficit" education (required level of education less actual years of education) is also smaller for men than women. From this finding, it can be said that women's wages are more sensitive to education-job match than are the wages of men. Living in an urban area significantly increases the wages for both men and women, but more so for men than for women. Belonging to the pre-reform generation slightly decreases the wage and men tend to suffer more from it than women. The results are presented in the table below.

Table 39: Effects of years of overeducation and undereducation on wages (dependent variable: log monthly wage): gender[13]

OLS	2007/2008 (n=7,997)	
	Coefficients	*t*-value
ADESCH	0.188***	22.89
OVERSCH	0.123***	10.17
UNDERSCH	-0.123***	-10.99
ADESCH_M	-0.014	-1.39
OVERSCH_M	-0.048***	-2.62
UNDERSCH_M	0.092**	2.25
MALE	0.271**	2.04
URBAN	0.244***	5.89
MARRIED	0.024	0.83
PRE_REFORM	-0.080*	-1.83
URBAN_M	0.108**	2.07
MARRIED_M	0.143***	3.19
PRE_REFORM_M	-0.195***	-4.64
EXP	-0.049***	9.15
EXP2	-0.001***	-7..70
QUARTER_1	0.125***	3.13
QUARTER_2	0.345***	9.14
QUARTER_3	-0.262***	-5.99
Constant	8.19	66.69
Prob>F	0.0000	
R^2	0.2578	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.3.5 Comparison of 2002/2003 and 2007/2008 findings

In this section, a comparison is made of the results of the analysis of the 2002/2003 data with the results of the analysis of the 2007/2008 data. The complete results of the comparison of the two data sets are presented in Appendix 4.

4.3.5.1 Effects of schooling on wages

[13] Gender-interaction terms are ADESCH_M, OVERSCH_M, UNDERSCH_M, URBAN_M, MARRIED_M, PRE_REFORM_M

For both data sets, the number of years of education, gender, and location of residence are major factors positively affecting wage levels, while the status of belonging to the pre-reform generation negatively affects the wage level (but it is only statistically significant in 2007/2008). Coefficients for gender and location of residence are comparable between two datasets, while coefficients for years of education are significantly higher in 2007/2008 than for 2002/2003 (see Table 40). For both years, belonging to pre-reform generation negatively affects the wage, but it is only statistically significant in 2007/2008.

Table 40: Effects of schooling on wages (key variables), 2002/2003 and 2007/2008

OLS	2002/2003 (n=2,271)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.154***	8.09	0.157***	7.38
URBAN	0.250***	9.43	0.271***	7.42
MARRIED	0.024	0.95	0.087***	3.62
SCHOOL	0.049***	11.96	0.136***	25.96
R^2	0.1708		0.2365	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

This implies that the rate of return to education may have increased between 2002/2003 and 2007/2008. This is consistent with the findings of the World Bank (2010a). This tendency remains the same when occupational categories are included in the analysis (Table 41). Compared to elementary workers, only farmers (including herders) have lower wages. The rate of return to education in 2007/2008 is slightly higher than in 2002/2003, again suggesting that the rate of return to education may have increased, even after controlling for wage variances between occupation categories. When occupational categories are included in the analysis, belonging to the pre-reform generation did not have a statistically significant effect on wages in 2002/2003, but it had a negative effect on

wages in 2007/2008. In addition, the wage differences between elementary workers and managers, professionals, technicians, and farmers (including herders) widened during this period. This may indicate that wages are becoming more polarized between high-level and low-level jobs.

Table 41: Effects of schooling on wages: occupational category (key variables), 2002/2003 and 2007/2008

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.127***	6.43	0.157***	6.94
URBAN	0.243***	9.05	0.268***	7.49
SCHOOL	0.041***	7.91	0.100***	17.27
PRE_REFORM	0.0001	0.00	-0.170***	-4.08
MANAGERS	0.290***	5.26	0.488***	9.36
PROFESSIONALS	0.199***	5.04	0.368***	8.08
TECHNICIANS	0.145***	3.80	0.354***	7.30
OFFICE_CLERK	0.108	2.16	0.269***	4.55
SERVICE	0.074**	1.91	0.035	0.76
FARMER	-0.246*	-2.55	-0.432***	-5.10
CRAFTSMEN	0.208***	4.71	0.139***	2.68
MACHINE_OPERATOR	0.217***	4.04	0.269***	5.28
R^2	0.2022		0.2643	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.3.5.2 Effects of years of overeducation and undereducation on wages

When years of education are divided into years of adequate education, overeducation and undereducation, for both data sets, the rate of return to overeducation is positive but smaller than that to adequate education. The rate of return to undereducation is negative. This is consistent with previous studies and shows that years of overeducation and undereducation have a similar effect in highly industrialized and/or knowledge economies to the effect in developing countries such as Mongolia.

Table 42: Effects of years of overeducation and undereducation on wages (key variables), 2002/2003 and 2007/2008

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.161***	8.18	0.192***	9.20
URBAN	0.254***	9.42	0.297***	8.23
ADSCH	0.052***	11.97	0.179***	27.42
OVERSCH	0.036***	4.47	0.100***	10.70
UNDERSCH	-0.047***	-7.69	-0.106***	-14.19
PRE_REFORM	0.001	0.03	-0.167***	-4.01
R^2	0.1743		0.2532	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

In the previous section it was shown that wages may be becoming more polarized between high-level jobs and low-level jobs. However, when the number of years of adequate, overeducation and undereducation is controlled, this does not hold. Rather - holding everything else constant - most of the high-level jobs (e.g, managers and professionals) have a negative coefficient, indicating that these workers have lower wages than elementary job holders, as shown in Table 43. This implies that overeducation may be more prevalent among high-level job holders. It is also worth noting that the rates of return to adequate education and overeducation increased, while rates of return to undereducation declined. This may indicate that education was valued more and undereducation was punished more in 2007/2008 than in 2002/2003.

Table 43: Effects of years of overeducation and undereducation: occupational categories (key variables), 2002/2003 and 2007/2008

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.127***	6.43	0.157***	6.94
URBAN	0.242***	9.00	0.268***	7.48
MARRIED	0.020	0.77	0.069***	2.90
ADSCH	0.098***	9.51	0.222***	17.57
OVERSCH	0.035***	4.38	0.101***	10.35
UNDERSCH	-0.044***	-7.05	-0.100***	-13.32
PRE_REFORM	0.001	0.02	-0.170***	-4.08
PROFESSIONALS	-0.091**	-2.03	-0.120***	-3.36
TECHNICIANS	-0.143***	-2.90	-0.134***	-3.16
OFFICE_CLERK	-0.123**	-2.27	0.268***	4.50
SERVICE	0.195***	3.72	0.034	0.76
FARMER	-0.134	-1.29	-0.188**	-1.97
CRAFTSMEN	0.207***	4.69	0.139***	2.68
MACHINE_OPERATOR	0.335***	5.08	0.269***	5.29
R^2	0.2024		0.2643	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.3.5.3 Effects of overeducation and undereducation on wages, with industrial categories

Although it is inappropriate to directly compare the two datasets due to methodological differences discussed earlier in this study, it can be observed that most industries had higher wages than the public sector in 2002/2003, but the public sector wages became higher than most of these sectors in 2007/2008, controlling for other factors (Table 44).

Some industries (i.e., mining and information) had higher wages than the public sector even in 2007/2008, but the differences narrowed between 2002/2003 and 2007/2008.

Table 44: Effects of years of overeducation and undereducation on wages: industrial categories (key variables), 2002/2003 and 2007/2008

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.114***	5.67	0.154***	6.86
URBAN	0.222***	8.46	0.288***	8.01
ADSCH	0.064***	15.77	0.166***	22.70
OVERSCH	0.040***	5.23	0.098***	1036
UNDERSCH	-0.047***	-7.89	-0.098***	-13.48
PRE_REFORM	0.002	0.04	-0.177***	-4.33
AGRICULTURE	-0.142**	-2.09	-0.645***	-6.48
MINING	0.405***	6.26	0.199***	3.00
MANUFACTURING	0.106***	2.61	-0.170***	-3.54
CONSTRUCTION	0.146***	2.80	-0.170***	-3.15
TRADE	0.066	1.59	-0.189***	-3.97
INFORMATION	0.210***	4.95	0.140***	3.12
FINANCE	0.216***	4.17	-0.032	-0,68
EDUCATION	-0.061**	-2.22	-0.124***	-3.11
HEALTH	-0.111***	-3.35	-0.083**	-1.96
SERVICE_JOB	-0.033	-0.84	-0.279***	-4.27
R^2	0.2438		0.2775	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.3.5.4 Effects of overeducation and undereducation on wages and gender

The effects of gender on rates of return to adequate education, overeducation, and undereducation were not statistically significant in 2002/2003. However, the effects of gender on rates of return to overeducation (negative) and undereducation (positive) became statistically significant in 2007/2009. Similarly, the effects of gender on other variables (i.e., URBAN and PRE_REFORM) were statistically significant only in 2007/2008 (Table 45). There are two possible explanations: first, the larger data size in 2007/2008 made it possible to detect the statistical significance of these variables; second, the gender effects

are greater in 2007/2008 compared to 2002/2003. This may be worth further investigation in future research.

Table 45: Effects of years of overeducation and undereducation (key variables): gender, 2002/2003 and 2007/2008

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
ADESCH	0.063***	10.32	0.188***	22.89
OVERSCH	0.050***	3.70	0.123***	10.17
UNDERSCH	-0.057***	-7.29	-0.123***	-10.99
ADESCH_M	-0.020**	-2.24	-0.014	-1.39
OVERSCH_M	-0.022	-1.37	-0.048***	-2.62
UNDERSCH_M	0.185	1.43	0.092**	2.25
MALE	0.428***	3.72	0.271**	2.04
URBAN	0.246***	7.68	0.244***	5.89
PRE_REFORM	0.027	0.57	-0.080*	-1.83
URBAN_M	0.016	0.41	0.108**	2.07
PRE_REFORM_M	-0.061	-1.31	-0.195***	-4.64
R^2	0.1789		0.2578	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

4.4 Analysis of quantitative results and major findings

In the previous sections of this chapter, the results of the quantitative analysis were presented: descriptive statistics; the incidence of overeducation; and the effects of overeducation and undereducation on wages. While there is a clear need for further investigating the representativeness of the data set as discussed earlier, five major findings can be derived from the quantitative analysis of this study. These results are analyzed below in the final section of this chapter.

(1) Overeducation and undereducation exist in Mongolia, a developing country where higher education has expanded rapidly. The share of the overeducated/undereducated people in Mongolia is comparable with previous studies conducted in developed countries. In 2007/2008, 27 percent of all workers were overeducated while 30 percent were undereducated. More women were overeducated than men and people living in urban areas were slightly more overeducated than people living in rural areas.

(2) Better educated, older and single men in rural areas with unpaid jobs have a higher possibility of being overeducated. Results from the multinominal logit analysis of all workers show that living in urban areas decreases the odds of being overeducated by 40 percent. An additional year of education almost doubles the odds of being overeducated (Model 2). Although more women are overeducated than men, being male increases the odds of being overeducated when other factors are controlled. Prior to this analysis, it was assumed that overeducation is primarily an urban phenomenon among wage job workers and that women are more likely to be overeducated. These assumptions were based on the findings of previous studies and the fact that in Mongolia women are more educated than men. However, the results did not support these assumptions. This indicates that there is a need to create more wage jobs in rural areas in order to absorb the human resources created by expanded education. At the same time, belonging to the pre-reform generation increases the odds of being overeducated. This may call for a need to expand continuing education,

especially in rural areas, to improve skills-job matching among those who received an education before the transition. This study, however, does not consider the quality of HEIs attended by the workers. Existing studies show that graduates from lower-quality HEIs tend to be more overeducated, since they need to compensate for their lack of competencies with more education. Without taking the quality issue into consideration, there is a risk of overestimating the incidence of overeducation.

(3) The rate of return to an additional year of overeducation is positive and statistically significant, but is smaller than that of an additional year of adequate education. On the other hand, the rate of return to an additional year of undereducation is negative and statistically significant. This finding is consistent with previous studies from developed countries, showing that the education-job mismatch results in similar economic returns in both developed and developing countries. The rates of return identified in this study tend to be larger than those found in the previous studies (as summarized by Hartog, 2000). Although they cannot be compared directly, it may be worth investigating whether the rates of return in developing countries tend to be higher than those in developed countries.

(4) Despite the fact that Mongolia has a "reverse gender gap" (women tend to be better educated than men) gender is still one of major factors affecting the incidence of overeducation and the impact of overeducation on wages. Being male significantly and positively affects wages, and women's wages are more sensitive to education-job matches, while men's wages are more sensitive to the generation of the

individual. The results of the regression analysis indicate that women's wages increase significantly more compared to men with an additional year of education above the required level. At the same time, when the actual education level does not reach the level required by the job, women's wages tend to be lower than men's wages, holding everything else constant. Belonging to the pre-reform generation (i.e., receiving education before the reform) tends to lower wages, with stronger effects for men. This implies that the current education system may be better preparing students for the job market, compared to the education system that existed before the 1990s, especially for men. The reasons behind such persistent effects of gender are not clear from the analyses. To some extent, this could be explained from the view that education is serving two conflicting value systems: democratization and capitalist production, the latter of which has a tendency to reproduce hierarchical relations within the workforce, as discussed in Carnoy and Levin (1985). Under such a tension, while women can be given more opportunities to pursue education, consistent with the process of democratization, gender inequality may persist in the labor market. The results that women are benefitting more from overeducation than men, at least in wages, may show that overeducation is an option for women to compensate their "disadvantages" in the labor market. It will be interesting to further analyze how overeducation affects women in different job categories in future studies.

(5) The incidence of overeducation and undereducation declined between 2002/2003 and 2007/2008, while the rates of return to education increased, indicating that the labor market may be functioning more effectively. The share of overeducated

and undereducated workers declined between 2002/2003 and 2007/2008. This suggests that the education-job match may be improving in Mongolia, where many reforms have been introduced in higher education. Rates of return to education increased for adequate education and overeducation while the rate of return to undereducation further decreased over the period between 2002/2003 and 2007/2008. This may mean that the labor market is functioning better in terms of rewarding education. This is consistent with the findings from the World Bank (2010a) that showed increasing wage premiums for higher levels of education between 1998 and 2007. It is also noteworthy that belonging to the pre-reform education did not have a statistically significant effect on wages in 2002/2003. In 2007/2008, belonging to the pre-reform education negatively and statistically significantly affected wages. This may also be explained by the improved functioning of the labor market, which valued required skills more efficiently in 2007/2008 compared to 2002/2003. This can also be explained by the recent economic development in Mongolia, driven primarily by its successful mining industry. As a result, Mongolian economy is diversifying, especially in service industry (

Figure **1**), and GDP per capita is increasingly steadily as shown in Figure 2. A recent study by Banzragch (2010) shows that wage premiums for university degrees are higher than that of secondary education and higher education diplomas. This implies that overeducation in Mongolia may be a phenomenon of a labor market development, suggesting overeducation in developing countries may be different in nature from overeducation in developed countries where economic development and labor market expansion are stagnant. This implies that, despite the perceived "problems" of

overeducation among the public and policy makers in Mongolia, overeducation may be a response to the expanding demands for diversified needs in the new structure of the economy.

CHAPTER V: QUALITATIVE ANALYSIS FINDINGS

This chapter presents the main results from the qualitative analyses in order to answer the following research questions.

Question 2: What are the policy responses to overeducation?

1) How do the key stakeholders (e.g., government officials, university presidents, employers, academics, and officials from donor agencies) perceive the issue of overeducation (reasons for overeducation and impact of overeducation)?
2) What kinds of policies have been formulated by the government or donor agencies, to address the issue of overeducation? Are they evidence-based? What influenced the development of such policies?
3) What are the perceptions of the key stakeholders on the effectiveness of policies addressing overeducation?

The first section of this chapter presents the results of the interviews. The second section presents the findings of the document analysis. The third section synthesizes the results into key findings.

5.1 Overall results from the interviews

As explained in Chapter III, 14 individual interviews were conducted. Rich information was gathered from these candid interviews with stakeholders with different

perspectives and agendas. The interviews covered the following broad topics: “major changes in higher education since the transition”, “current challenges of higher education,” and “responses to policy directions. Information collected through the interviews was analyzed around these three major topics.

5.1.1 Major changes in higher education since the transition

During the coding process, various sub-themes emerged under the main topic of “major changes in higher education since the transition”. They were: (1) the increase of students and private institutions, (2) a decline in quality, (3) the improvement of quality, and (4) the import of foreign policies. The findings for each of these themes are presented below. All quotations were extracted from the notes of the individual interviews.

5.1.1.1 Increase of students and institutions

All interviewees agreed that Mongolian higher education has expanded rapidly since 1991. Deregulation of the higher education sector and the introduction of private HEIs were considered to be major factors on the supply side contributing to the expansion of the higher education sector. One senior official (A), who was the key person in higher education during the transition period said that liberalization was an answer to the people’s demand for a free and market-oriented society. Another senior official (C) mentioned that higher education reform was one of the priorities for the Mongolian government during the transition. At the early stage of transition, there was some confusion and chaos in higher education, as in other sectors of society. A university staff member (F) said, “Private

institutions sprang up and the government couldn't control (it) – everyone could open their (own) private institutions." Similarly, a development agency staff member (N) said that the public sector failed to respond to meet the growing demand for higher education and that, quoting a high-level official in MECS, "Every member of the parliament wants to have his/her (own) college."

On the demand side, many interviewees pointed out that education had already been highly valued by the Mongolian people before the reforms began in the 1990s. Senior official A explained that, "After the transition, there was a hope among the general public to be better educated". Another senior official (B) commented that, "In the past, every family wanted to have one son as a monk, now it is a higher education graduate." A staff member from a private company (K) commented that, "Many low-tech factories closed down after the transition and the demand for blue-collar workers disappeared. So everyone wanted to have a university education." Even though today all HEIs charge student fees (as opposed to the pre-transition time when higher education was free and all students received allowances), families are still willing to send their children to HEIs. Also, there is a certain aspect of competition that drives higher education expansion. A development agency staff member (L) said, "People are forced to have higher education" because of slogans from the government and society that convince them that higher education is a tool for development of the country and individuals, and that higher education is therefore now considered as "a tool for survival".

The quantitative expansion of higher education was received positively by some of the interviewees as a process of social mobilization and democracy. As mentioned in the

above-section, senior official A said that higher education expansion was an answer to people's demand for more education. University staff member I said, "higher education provides students not only employment opportunities, but the students can learn scientific knowledge and lifeskills and be developed as human beings, which is a good thing itself." Development agency staff member L remarked that, "higher education expansion brought social mobility, no matter of their social status and income – many students from countryside, students from herder families now have more opportunities of receiving higher education." This was echoed by a university staff member (H), who said that now "everyone has a chance to succeed."

5.1.1.2 Decline in quality

However, this rapid expansion inevitably affected the quality of higher education in Mongolia. As senior officer C observed, "quality and quantity did not go together." Similarly, senior official B noted that the expansion in quantity was not matched with an increase in quality. One president of a university (D) said that in the pre-transition time, higher education staff had more opportunities for training. Another president of a university was even more critical. He said, "The quality of education in HEI declined in the last 20 years." University staff member F even remarked that, "during the 1980s to 1990s, higher education sector was almost ruined with all public universities paralyzed." The main reason for this decline in quality seems to be loss of funding. In the initial stage of the transition, the government needed to cut the education budget in order to cope with its financial challenges. HEIs felt that change. University staff member F commented that, during that

time, “public funding to higher education disappeared.” Similarly, senior official C remarked that, “during the transition, the State lost its attention to higher education”. Government senior officials also acknowledged that the quality of higher education is a major issue. Senior official A said, “the quality of education may be declining, especially in specific professional areas of higher education”. According to this official, the decline in quality may be due to a shift from the Soviet system to the North American system, focusing more on general education rather than on specialized skills, which had been a source of respect for higher education graduates.

5.1.1.3 Improvement of quality

Although many of the interviewees perceived that the quality of higher education had declined, some believed that the quality of higher education had actually improved. Senior official A remarked that, “nowadays, the best students can obtain a better education than their counterparts in the pre-1990s.” He remarked that the attitudes of students toward learning had also improved because of such things as critical thinking and active-learning that are emphasized in post-transition higher education. Similarly, senior official B said that, in general, the quality of education had improved as there is now more flexibility in the system and curricula are more focused on critical thinking and creativity.

5.1.1.4 Importing foreign concepts and policies on higher education

Many of the interviewees agreed that there was a significant influence from international development partners and other development partners in designing the

reformed higher education sector. According to senior official C, international evaluations of the Mongolian higher education, along with training of higher education staff, greatly influenced the shaping of post-transition higher education in Mongolia. The North American system and approach to higher education, rather than the Soviet approach, dominated the reform process of higher education in Mongolia (senior official A, senior official C). The changes introduced during this period included the privatization of HEIs, decentralization, an emphasis on general education instead of on specialized education, the introduction of fees, the initiation of a credit-based system, and the introduction of the concept of market-choice in higher education. Universities also received support, advice and funding from international development partners. A university staff member (G) commented that the World Bank encouraged and supported his university to become privatized. Similarly, university staff member H said that the technical support from UNESCO's International Institute of Education Planning (IIEP) assisted them to adapt to the major shift from the Soviet model to the North-American model. While the majority of the interviewees were positive about this importation of international concepts and policies, some expressed resentment. In this sense, another university staff member (E) was the most vocal. He said, "the direct import of the higher education system (particularly from North America) did not work." He continued, "new teaching methodologies and curricula directly imported from the US are not linked to the Mongolian context and students are not learning enough specialized skills in order for them to find a job" and "the market-oriented system did not function as intended." The introduction of private HEIs was also part of the reform

package which received severe criticisms from the interviewees. This will be discussed further in the section below on "the images of private universities" under section 5.2.

5.1.2 Current challenges faced by higher education in Mongolia

This section presents and analyzes the interview responses related to the current challenges faced by higher education in Mongolia. During the coding process, four sub-themes emerged: (1) the employability of students/graduates, (2) finance, (3) management, and (4) the quality of higher education institutions, especially private universities.

5.1.2.1 Employability of graduates

Some interviewees, especially university staff, expressed concern about the capacity of students and their attitude towards learning. University staff member E observed that students today have lower knowledge and academic skills compared to those of the pre-transition time. He also said, "In the old system, students worked harder. In the new system, it is difficult to make students study harder." University staff member D also remarked that nowadays it is necessary to motivate students. This view was shared by some employers and development partners. Development agency staff member L said that some students struggle to study in HEIs because of their academic capacity and "lifestyle." A private employer (J) said that the quality of graduates varies, but in general, the decline of the quality of graduates is an issue. Senior official C remarked that "some people say that the quality of students has declined" and that "some private companies complain that graduates are not skilled enough and their capacity is low."

This perceived decline in the quality of graduates is related to the rapid increase in the number of students and graduates since the transition. Even though having more educated people is a good thing in general for a country (university staff I), senior official A felt that there may be "degree inflation." Senior official C said that "current Bachelor's is for everyone, not only for competent ones". This was echoed by several interviewees: "nowadays those who wish to go to university can become university graduates" (private company employer J); "as long as you pay, you can be admitted without examination, learning records, or even attending school" (development agency staff member L). Interviewees seem to agree that there may be a need to tighten the intake of students in order to maintain or improve quality. Senior official C mentioned that there is a plan to control enrollment in public HEIs.

This and the increased number of graduates, naturally, made it difficult for new graduates to find employment. As senior official B said, "in socialist times, the state provided a workplace for all graduates. Now, only people with good skills and knowledge get jobs." University staff member D commented even in one of the best universities in Mongolia, many graduates are unemployed and they do not want to take a job outside their area of study. Since being a higher education graduate used to be synonymous with being of the elite, higher education graduates expect to have an "appropriate job" upon their graduation. Senior officer C said that some students do not even seek a job if they expect "better job." Those who cannot find jobs will seek further education, development agency staff member N pointed out. However, at the same time, it is also the case that "some people are willing to work at a lower level job even with higher education degrees" (senior

official B). As a result, “even for drivers, we receive applications from higher education graduates. For professional positions, there are more applicants with master’s degrees” (private company employer K) and “even for a secretary post for a small company, a bachelor’s degree is required. We now have salespersons with bachelor’s or master’s degrees” (development agency staff member L).

A mismatch between graduates’ skills and knowledge and the labor market’s needs seems to be one of the major causes of difficulties in finding a job among higher education graduates. Some criticize the lack of planning. Senior official B commented that the Ministry of Labor should conduct a prediction and estimation of human resource needs. Senior official A remarked that in the absence of a long-term human resource development plan by the government, HEIs are simply responding to students’ needs, not to employers’ needs. University staff member D confirmed this view by saying that in order to attract students, universities are creating new majors, which may not be needed by the labor market. University staff member E said, “students are not learning enough specialized skills and knowledge and it is difficult for them to find a job.” University staff member I pointed out that, “we need to be more sensitive to the market’s needs”. Development agency staff member L agreed, saying “Mongolian higher education should improve the linkage between education and demands from the labor market.” On the employers’ side, Private company employer J said that the quality of higher education is low and the employment rate of the graduates is also low. Private company employer K was more critical about the Mongolian HEIs. She said, “students’ attitudes are as important as skills and education attainment - integrity, excellence, team player, result-oriented, and ethics. They don’t teach

these things at university. Higher education should also teach these values – Mongolian universities tend to focus on skills and knowledge. It is difficult to teach at schools but there should be some effort." She also said that English language skill is a priority for her company, but it is not a common skill among the Mongolian university graduates.

When it comes to education reform, MECS believes in a "survival of the fittest" (senior official A) approach to HEIs. Senior official A also mentioned that in a "free and market-oriented society, the market regulates the higher education sector." He further explained that quality assurance mechanisms will be strengthened, the government's support to higher education will be more streamlined to the national strategies and market needs, and more flexibility will be introduced (e.g., designing their own majors, free movement of students among HEIs). In general, MECS officials feel that the system has started to work and the under-performing HEIs will go out of business, while students' choices will be ensured. MECS officials are concerned that higher education has become a hot political topic and some people feel the Soviet system worked better. This view was clearly expressed by university staff member E, who pointed to the political tensions between the two major political parties in Mongolia (the Democratic Party and the People's Revolutionary Party) arising from the issue of education. At the moment, it is not likely that MECS will reverse their reforms of higher education away from the North American style higher education system and back to the Soviet system. However, this reform may face resistance at the political level and it may therefore take considerable time for MECS to fully implement its reform plan.

5.1.2.2 Finance

Insufficient funding is one of the biggest challenges faced by HEIs in Mongolia, both public and private, even the prestigious ones. Since fees were introduced and the government funding to higher education was decreased, HEIs have had to "survive on student tuition fees" (senior official B). Currently, "More than 80% of the revenue comes from students and institutions are forced to enroll more to survive" (senior official A). University staff member D noted that HEIs' need to increase the number of students in order to ensure the income and universities is leading to the creation of new majors. Although raising funds from diverse sources is encouraged, "There is no private donation either from companies or families" (university staff member E) and "It is difficult to conduct innovative research or renovate/upgrade infrastructure with current funds" (university staff member D). It is also becoming increasingly difficult for HEIs to attract and retain good faculty members since highly educated and competent people are in great demand in the private sector and in international organizations. According to a university staff member (G), salaries for the faculty members in private HEIs are low and it is difficult to attract good faculty members. He remarked that, "Many of the faculty members are part-time and overworked, so there is no time for self development. Many of them also have to teach many subjects outside their areas and the quality suffers." Another issue that has arisen as a result of financial difficulties is that "Faculty members have less training opportunities" compared to those in the pre-transition time" (university staff member D).

The dependence on students' tuition fees has not only resulted in the need to rapidly increase the number of students, but has also placed a substantial financial burden

on students and parents. Development agency staff member N pointed out that while the tuition fees may seem low compared to fees in North America and elsewhere, they are still a barrier for many families, especially those in rural areas, which hampers equality in access to higher education. Development agency staff member L remarked, similarly, that many students drop out from HEIs because of financial difficulty. University staff member D explained that families invest a lot in their children's higher education and then face financial difficulties if these children cannot find a job after their graduation. There are scholarships and student loan programs available, but they need to be strengthened "to ensure their efficiency, transparency, and accountability" (development agency staff member M).

At the same time, HEIs are feeling the need to increase tuition fees in order to improve the quality of the education they provide. University staff member I explained that the university governance board sets tuition fees but must follow instructions from MECS (in 2011, it was not permitted to increase tuition fees by more than 20 percent), which hampers their efforts to improve quality. University staff member G remarked that universities should be able to set tuition fees themselves.

5.1.2.3 Management

With regard to the management of higher education, one of the biggest challenges is the lack of fair competition between public and private institutions. Private company employer J noted that, "In terms of financing, we cannot talk about competition since state universities are receiving government funding and private universities cannot compete with

them." University staff member F agreed that the government should provide financial support to private HEIs, for teacher training for example, to improve their quality. Similarly, university staff member I commented that, "financial and policy support, such as tax exemption for laboratory equipment should be in place" so that private HEIs can also offer science and technical engineering courses, which are the government priority areas.

One way to improve competition between public and private HEIs is through an accreditation system as part of a quality assurance system. Any accredited HEIs, public or private, would therefore receive the same treatment, and private HEIs would no longer be disadvantaged. Some interviewees saw a beneficial impact arising from participating in an accreditation process, especially at the international level. University staff member G pointed out that the government is encouraging HEIs to obtain international accreditation and this process involves upgrading faculty members and changing the regulations at the institutional level, leading to better quality. A development agency staff member (M) agrees that with a functioning accreditation system, "the number of HEIs will follow the market economy rules and the survivors will be those better quality HEIs."#

However, an accreditation system is yet to become functional in Mongolia. According to senior official B, "quality assurance system still needs to be improved." Development agency staff member M pointed out that "the university accreditation system has been in place since 1998; however, this system is not obligatory and is considered to be weak in terms of the assessments performed. The current accreditation system in Mongolia has very little effect on the public funding received by an institution." This is not because the system itself is inappropriate: rather it seems to be a problem of implementation as

pointed out by university staff member D, who said "there are good standards, but low capacity to implement them." Similarly, development agency staff member N remarked that "Mongolia does not have a national entity to abide a strategic leadership in higher education. The ministry is too occupied with general education."

5.1.2.4 Quality of higher education institutions, especially private universities

Development agency staff member N criticized HEIs in Mongolia for often being "diploma mills," with poorly qualified, poorly paid, and poorly trained faculty members who lack research skills. This tendency is more evident among private HEIs. As noted previously, private HEIs are considered second-class, and face many more challenges than public HEIs. The increase in the number of students attending private HEIs is also considered a part of the cause of a decline in quality within higher education. Public university staff member H remarked that "I really don't want to compare my university with private universities." This view was echoed by private company employer K who said, "As an employer, I would be hesitant to employ a graduate from a private university." She also said, "For professional positions, there are more applicants with master's degrees, but I … do not see any value added from those degrees if they are from private intuitions in Mongolia." Similarly, parents and students consider that public HEIs are preferable to private HEIs. According to senior official B, "less private institutions provide a good quality education. Families prefer public institutions." Many private HEIs indeed lag behind public HEIs in several aspects of quality. Development agency staff M pointed out that, "As for quality issues - the number of teachers and training curricula, as well as the

premises for training - it is difficult to compare private HEIs with state-owned universities." Development agency staff member L pointed out that, "In the mid-90s, everything was very scarce in private universities, such as teachers and textbooks – so lots of teachers were fresh graduates." The situation has changed since then and some private HEIs have improved their quality and status, but low-quality private HEIs still operate, and the public image of private HEIs remains negative, as university staff I remarked, "The image of private universities suffered due to the low quality of some private universities. Those universities produced many graduates without proper training, resulting in higher unemployment among them."

In general, this negative image of private HEIs is closely linked to the expansion of higher education in Mongolia since the transition. Private HEIs are considered less selective and the best students try to go to public HEIs, according to several interviewees (e.g., private company employer K, senior official C, development agency staff member L, development agency staff member M). Development agency staff member L noted, "Over the years, people have developed a negative image of private universities – admittance is very easy, as long as you pay, you can be admitted without examination, learning records, even attending the school." Although most of the private HEIs are not-for-profit (only one for-profit HEI was in operation in 2010 according to senior official A), people feel that private HEIs are interested in making money, as development agency staff member L noted, "They are interested in their fees, but not in the well-being or quality of the graduates and employment." Some are also skeptical about the "non-profit" status of private HEIs. Development agency staff member M remarked that, "Although these private HEIs are

calling themselves "non-profit educational institutions", the reality of their continued existence is directly related to students' tuition fees. If there are no such profits, no one will voluntarily establish the HEIs and run classes."

Some interviewees, on the other hand, remarked that private HEIs have advantages over public HEIs. University staff member G noted that public HEIs can be constrained for political reasons and therefore makes long-term planning difficult. Similarly, according to senior official C, private HEIs are more flexible and have more options to improve their quality than public universities do.

5.1.3 Responses to policy directions

There have been major reforms in the Mongolian Higher Education (HE) since the transition. According to development agency staff member M, however, many of the changes were "piecemeal and ad hoc," and now "there is an urgent need to undertake extensive and systematic, yet politically feasible reform." The third and final major topic covered by the interviews was "responses to policy directions." Under this topic, information was collected regarding the perceived impact of policy reforms introduced since the transition. As with the other topics, various sub-themes emerged during the coding process. They were: (1) competition, (2) quality improvement and rationalization, (3) globalization, (4) public-private partnerships, (5) flexibility, and (6) a shift to TVET. The responses for each of these sub-themes are presented below.

5.1.3. 1 Competition

Deregulation (or liberalization) was a significant shift in higher education in Mongolia as it allowed private HEIs to open and it introduced competition among HEIs. While some interviewees perceived it positively, as a way to stimulate HEIs to improve quality (e.g., senior official A and development agency staff member M), others criticized this change. Among those who saw the change as being beneficial was private company employer J, who remarked that, "Allowing private ownership of higher education institutions brought big advantages for society". In the initial transition period, deregulation was closely linked to democratization. Senior official A remarked that deregulation was necessary to respond to people's demand for education. He commented that, "we should not control people's demands. If there is a demand, it should be responded to."

Among those who criticized deregulation of HE was university staff member E who remarked that, "the shift from the centralized system to the market choice system in higher education did not work as intended," citing the decline in the quality of higher education and high unemployment rate among the graduates as its negative consequences. The shift in focus of HE towards the employability of graduates was also criticized by some. Senior official C noted that, "higher education has social benefits beyond employment." University staff member F shared this view.

> *I don't agree with the government's position to follow the demands of companies – this is the same as the previous centrally planned approach. Higher education should be a way to improve oneself without being told where to work in the future. The public should recognize the capacity developed among the graduates beyond*

their simple employment status in the formal sector, such as becoming independent workers and small business owners.

Although different views were shared, the interviewees seemed to agree that the greater competition that inevitably arose as a result of deregulation has been beneficial in improving the quality and efficiency of higher education. The issue was rather how that competition should be facilitated and how the quality of the HEIs should be assessed. These points are further discussed in the below sections.

5. 1.3.2 Quality improvement and rationalization

In response to concerns over quality, the government introduced several policies. One was to set up various quality assurance measures, including establishing a quality assurance body and linking government funding to accreditation. In the initial stage of the transition, private HEIs were not required to be accredited and "did not have any incentive to be accredited" (development agency staff member L), but currently the government provides financial support only to accredited HEIs and those HEIs are monitored by the state inspection agency. The failure to meet government standards results in a loss of funding, a loss of students and in some cases, a closure of the HEI, according to university staff member I and development agency staff member M. Senior official C is confident that the accreditation system is improving the quality of higher education. Some interviewees considered that closure of "failing HEIs" was necessary to improve the quality and efficiency of the higher education sector (e.g., development agency staff member M).

For some, however, the government's effort has been insufficient or inappropriate for Mongolia. Some feel that the government is not focusing its resources on high-quality and international-standard universities, as laid out in its campus-based university development plan. Others question the quality assurance mechanisms. According to senior official C, "the quality assurance system, together with the lower performance of private institutions, did not function well during the transition period." Similarly, senior official A remarked that:

> *In, 1998, MECS created, with the participation of the academic community, a national accreditation body as a professional independent agency – this is still in progress. The reputation of the body suffered due to lack of adequate human resources and lack of transparency.*

Some also question the necessity of rationalizing the higher education system. University staff member D shared his concern that many faculty members may lose their jobs because of rationalization and restructuring. Similarly, senior official A remarked that, "the closure of smaller HEIs for the sake of efficiency may not improve quality." Development agency staff member N commented that, while various international development partners had provided support for rationalization of HIEs, rationalization may not solve the problems without equal access to high quality basic education, a good TVET system, and a strong and well-functioning quality assurance mechanism, which are yet to materialize in Mongolia.

5. 1.3.3 Internationalization and learning from other countries' experiences

The world has seen a massive wave of globalization in the past 20 years and Mongolia is one of the countries that has embraced this trend. As discussed in earlier sections of this study, higher education in Mongolia has been through significant conceptual and policy changes since the transition, drawing strongly on the North American model of HE. According to some interviewees (e.g., university staff H and university staff I), both public and private universities have already completed or are pursuing joint projects with foreign universities. Furthermore, meeting international standards and becoming internationally competitive are major goals of the HEIs in Mongolia. According to development agency staff member M, the government is currently planning to construct "a completely new university campus … designed and staffed to meet an acceptable international standard." This interviewee further commented, as follows.

> *The Government of Mongolia considers reforming higher education as one of the key instruments to accelerate economic growth. The government intends to establish a higher education system that will meet international standards and produce graduates who can compete successfully in an increasingly globally oriented economy.*

Similarly, private company employer K commented that they were planning to open an American University of Mongolia, which would conform to "the highest American standards."

Many of the interviewees were passionate about adhering to international standards in HE. University staff member D said that the academic standards of universities in Mongolia "are the same as major universities in other countries." According to senior official C, the international recognition of degrees is being discussed and HEIs are encouraged to obtain international accreditation, which has improved the quality of the institutions (university staff member G).

One of the interviewees (university staff member I) expressed his frustration that the government is not doing enough to learn from the experiences of universities abroad:

> *The government should be more open and provide more information on higher education at the global level. Experience in other countries shows that private education is a vital part of the higher education sector.*

On linkages between higher education and the labor market, this sentiment was echoed by the employers. Private company employer J said that they are "trying to learn from other countries, such as Japan, where companies take large number of new graduates."

Interestingly, one negative comment on the importing of policies came from an international development partner (development agency staff member N):

Banks are giving one set of advice and UNESCO is giving another set. The government seeks yet further advice. The president talked about improving the quality of higher education by transplanting the Cambridge system (teacher training, curriculum etc) here. These are conflicting and competing pieces of policy advice. The government is not examining their own situation (e.g., geographic and economic realities). This is not the right direction.

5. 1.3.4 Public-private partnerships (PPP)

As discussed in previous sections, some of the major challenges faced by Mongolian HEIs include insufficient financial resources, as well as a mismatch between the skills and knowledge of higher education graduates on the one hand, and the requirements of the labor market on the other. To tackle these issues, PPP has been encouraged. Funding of HEIs by the private sector is extremely limited thus far, but some interviewees see potential in linking HEIs and the private sector through PPP. Forms of PPP supported by the interviewees include not only funding support from the private sector but also scholarships (suggested by university staff member G and private company employer J), on-the-job training and internships (suggested by senior official C).

The interviewees did not have any explicitly negative views on the expansion of PPP though some had earlier expressed their dissatisfaction with the government's emphasis on market-driven higher education. This probably reflects the fact that HEIs greatly need to diversify their funding sources and are therefore willing to collaborate with the private sector. HEIs are also concerned about the low employment rate of recent

graduates and hope that linkages with private companies will improve the relevance of their programs and therefore result in better employability of the graduates. From the private sector perspective, PPP also makes sense since it allows companies to access potential employees at an early stage in their studies. It also allows private companies to get "tailor-made" programs that prepare students with the specific skills and knowledge needed by these companies.

5. 1.3.5 Shift to TVET

The latest development related to higher education is a revival of technical and vocational education (TVET). Many interviews compared higher education to TVET, which is currently receiving substantial attention from international development partners, governments, private companies and students/families. Development agency staff member L pointed out that the booming mining sector in Mongolia requires more technicians and TVET is regarded as more appropriate than universities in responding to these requirements. Similarly, development agency staff member N said that Mongolia needs a strong TVET system, and one that is a true alternative to universities. Private company staff member K remarked that there is currently huge demand for electricians, welders, and mechanics in the mining sector and there has been a shift among students away from higher education to TVET. Likewise, university staff member I commented that nowadays students prefer TVET because the government provides a stipend for TVET students. University staff member F complained, however, that the government is now encouraging students to choose TVET instead of higher education without setting an appropriate quality assurance

system for private TVET institutions and is therefore allowing low-quality private TVET institutions to mushroom. This view was echoed by university staff member F and development agency staff member L.

5.1.4. Analysis of the findings of the interviews

In the above section, individual responses to the interviews were presented under each theme and sub-theme (called "nodes" in NVivo). In this section, the responses are further analyzed based on the position of the interviewees (senior officials, public university staff, private university staff, employers, and development agency staff) to investigate whether these different groups of people differ in their perspectives and, if so, why. The results are then synthesized into major findings for each of the three major topics covered by the interviews: (1) major changes since transition, (2) current challenges of higher education in Mongolia, and (3) responses to policy directions. The patterns of responses by the different groups are visualized using tree maps (Appendix 5).

5.1.4.1 Major changes in higher education since the transition

As discussed in section 5.1.1., four themes emerged during the coding process: (1) the increase of students and institutions; (2) a decline of quality; (3) the import of other countries' policies; and (4) the improvement of quality. Figure 14 shows the structure of the themes under "major changes in higher education since the transition."

Figure 14: Structure of the themes under "major changes in higher education since the transition"

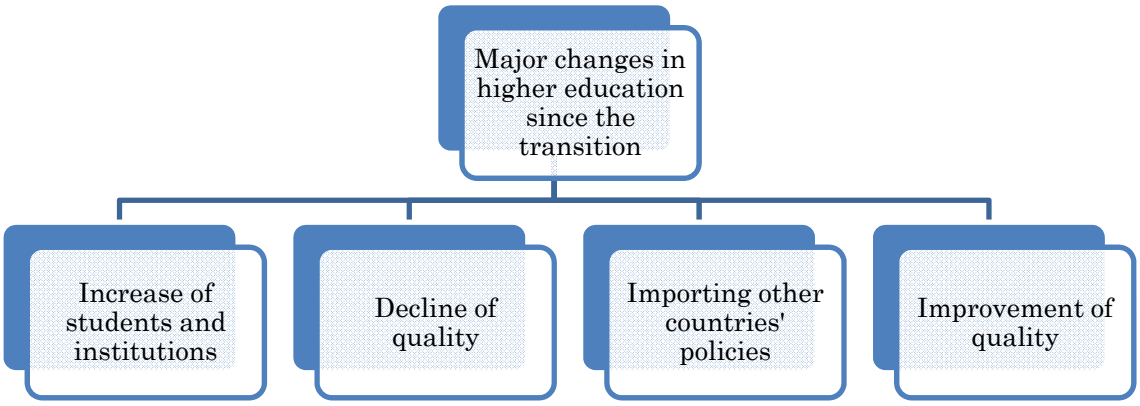


Table 46 presents the most and second most frequently mentioned themes by all interviewees, as well as by groups of interviewees (senior officials, public university staff, private university staff, employers, and development agency staff).

Among all interviewees, the most frequently mentioned theme was "increase of students and institutions" followed by "decline in quality". This indicates that interviewees feel that the expansion of higher education was accompanied by a decline in quality, as expected.

Among the senior officials, "increase of students and institutions" was the most frequently mentioned theme. Unlike the other groups, however, "importing other countries' policies" was the second most frequently mentioned theme, followed by "decline in quality." This indicates that government officials were exposed to strong influences from foreign countries (mostly from North America), especially during the initial stage of the transition. The analysis shows that senior officials who were at the center of the reform were very aware that their reform is heavily influenced by foreign policies. The interviewed staff of

public universities, which went through a complete conceptual change, also felt that the reform was "imported." This confirms the findings from various studies on higher education in the transition countries (e.g., Bray, 2000 and Hall and Thomas, 1999).

Among public university staff, "the increase of students and institutes" and "the import other countries' policies" were the themes mentioned most frequently. It is understandable that among the private university staff, "a decline in quality" was the second most frequently mentioned theme after "the increase of students and institutions." They are more sensitive about the quality of the education they provide since they are in competition with other HEIs for the survival of their universities. In addition, their students tend to be less academically capable compared to those studying in public universities. This may make them perceive a decline in the quality of higher education as a whole.

Employers are most concerned with the themes: "the increase of students and institutions" and "a decline of quality." There was no mention of "the import of other countries' policies." This reflects that their interest is primarily in the difficulty in recruiting from HEIs. For development agency staff, the most frequently mentioned theme was "the increase of students and institutions", followed by "a decline in quality."

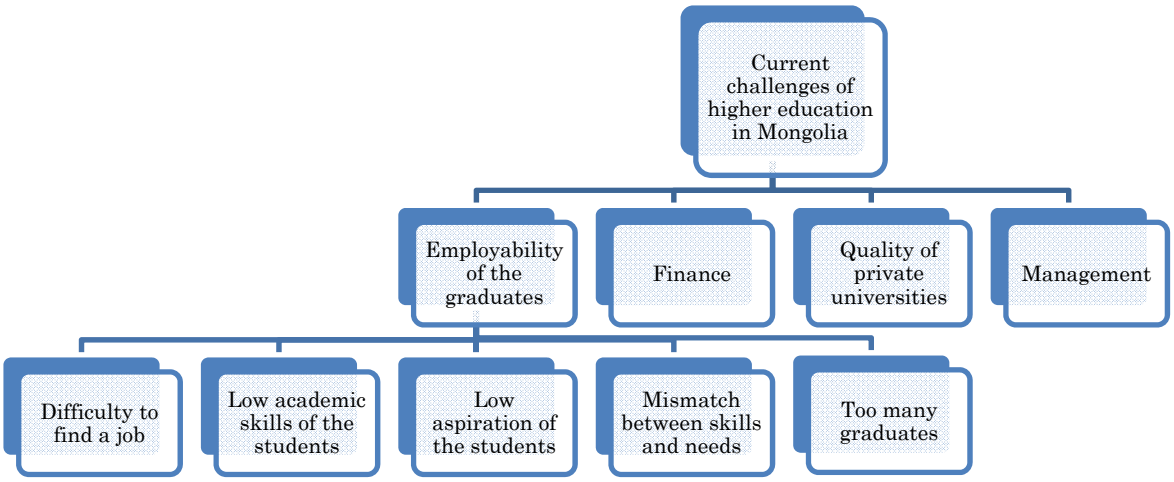
Table 46: Comparison of number of coded references by groups

Group	Most frequently coded	2nd most frequently coded
All interviewees	Increase of students and institutions (31)	Decline of quality (12)
Senior officials	Increase of students and institutions (5)	Importing other countries' policies (3)
Public university staff	Increase of students and institutions (3)	Importing other countries' policies (3)
Private university staff	Increase of students and institutions (5)	Decline of quality (2)
Employers	Increase of students and institutions (4)	Decline of quality (1)
Development agency staff	Increase of students and institutions (9)	Decline of quality (2)

5.1.4.2 Current challenges of higher education in Mongolia

The second major topic of the interviews was "current challenges of higher education in Mongolia." Under this topic, four themes emerged through the analysis: (1) the employability of the graduates; (2) finance; (3) the quality of private universities; and (4) management. For this topic, several sub-themes also emerged as presented under each topic. The structure and an example of sub-themes (under employability of the graduates) are presented in Figure 15.

Figure 15: Structure of the themes under "current challenges of higher education in Mongolia" and sub-themes under the category of "employability of the graduates"



Among all interviewees, except development agency staff, the sub-themes under "the employability of graduates" theme were the most frequently mentioned during the interviews. Among these sub-themes, "the mismatch between graduates' skills and knowledge and the market's needs" was the most frequently mentioned, followed by "the difficulty in finding a job." Many interviewees have a negative image of private universities. This mirrors the findings of Steiner and Khamsi, and Stolpe (2006).

It became clear from the interview responses that "the employability of graduates" is a major challenge, especially for employers, whose responses were predominantly around this issue. On the other hand, among the private university staff, the main challenges were found to be finance (e.g., insufficient funding) and management (e.g., lack of fair competition between public and private universities). This reflects the difficult situation of private universities in Mongolia. Private universities are considered of low quality by most of the interviewees, especially when it concerns the graduates'

employability. At the same time, private universities are struggling to survive with insufficient funding. Table 47 presents the most and the second most frequently mentioned themes by each group.

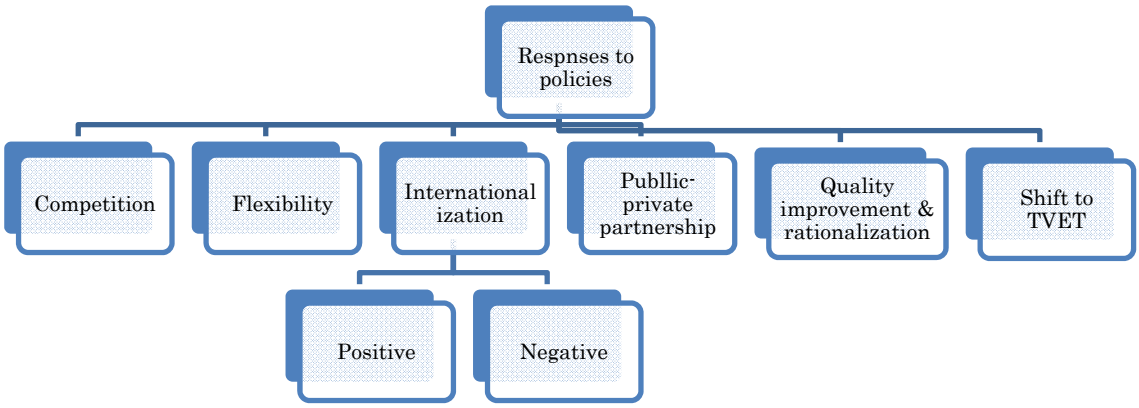
Table 47: Comparison of number of coded references by group

Group	Most frequently coded theme	2nd most frequently coded theme
All interviewees	Employability of graduates (37)	Quality (27)
Senior officials	Employability of graduates (13)	Quality (6)
Public university staff	Employability of graduates (8)	Quality (2) Finance (2)
Private university staff	Finance (6)	Management (4)
Employers	Employability of graduates (11)	Quality of private universities (3)
Development agency staff	Quality (12)	Management (6) Finance (6)

5.1.4.2 Responses to policy directions

The third and final theme (topic) covered by the interviews was "responses to policy directions." Under this topic, interviewees were asked to talk freely about their perceptions of the appropriateness and effectiveness of the government's policies to reform higher education in Mongolia. As with the other topics, specific themes emerged during the coding process. As noted above, five themes, representing the government's policy priorities in higher education, were created and organized under this topic. They are: (1) competition; (2) flexibility; (3) internationalization; (4) public-private partnership; (5) quality improvement and rationalization; and (5) a shift to TVET. "Positive" and "negative" responses within the themes were structure under each theme, as shown in Figure 16.

Figure 16: Structure of the themes under "Responses to policy directions"



The "internationalization" of higher education is positively perceived by most of the interviewees, except public university staff. It is worth noting that public university staff are the ones who went through the most significant changes – a complete shift from the Russian/Soviet model of higher education to the North American model. They also lost their positions as the sole providers of the social elites, along with the financial stability they enjoyed during the communist period. It is therefore understandable that some of them consider that "internationalization" is merely copying the North American system and is not suitable for the Mongolian context. On the other hand, private university staff, employers, and development agency staff welcome "internationalization" as a way to improve higher education and, therefore, productivity of the graduates. Private university staff view competition and the shift to TVET negatively, however. This was expected, given that these factors have a direct impact on the survival of private HEIs. Another interesting finding was that among senior officials, the government's policy effort on quality improvement and rationalization is perceived negatively, though it is perceived

positively by other groups. This reflects the government's dissatisfaction with the current system and its will to further improve the quality assurance system. Table 48 below presents the most and the second most frequently mentioned themes by each group of interviewees.

Table 48: Comparison of number of coded references by group

Group	Most frequently coded	2nd most frequently coded
All interviewees	Internationalization: positive (15)	Quality improvement measures: positive (12)
Senior officials	Quality improvement and rationalization: negative (3)	Competition: positive (3)
Public university staff	Internationalization: negative (3)	Internationalization: positive (2)
Private university staff	Internationalization: positive (3)	Competition: negative (1) Shift to TVET: negative (1) Public-private partnership: positive (1)
Employers	Internationalization: positive (3)	Flexibility: positive (2) Public-private partnership: positive (2)
Development agency staff	Quality improvement and rationalization: positive (9)	Internationalization: positive (4)

5.2 Overall results from the policy document analysis

Document analysis is a systematic procedure for reviewing or evaluating documents that contain text (words) and images that have been recorded without a researcher's intervention (Bowen, 2009). This section presents the overall findings of the analysis of the publicly available policy and strategic documents produced by government authorities and international development partners. The main purpose of this analysis was

to identify the trends of policy development in higher education reform and understand the dynamics behind such reforms. This provides a basis for understanding the government's responses to overeducation. This analysis also acts as a triangulation process to verify the findings of the analysis of the interviews. Since documents vary in length and nature, data abstraction was conducted for all documents. Data abstraction is a process that aims to capture as much potentially relevant text as possible without prejudging the content. Abstracted documents were then coded and analyzed.

5.2.1 Summary of the key policy documents analyzed

In this section, each of the documents included for analysis is briefly summarized. The documents are divided into two categories: government documents and international development partner documents. A full summary of each can be found in Appendix 6 and Appendix 7.

5.2.1.1 Government documents

Mongolia's "Economic Growth Support and Poverty Reduction Strategy" (EGSPRS) that was submitted to the International Monetary Fund (IMF) as its poverty reduction strategy paper, was adopted in 2003. It envisions lowering the level of extreme poverty by 50 percent by 2015, through sustained economic growth. In this document it is stated that the government aims to enhance economic growth and support sustainable livelihoods among the population through three main pillars: (1) macroeconomic stability, (2) improving the business climate, and (3) human capital enhancement. Strategies to

achieve the goals cover wide range of interventions, including economic restructuring with privatization, the development of ICT, land reform, the improvement of governance, the promotion of gender equality, and the improvement of access to and quality of public services. In this context, education is considered a priority area not only for reducing poverty but also for generating economic growth. One of the education-specific strategies is "(t)o improve the quality of accreditation process for the higher education institutions, to upgrade the level of higher education up to the international standards" (p.132).

The National Development Strategy, adopted in 2008, targets double-digit economic growth and per-capita GDP to reach USD 12,000 by 2021. With Mongolia's vast mineral repository, this growth is expected to come primarily from mining and mining-related foreign direct investment. The important feature of this document is mainstreaming of the Millennium Development Goals (MDGs) in the development strategy. Achieving the MDGs is considered crucial for economic growth (2007-2015) and for eventually making a transition to a knowledge-based society (2015-2021). Another important feature of this document is its full embrace of globalization and information technology (IT). Mongolia's priority areas for national development focus on (1) achievement of the MDGs and human development goals, (2) family values, (3) culture and tradition, (4) environmental sustainability, (5) balanced economic growth, (6) an export-oriented knowledge-based economy driven by private sector, and (7) democracy and good governance. In order to realize these objectives, the government aims to increase the competitiveness and prestige of higher education.

The most important education policy document developed by the Mongolian Government is probably the "Education Sector Master Plan" (2006). According to this plan, several goals related to higher education have been revised and/or articulated. The focus of this plan was the rationalization of the courses offered and students enrolled, as well as improvement of quality, while capping the percentage of graduates with complete secondary education enrolled in universities at 70 percent (an 11 percent reduction from 2006). They can be categorized as below.

Rationalization of enrolment and courses:

- By 2017, an increase in the enrolment of students in engineering, technology, natural sciences, and a decrease the enrolment of students in the humanities, law and the medical sciences.
- Provide tuition loans from the State Training Fund for three out of every five students majoring in engineering technology, natural sciences, education and agriculture, and for two out of every five students majoring in other subjects; introduce merit-based scholarships; and set an optimal ratio between tuition loans, grants, and scholarships.
- Undertake a comprehensive review of the financing and governance of higher education institutions in Mongolia, aimed at course rationalization.
- Undertake a comprehensive review of higher education provision in Mongolia aimed at course rationalization and national course and institutional accreditation standards.

Improving the quality of higher education:

- Provide funding of $25,000 each for the national universities, for purchasing textbooks, training manuals and other publications in foreign languages.
- Register national universities on an inter-library network, and ensure that university teachers, students and researchers have free access to this inter-library network.
- Provide grants and support for in-service training for university teachers.
- Develop the capacity of university teachers, through professional development and joint programs with international universities, and provide support to those teachers working in rural areas.
- Set up a quality assurance system for higher education institutions.
- Set international standards for premier universities.

As noted above, one major policy shift in recent years is a renewed focus on TVET. In order to respond to increased demand from the booming mining industry and absorb secondary education graduates who do not go to universities, the government is encouraging students to enroll in TVET programs. The number of private TVET institutions is therefore increasing. In the Education Sector Master Plan, the strategies to enhance TVET include:

- By 2015, increase the total number of students studying in TVET institutions by 24 percent compared to the 2009 baseline.
- Build model TVET schools.

- Enhance public-private partnerships.
- Develop a national TVET classification system, skills standards, and training modules in line with labor market trends.

In this context, the Law of Mongolia on Professional Education and Training was developed in 2008. This law establishes a National Council for TVET, which exercises the highest authority in TVET, including in policy development, finance, and coordination. The Council will not have separate staff. Rather, it comprises government implementing agencies as well as representatives of private enterprises. The State administrative organization is assigned to implement the Council's decisions and is equipped with powerful authority, including the power to create and close both state-owned and non-state-owned TVET institutes. The law also states that a national standard shall be developed and that all TVET teachers should have bachelor's degrees.

5.2.1.2 International development partners' documents

In Mongolia, the Asian Development Bank (ADB) is currently the largest provider of support to higher education. In 2011 it approved a USD 20 million loan to reform the higher education sector in Mongolia. During the project development process, various reports and documents were developed. The challenges of Mongolian higher education identified in one of these documents, a technical assistance consultant report ("Roadmap for Higher Education", ADB, 2010), are as follows: (1) insufficient investment in higher education, (2) education-job mismatch and poor employability of the graduates, (3) lack of

partnership mechanisms with the private sector, (4) excessive number of students and low quality, (5) lack of equipment and facilities, and (6) lack of competitiveness of universities. The reforms proposed are: (1) the articulation of higher education policies, (2) the improvement of the quality assurance system, (3) the improvement of linkages between education and the labor market, (4) control of the number of students in response to the labor market's needs, (5) the improved use of ICT, (6) the linking of public financing to results, and (7) the improvement of the accountability of institutions. A proposed ADB loan was developed based on these recommendations.

A document titled "Report and Recommendation of the President to the Board of Directors", prepared for this loan, identified the following challenges in higher education: (1) low quality and relevance, and weak quality assurance, (2) low staff quality and an inadequate learning and research environment, (3) ineffective governance and management, a lack of autonomy, and weak leadership, (4) inadequate financing, and (5) a lack of equity in access. Under this project, it is planned that all institutions will be accredited by a strengthened national accreditation body and linkages between education and industry will be improved through public-private partnerships. Financial incentives will be introduced for institutions to improve the quality and relevance of the education services they provide, also improving governance and accountability. Scholarships will also be increased for those studying in priority areas (e.g., science and technology). Open and distance learning will also be introduced in rural areas to improve equitable access to higher education.

UNESCO produced its national education support strategy for Mongolia in 2008 (Mongolia UNESCO National Education Support Strategy, UNESCO, 2008). It presents

UNESCO's analysis of the government's national education policies and proposes areas of collaboration with UNESCO. For higher education, it states that although Mongolian higher education has had many achievements, its recent rapid expansion has had a negative effect on quality. It commends Mongolia's higher education reforms in terms of decentralization and flexibility, while questioning the effectiveness of the existing quality assurance system. It also raises the issue of the current unequal access to higher education and the importing of low-quality higher education services from overseas through the establishment of branches of foreign universities without a rigorous quality assurance mechanism. As stated in the document, "(o)n the whole, higher education in Mongolia is characterized by poor quality, mismatch between demand and supply, outmoded and irrelevant curricula and teaching methods, inadequate funding, and poor governance and management practices" (p.17).

In 2002, the World Bank published a report called "Constructing Knowledge Societies: New Challenges for Tertiary Education", focusing on the challenges faced by tertiary education in developing countries, especially in transition countries. The report emphasizes knowledge as the major driver for sustained social development. In this context, according to the report, higher education has "a critical role in supporting knowledge-driven economic growth strategies and the construction of democratic, socially cohesive societies" (p.23). The report presents the globally common challenges of higher education, including: (1) the expansion of higher education under severe resource constraints; (2) inequalities in access and outcomes; (3) inadequate education quality; (4) low relevance to economic needs; and (5) rigid governance and management structures.

According to the report, developing and transition countries are at higher risk of being further marginalized in the globalized and market economy if they do not have functioning higher education systems that maximize the creation and use of knowledge. According to the report, with the increasing importance of higher education in developing and transition countries, "the World Bank has renewed and deepened its commitment to enhancing the contribution of tertiary education to economic and social development worldwide" (p.99). The report has a short section on the World Bank's directions for future support specific to transition countries. After briefly discussing common challenges faced by higher education ("tertiary education" in the report), it proposes specific options for the World Bank for transition countries, as follows.

> *The leading options for improving tertiary education include introducing more flexible and less specialized curricula, promoting shorter programs and courses, making the regulatory framework less rigid, and relying on public funding approaches that encourage institutions to respond to market demands for quality and diversity. Other important options include improving access through the provision of financial aid to students, requiring external participation in governance, and professionalizing university administration. Public investments are needed to build capacity for academic and management innovations, to expand the breadth of course offerings at individual institutions, and to create new programs in response to evolving demand-driven areas of learning. (p.113)*

In terms of country specific documents, in 2007 the World Bank published a report titled, "Mongolia: Building the Skills for the New Economy", which examines the challenges in the labor market in Mongolia in light of the transition to a market economy. This report identifies three major challenges: joblessness, the prevalence of informal jobs, and skills mismatch, especially in general (e.g., critical thinking) and practical skills (e.g., English and IT). The document presents a series of policy options, including (1) making the supply of skills more responsive to the labor market's needs, through new standards and curricula, and (2) enhancing productive employment opportunities through an improved investment climate. More concretely, the report advocates for more flexible curricula for education, as well as expansion and improvement of TVET as an alternative to higher education. The report also discusses "education overqualification." According to the report, approximately 22 percent of secondary school graduates and 13 percent of college graduates in Mongolia feel that their jobs require a lower level of education than their actual level of education. The report also emphasizes the importance of TVET and "second chance education" in reducing skills mismatch.

In 2010, the World Bank issued a policy note on tertiary education titled "Tertiary Education in Mongolia: Meeting the Challenges of the Global Economy" (World Bank, 2010), which presents the challenges faced by higher education as well as policy recommendations. The document lists the following three challenges: (1) low cost and low quality of higher education, (2) a mismatch between skill supply and demand, and (3) inequitable access. The policy recommendations listed in the document include the establishment of a tertiary education commission; the creation of institutional ranking; the

provision of incentives to institutions for quality improvement and participation in accreditation; the alignment of the supply of skills to the demands of the market; and the reform of the State Training Fund for effective and equitable distribution of scholarships.

Also in 2010, the UNESCO Beijing office commissioned a study on higher education to assess the current situation in higher education of Mongolia ("Current State of Higher Education in Mongolia," UNESCO Beijing, 2010). The study reviewed existing policies; conducted interviews and focus group discussions with policy makers, officials and other stakeholders; and conducted a survey of students, instructors, faculty members, and employers. The study analyzed the challenges of higher education sector from seven perspectives: (1) policy and governance; (2) admission; (3) academic programs and curriculum; (4) quality assurance; (5) budget and finance; (6) student affairs; and (7) faculty. The challenges identified include: (1) the lack of systematic reform and of a vision of higher education; (2) political interference; (3) a heavy dependence on tuition fees and its impact on student selection; (4) rigid and overloaded academic programs; (5) insufficient focus on research; (6) an ineffective quality assurance system and the lack of incentives for quality improvement; (7) insufficient funding; and (8) a lack of equity in access to higher education.

5.2.2. Results of the document analysis and discussion

The trend is clear that higher education is increasing in importance as a critical foundation for sustained knowledge-based economic growth in the context of globalization. "International competitiveness" was one of the keywords found in all of the analyzed

documents. In addition, it was found that human development is a core value enshrined in the analyzed documents. According to the documents, government and international development partners seem to share a common vision of higher education. Higher education is considered necessary for creating a just and democratic society, and despite the fact that higher education is primarily funded by student fees, all of the analyzed documents emphasize higher education as a public good.

The documents are similar in terms of their lists of issues and challenges faced by higher education in Mongolia. These issues can be categorized into five categories: (1) access to education (e.g., gender inequality, urban/rural gap), (2) the employability of graduates (oversupply of graduates, skills mismatch), (3) education quality (low quality, low research capacity, lack of linkages to the private sector, not meeting international standards), (4) finance (insufficient funding, dependency on student fees), and (5) management and governance (lack of autonomy, weak leadership). These categories correspond to the categories that emerged from the analysis of the interviews, as presented in the previous sections. Table 49 presents a comparison of the key messages of the government and of development partners on the roles and issues of higher education, as found in the analyzed policy documents.

Table 49: Comparison of key messages: roles and issues of higher education

	Role of higher education	Issues faced by higher education
Government	Foundation of knowledge-based economic growth and international competitiveness	• Inequality in access • Inadequate funding • Low quality • Supply-demand mismatch • Weak management and governance
International development partners	Necessary for national development and international competitiveness; foundation of just and democratic society	• Inconsistent policies • Inadequate funding • Inequality in access • Low quality • Supply-demand mismatch • Weak management and governance

When government policies and the policy recommendations of international development partners are compared, it becomes clear that they are almost identical. This similarity is not surprising considering that the government and international development partners share a similar vision of higher education and the challenges they identify are also similar. This similarity is also likely to be a result of the influence that international and national experts, funded by international development partners, have on developing the government's vision. For example, ADB provided instrumental support (both financial and technical) to the development of the Education Master Plan of Mongolia. This does not, of course, mean that the international development partners shape the government's policies, but the exchange of information is likely to have an impact. In this regard, it is worth noting the similarity between the recommendations in "Constructing Knowledge Societies: New Challenges for Tertiary Education" (World Bank, 2002), which set areas for the World

Bank's support in reforming higher education globally and especially for transition countries, and the policies actually set by the Mongolian Government.

The policies and policy recommendations implemented or proposed are as summarized below (a full list of the policies and policy recommendations of each document is presented in Appendix 7).

- Regulate enrolment
- Rationalize institutes and programs
- Improve the quality assurance system
- Improve and update curricula and teaching methodology (leaner-centered, practical, flexible, and responsive to the market's needs)
- Improve quality (faculty, equipment)
- Upgrade Mongolian higher education to meet international standards
- Expand TVET
- Improve management and governance
- Enhance public-private partnerships
- Harness ICT in higher education
- Introduce competitive funding
- Introduce funding linked to institutional performance

Another feature of the documents is their emphasis on globalization, international competitiveness, and knowledge-based economic growth. This justifies investment in and reform of higher education, modeled after other more "developed" countries. As discussed

in earlier sections of this study, education – higher education in particular – is a very political matter in Mongolia. By referring to globalization and to the need to be internationally competitive, policy makers may be (consciously or unconsciously) using this rhetoric to generate pressure for reforms and avoid political conflict.

From examining these policies and policy recommendations, it becomes clear that they are largely correctional measures to ameliorate the adverse effects of the initial higher education reform of the early 1990s. Deregulation, privatization, and introduction of tuition fees were the main features of higher education reforms in most of the Central Asian countries after 1990, as summarized in Steiner-Khamsi and Stolpe (2006). These reforms were financially supported by international development partners and many of the countries receiving this financial support, including Mongolia, adopted a "universal language of reform" (Steiner-Khamsi, 2006, p.186), which seems to have continued to be the case in the current period of reforms in higher education. One can imagine that this language helped the Government to receive a USD 20 million loan from ADB to implement the reforms, which was approved in 2011. This indicates that education transfer is a continuous cyclic process, as shown in Figure 9.

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5.3 Synthesis of the findings from the qualitative analyses

In the previous sections of this chapter, the findings from the qualitative analysis were presented and discussed. These findings are further discussed under six major headings below.

(1) Stakeholders agree that overeducation and skills mismatch are prevalent in Mongolia as a result of the education reform during the transition. As discussed in the previous sections, this study found that overeducation is prevalent in Mongolia and is considered a challenge by policy makers, HEIs, and development agencies. Overeducation is a product of mass higher education which started in the United States in the 1960s, followed by Europe and Japan in the 1970s and 1980s. In Mongolia, the shift from elite to mass higher education started with the collapse of the Soviet Union in 1991. The expansion of higher education in Mongolia was primarily demand-driven, supported by the Mongolian tradition of highly valuing education in general and the economic prospects that higher education was associated with during the Soviet era. On the supply side, the number of HEIs increased, both public and private, through deregulation (e.g., introduction of private HEIs and tuition fees). Expansion of higher education was also regarded as a process of democratization and this process was heavily influenced and funded by development agencies such as the World Bank and the ADB. It could be said that higher education expansion was part of a "reform package" for transition countries.

(2) Employability of graduates is one of the major challenges of higher education in Mongolia. Key stakeholders feel that graduate unemployment and overeducation are caused by (1) over-supply of graduates (lack of absorption capacity of the labor market) and (2) mismatch between the knowledge and skills taught at HEIs and those demanded by the labor market. At the same time, however, students continue to pursue higher education in order to remain competitive in the labor market. Given the financial structure of the HEIs, which heavily depends on tuition fees for their operation, the number of higher education students will continue to rise. It is therefore expected that overeducation will be a long-term phenomenon in Mongolia.

(3) Government recognizes the challenges facing higher education in Mongolia and has taken policy actions to respond, with influence from international development partners. Inequality in access, inadequate funding, low quality, and weak management and governance are among the major issues addressed by government policies. A supply-demand mismatch (oversupply of graduates and skills mismatch) is considered a critical challenge. While controlling the number of graduates through the rationalization of existing HEIs and introducing a cap on the number of HEI students are considered necessary, improving the quality of higher education and its relevance to the labor market so that Mongolia can improve its international competitiveness, is considered most important. Other policy responses include the expansion of TVET and the improvement of management and governance. These policies are very similar to the policy

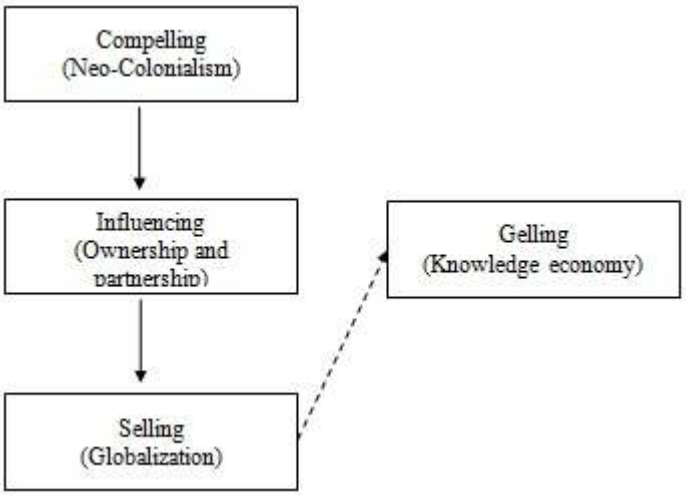
recommendations provided by international development partners. This suggests that these policies are most probably influenced by such institutional partners.

(4) Education transfer in Mongolia is a continuous process: Mongolia heavily borrowed policies to reform higher education during the transition and now it is borrowing its remedy. In the initial stage of the transition, higher education in Mongolia went through significant reform, heavily influenced and funded by international development partners. Many of the policies introduced under this reform including deregulation, privatization, introduction of tuition fees and more flexible curricula, were part of the "reform package" applied to most post-transition countries by the international development partners. The Mongolian Government implemented policies selectively, however. For instance, although curriculum reform and learner-centered teaching methodology were introduced, many faculty members continued to teach "old" curricula and used the same teaching methodology they used in the pre-transition period. Thus, 20 years after the transition, the current higher education reform is a corrective action to the original reform. The reforms taking place now are again heavily influenced and funded by international development partners. This shows the continuous nature of policy borrowing.

(5) Nature (or the politics) of education transfer in Mongolia may be changing over time from "compelling" to "influencing." It is yet unclear whether it is moving towards "selling" though some findings imply that it may be happening. In the early 1990s, Mongolia was flooded with "international experts" to help Mongolia survive the

transition and become a "free and democratic" state. Mongolia, experiencing an extreme form of a financial crisis, had no other option than accept them. In this sense, there is no doubt that the nature of policy borrowing happened during the initial state of the transition was that of "compelling." Mongolia's economic prospects since then have changed dramatically. Mongolia is now a middle income country with a promising future. Its geopolitical importance also makes neighboring countries to form allies with Mongolia. The nature of policy borrowing also changed during this process, emphasizing local ownership and partnerships. At the same time, however, the availability of funds continued to play a key role in determining which policies to be transferred ("influencing"). As the Mongolian economy further developed, Mongolia started look for more technical support hoping to upgrade Mongolian education to meet the "international standards." Some analytical work requested (e.g., higher education sector review by UNESCO Beijing) by the government was not necessarily linked to funding, indicating that the government may be becoming more able to select policies from "the international market" (Johnson, 2006). The nature of policy borrowing may be becoming that of "selling," which may be leading to "gelling." The trajectory of policy borrowing can therefore be described in Figure 17.

Figure 17: Trajectory of policy borrowing in higher education in Mongolia, after the transition



(5) Globalization, international competitiveness, and a knowledge-based economy are the mantra of Mongolia's national development strategy, and higher education plays a critical role. However, some stakeholders are concerned with the speed and magnitude of "importing foreign policies." The key national development strategies analyzed in this study suggest that Mongolia's vision of development is to achieve sustainable development through further integration into the global market with enhanced international competitiveness of Mongolian goods and services. Though Mongolia is rich in natural resources, which have been the driving force of its economic development since the transition, Mongolia aims to embark on building a knowledge-based economy with a focus on high-level technology. Quite understandably, higher education that meets "international standards" is considered crucial in this process. Technically and financially supported by international development partners, Mongolia adopted several

reform policies, mostly borrowing from international experiences. Some stakeholders, including staff from international development partners, are concerned that this policy borrowing is happening too quickly and without thorough analysis of the Mongolian context.

(6) Reforms have been put in place in order to translate these policies into action but stakeholders have mixed feelings regarding the effectiveness of such policies. A number of policies have been announced. For example, greater financial support will be given to students in focus areas such as science and engineering; curricula will be revised to better align courses with the labor market demand; and more funds will be made available for "campus development" and upgrading the skills of teachers. Universities are yet to feel the effect of such reforms, however. While the importance of responding to demand from the labor market is recognized, some university presidents and officials are reluctant to exclusively follow market demand, emphasizing that learning itself has value, even though it may not directly lead to employment. This may be a source of resistance that may have affected the existing quality assurance mechanism, causing "selective" borrowing of the quality assurance policies that were introduced in Mongolia since the transition. This quality assurance system had started to function in terms of regulating small private HEIs and improving the general quality of higher education in Mongolia, but as the qualitative analysis of this study has found, stakeholders perceive that the quality assurance system should be further enforced and transparency should be improved to facilitate consolidation of small HEIs or provide a benchmark for quality improvement.

CHAPTER VI: CONCLUSIONS, LIMITATIONS AND AREAS FOR FURTHER RESEARCH

6.1 Conclusions

This section provides a summary of the findings and the analyses, followed by the conclusions for each of the research questions, leading to the construction of answers to the overarching question.

Research question 1: What is the incidence of overeducation in Mongolia, and how has the trend changed over time (2002/3 to 2007/8), by individual and job characteristics?

The overall incidence of overeducation in Mongolia in 2007/2008 was 24.8 percent for males and 28.8 percent for females. This is higher than the average (13.1 percent) for studies using realized match (RM) method (Groot and Maassen van den Brink, 2000) from Europe and the United States, while the figures are similar to other findings in the Asia-Pacific region. For example, Cohn and Ng (2000) found that in 1991, 35 percent of males and 44 percent of females in Hong Kong are overeducated, using the MD method of measuring overeducation. Similarly, a study from Taiwan (Hung, 2008) using the AE method found that 17.31% of the population is overeducated.

The incidence of overeducation in Mongolia was also confirmed through the qualitative analysis. One of the interviewees mentioned “degree inflation” while others talked about the difficulty graduates face in finding an appropriate job for their

qualifications and how people are forced to apply for jobs that do not match their level of education.

The study found that more women are overeducated compared to men and more people in urban areas are overeducated compared to people in rural areas, for both 2002/2003 and 2007/2008. The findings from the multinominal logit analysis showed that the more educated a person is, the higher the odds of being overeducated. Belonging to the pre-reform generation and having an unpaid job also increase the odds of being overeducated. This implies that education before the transition (pre-reform) may not be relevant to the current labor market and therefore older people tend to be more overeducated. Similarly, those with unpaid work may not have skills relevant for the current labor market and are therefore not able to find paid work.

When the type of the job (paid, unpaid, and own account) was included in the model (model 2), however, the findings indicate that being male increases the probability of being overeducated and living in urban area decreases the odds of being overeducated. While this finding appears to contradict the findings of the previous model, this result can be explained by the fact that the data sets include all workers (both paid and unpaid job, formal and informal sectors). Although the share of agriculture in the Mongolian economy is declining steadily, in 2007/2008 more than 34 percent of the workers were engaged in agriculture. Most informal agriculture workers (i.e., herders) are men. Thus, the results suggest that there may be wasted human capital in rural areas where many educated men are engaged in an informal agricultural sector.

Although the 2002/2003 data and 2007/2008 data were not obtained in the same manner and direct comparisons are difficult, some observations can be made. It was observed, for example, that the overall incidence of overeducation declined between 2002/2003 and 2007/2008. In 2002/2003, 37.5 percent of the surveyed population was overeducated, while in 2007/2008 the share of overeducated people had declined to 26.8 percent. At the same time, the share of adequately education people almost doubled. This is contrary to the initial expectations of the study, and supports the finding of the qualitative analysis that the various reforms has started to show some effects and the labor market has started to function.

Research question 2: What is the impact of overeducation on individual earnings in Mongolia?

Years of schooling have a positive and statistically significant return to individual wages. When differences in occupational categories are not considered, one additional year of education increases monthly wages by 0.136. Even when differences in occupational categories were included in the model, the rate of return to education remained positive at 0.10.

When the ORU method was applied, returns to a year of adequate schooling were 0.19 for model 1 (without occupational categories) and 0.22 for model 2 (with occupational categories). Returns to a year of overeducation were 0.10 for model 1 and 0.101 for model 2, while returns to a year of undereducation were -0.106 for model 1 and -0.10 for model 2.

These figures are in a similar range to those in studies from the Netherlands (van der Meer, 2006), Germany (Bauer, 2002), Hong Kong (Cohn and Ng, 2000), and USA (Daly et al, 2000), suggesting that even in a developing country like Mongolia, overeducation and undereducation has an impact on wages that is similar to the impact found in more developed economies: the return to overeducation is positive but smaller than to adequate education while the return to undereducation is negative. The results from another regression model, which included industries of employment rather than occupational categories, showed a similar trend (a positive but smaller return to overeducation than to adequate education and a negative return to undereducation).

The previous section discussed how being male increases the odds of being overeducated. The regression analysis suggests that being male is associated with higher wages, with everything else held constant. The picture looks different, however, when rates of return to overeducation and undereducation are analyzed. The results of the regression analysis indicate that the rate of return to a year of overeducation for men is smaller than that for women (-0.048), while the rate of return to a year of undereducation for men is larger than those for women (0.092). This suggests that while men are at higher risk of being overeducated, once they have paid job their wages are less sensitive to their education status (adequately educated, overeducated, or undereducated) compared to women. Although this is similar to the findings in previous studies, this was somewhat unexpected. Mongolia is one of the countries that faces a “reverse gender gap”, where men tend to have lower educational attainment than women. In a recent report from the World Economic Forum (Global Gender Gap Report 2010), Mongolia was ranked number 2

among 134 countries in terms of "economic participation" by both men and women. However, the results of this analysis showed persistent gender gaps in wages. At the same time, women tend to benefit from overeducation than men since rates of return to years of education beyond the required level of education are larger for women. Women may be pursuing more education in order to compensate their wage differences in the labor market, which may still be dominated by men. More in-depth analyses on impact of gender on overeducation could shed a light on this complicated issue. Further study is therefore needed.

Research question 3: How do the key stakeholders (e.g., government officials, university presidents, employers, academics, and officials from donor agencies) perceive the issue of overeducation (reasons for overeducation and impact of overeducation)?

All stakeholders interviewed agreed that Mongolian higher education expanded rapidly after the transition, mainly due to deregulation and privatization. From the government perspective – in the new market-oriented society – responding to people's needs, including the need for access to higher education, was a priority. All interviewees mentioned that Mongolian people value education highly and consider higher education as a path to joining the intellectual elite. With expanded access to higher education, it was natural that enrolments doubled in only 10 years. Stakeholders from different backgrounds (government, universities, and employers) agreed that the issue of overeducation or "degree inflation" arose, though perceptions of the magnitude of the problem varied. While

concerned with increased difficulties new graduates have in finding employment, government officials tended to be optimistic and perceive the current situation as a transitional one. They believe that with some policy interventions (e.g., improved quality assurance, introduction of internship programs, and capping enrolments in public universities), the market will regulate itself eventually. On the other hand, universities are facing a dilemma, caught between the need to ensure their own survival and the grim employment prospects of their graduates, which will hurt the reputation of their institutions, and they therefore demand more support from the government. They are also somewhat frustrated that the new entrants are less intellectually capable and less motivated to study compared to the pre-reform era students, but seem to agree that this is an inevitable phenomenon of mass higher education. Their focus now is more on how to motivate their students to take the initiative in their learning.

As expected, the key stakeholders interviewed did not necessarily see the "overproduction" of graduates as an issue. Although it was clearly a political and economic decision to expand higher education after the transition, respondents were unanimous in saying that Mongolia needs to develop its intellectual base through better higher education, and that Mongolia needs a better-educated population for its national development. This view was clearly stated in the policy documents analyzed. The major issues are rather in the general quality of higher education (e.g., high teacher-student ratio) and the mismatch between the courses taught and the labor market's needs.

Political tension still exists between two groups of stakeholders – those in support of the North American model and those who prefer the previous (Soviet) model.

Considering the demand from employers as well as parents for education that meets labor market demand, it is unlikely that the government of Mongolia will shift its direction away from the current trend of following the North American model. Mongolia may however, take some time to develop a "Mongolian style" of higher education.

Research question 4: What kinds of policies have been formulated by the government or donor agencies to address the issue of overeducation?

Although there is no policy that specifically addresses "overeducation," the government is making an effort to control the flow of students into higher levels of education, especially in areas of social sciences and business, areas covered by the most of the small, private HEIs. In the Education Sector Master Plan, it was stated that "enrollment is still not correlated with labor market demand and national development policies and priorities", and "there are insufficient graduates in natural science, agriculture, engineering and technology, and teaching". In response to these challenges, the Mongolian Government is planning to increase enrollments of students majoring in areas of high demand, such as engineering, technology, natural sciences, education and agriculture, while slightly reducing the number of enrollments in humanities, law and medical sciences. This will be done through the provision of student loans and scholarships to students majoring in priority subject areas. The government is also offering stipends to students who enroll in TVET courses, in order to meet demand for technicians for Mongolia's booming mining industry. Furthermore, the government plans to increase number of TVET institutions,

including the private ones, through enhanced public-private partnerships. This is expected to better align the skills of graduates with labor market demands. Since many small, private HEIs do not have the financial and human resource capacity to offer degrees in the priority areas, the number of HEIs may decrease over time. At the same time, the government plans to improve the quality assurance mechanism and introduce competitive funding mechanisms to improve management and governance of HEIs.

The ultimate aim of higher education reform in Mongolia is to achieve knowledge-based economic development to make Mongolia internationally competitive. In this context, policies were imported from other countries at the initial stage of the transition (e.g., deregulation, privatization and introduction of tuition fees), and the adoption of such policies was often supported by international development partners. The qualitative analysis conducted as part of this study suggests that the current reform policies were probably influenced by international development partners, if not formulated by them. With the possibility of receiving substantial loans to implement the reforms, the government may have voluntarily adopted recommendations from international consultants. As noted previously, this seems to have played a critical role in securing funding from ADB (USD 20 million loan) for implementing education reform. This is clearly an example of how "economics of policy borrowing" (e.g., Steiner-Khamsi, 2006) works in a developing country. It also shows how imported policies are implemented and internalized, leading to another cross-national attraction for importing further reforms (Phillips & Ochs, 2003).

Research question 5: What are the perceptions of the key stakeholders on the effectiveness of policies addressing overeducation?

The perceived effectiveness of the existing policies and policies in the pipeline seem to differ between stakeholders. Naturally, interviewees from the MECS are more confident about the effectiveness of the policies compared to interviewees from universities and private organizations. Universities (both public and private) hope to see more support from the government in future. Private universities, in particular, feel that the competition with public universities is unfair due to the "negative image" of private universities and the lack of the financial and legal support for them from the government. Private employers would like to see the further streamlining of HEIs and better linkages between education and labor market demand. As noted above, despite the challenges they face, most of the interviewees said that the Mongolian higher education system is moving in the right direction in terms of improving the quality of education since Mongolia needs good quality higher education in order to create a "knowledge-based economy" that is "internationally competitive."

While the pressure of globalization has certainly helped in legitimizing higher education reform, respondents had reservations about how the reform policies have been identified, developed and implemented. Some criticized the government for importing a North American style of higher education system without considering the Mongolian context. There is tension between those who support the North American (or "international") model and those who believe the Soviet model was better. This debate

indicates that there is concern among the stakeholders over education policy transfer in higher education in Mongolia.

Overarching question: What has been the impact of higher education expansion on overeducation of Mongolian graduates over time? Is overeducation occurring in Mongolia, a developing country with a relatively small economy? What policies have been implemented or can be recommended to address this issue?

Even though more than 20 years have passed since the end of the communist era, it is clear that Mongolia is still in a process of transforming its higher education system from one that is centrally-managed and highly controlled to one that is open and market-oriented. The higher education system is expected to produce the country's leaders as well as respond to the market needs for human resources, leading to the creation of a knowledge-based economy that is international competitive.

The rapid expansion of higher education in Mongolia has been fueled by strong demand driven by traditionally strong value of education, the good economic prospects of higher education graduates, and the need for new knowledge and skills in a globalized world (e.g., English, business and marketing skills). This demand was met by a greater supply of HEIs, driven by privatization and deregulation – two major features of the transition period, which were often technically and financially supported by international development partners. In this sense, it can be said that Mongolia's experience with regard to its higher education sector is similar to those in other former communist countries. The

higher education reforms introduced in Mongolia during the initial stage of the transition are very similar to the ones introduced in other former-communist countries. This suggests that higher education reform was one of the "traveling reforms" facilitated by international development partners and actively adopted by the government.

The findings from the quantitative analysis show that both overeducation and undereducation do exist in Mongolia. The percentages of overeducated and undereducated workers fall within the ranges found in previous studies that used similar definitions of overeducation and undereducation. This supports the assumption underlying this study, that overeducation can happen even in a small country with a relatively small economy that is heavily reliant on natural resources and agriculture.

This study found that more women are overeducated than men and more people in urban areas are overeducated than people in rural areas. After controlling for factors such as education and marital status, however, the study found that being male actually increases the odds of being overeducated, and living in urban area decreases the odds. This suggests that the government may need to provide skills training to men in rural areas to improve their education-job match and may need to create more employment opportunities in rural areas. The findings also show that the rate of return to each year of overeducation is positive but smaller than that to adequate education. This finding is consistent with previous studies about overeducation. Although the 2002/2003 data was not directly comparable with the 2007/2008 data, the study findings indicate that the incidence of overeducation is decreasing while the rate of return to adequate education is increasing. This may be due to Mongolia's recent economic development driven by its mining sector

and diversification of the labor market which may have created more demand for educated workers. From this perspective, despite negative perception of "surplus" education among the general public and policy makers, overeducation in Mongolia may have had a positive impact by providing more educated workers that are needed for expanding industries such as service sector. It can also be said that the policies introduced by the government have been effective in improving the education-job match among recent graduates, and therefore the criticism they have received from the public is undeserved.

The responses of the interviewees show that the rapid expansion of higher education has had a significant and negative impact on the quality of education as well as on the employability of graduates. Private HEIs are regarded as second class institutions and many of them struggle to survive. Insufficient financial resources, other than tuition fees, force HEIs to increase the number of students in order to ensure sufficient income. Many of these struggling HEIs, private and public, are becoming "diploma mills" and enroll far more students than they can provide with good quality education. As a result, many HEI graduates, even those who graduate from prestigious universities, are having difficulty in securing employment. As noted above, this led to calls for better alignment between higher education and labor market demand. Several government policies have been formed in response to this situation, including the establishment of a quality assurance mechanism, the rationalization of existing HEIs, and a shift of emphasis to TVET. Although the results of the quantitative analysis suggest some positive effect of the policies on improving higher education (at least in terms of education-job match), the effect of these

policies is yet to be recognized by the stakeholders and it is likely to take time for Mongolia to "complete" this transition to a new higher education system.

Throughout the qualitative analysis process, traces of the "politics and economics of education transfer" were evident when higher education policy development in Mongolia was examined. Up to 1990, Mongolian higher education was integrated into the Soviet system, producing only the human resources required for implementation of national development plans, which were closely linked to those of the Soviet Union. Leaders were trained almost exclusively in the Soviet Union or in Central and Eastern Europe. With Mongolia's economy heavily dependent on the Soviet Union, Mongolia did not have any choice but to produce what was required by the Soviet Union. This situation changed completely in 1990 with collapse of the Soviet Union and its economic bloc. Mongolia had to quickly adapt to the new and globalized economic system. During the initial stage of the transition, the education sector was completely reformed, including the higher education sub-sector. International development partners played a crucial role in providing advice based on "best practices" from developed countries as well as in providing funding for the reforms. These international best practices legitimized what would otherwise have been perceived as radical higher education reforms in Mongolia, such as the privatization of universities, the introduction of tuition fees, and a learner-centered curriculum. The interviews with key stakeholders revealed that some of the reforms, especially the learner-centered curriculum, were not implemented in accordance with policy documents. For instance, professors continued to use the same textbooks and same pedagogy from the pre-reform period, while presenting it as "learner-centered". This is an example of

"Mongolization" of the reform. Such shortcomings of the reform led to the government examining yet further "best practices," completing a cycle of education transfer as described by Phillips & Ochs (2003). The new cycle of education transfer thus began again with technical and financial support from international development partners.

The aim of the current reform is to upgrade higher education in Mongolia to an "international level" which will produce the standard of human resources required to create a knowledge-based economy and enhance Mongolia's competitiveness in the global market. In this context, the government and other stakeholders are not concerned with the over-supply of higher education graduates per se. Rather, they are frustrated with the low quality of HEIs as these HEIs are not able to produce graduates with skills that are relevant to the current labor market. Although some interviewees made a point that higher education is not all about finding a better job and is also about improving one's quality of life and improving society through greater knowledge, this view remains a minority one and political decisions have already been made to introduce quality enhancement measures such as improvement of the quality assurance body, the rationalization of HEIs and programs, and introduction of a competitive funding scheme. Further research will be needed to observe the effects of these policies over time.

6.2 Limitations and areas for further studies

This study offers a rare analysis of the incidence and impact of overeducation as well as the policy development process in response to overeducation in a developing country, Mongolia, but there are several limitations to the study, and therefore further research is required in certain areas.

Firstly, this study focuses primarily on the wage premium obtained by higher education and therefore does not analyze educational benefits beyond individual income. McMahon (2006) defines such "nonmarket benefits" of education as follows:

> *The nonmarket benefits of education are those that result from the use of human capital during non labor-market hours. Education increases the productivity of time spent at home and in the community as it is used to produce private satisfactions such as enjoyment from reading and social benefits to the community such as activities contributing to effective civic institutions and charitable institutions (p.267).*

In addition to not examining these non-market benefits, this study was not able to incorporate the social impacts of education (e.g, a declining crime rate, declining fertility rates, improved life expectancy, and improved access to education for children) that have been reported in previous research (e.g., United Nations, 1995; Muller, 2002; Wong et al., 2002; Grossmann, 2005; and Buonanno and Leonida, 2009).

As the required data was unavailabile, the study could not assess the "negative" impacts of overeducation (e.g., reduced productivity, increased production costs). At the same time, this study did not analyze potential "positive" impacts of overeducation. For instance, having a better educated workforce may benefit the entire workforce, regardless of the level of education actually required by the job. In fact, overeducation maybe, overall, a positive phenomenon that can be a basis for economic development by improving the education level of the overall workforce. While Mongolia's recent economic boom has been largely from the mining industry, overeducated workers may be contributing to diversifying the industry as recently observed. The narrow definition of overeducation and its impact on wages, as used in this study, may result in an underestimation of the actual impact of overeducation, either positive or negative. Therefore, this study by no means aims to assess the "optimum level of education" for Mongolia. Rather, it aims to shed light on the potential underutilization of the educated workforce in Mongolia in the existing labor market.

Secondly, due to lack of data, the impact of the quality of higher education could not be analyzed. Overeducation can be explained, from a human capital theory perspective, as being a result of low quality education. When the quality of higher education is low, individuals need more years to obtain the same level of skills and knowledge that would have been obtained in fewer years through a better quality education. For instance, 4 years in a poor quality HEI may be equivalent only to 2 years in a good quality HEI, resulting in overeducation among graduates of low-quality HEIs. According to this theory, the incidence of overeducation tends to be higher among the graduates of low-quality HEIs

(Robst, 1999). Since the quality of education in Mongolian HEIs varies significantly, as discussed in Chapter V, an analysis of the impact of the quality of education on overeducation would have provided very useful insights. This aspect should be further studied in future research.

Thirdly, this study also limited its focus to individuals with employment and therefore did not examine the important issue of unemployment among higher education graduates. As discussed previously, the unemployment rate among higher education graduates is higher than that of secondary education graduates in Mongolia. Every year, a substantial number of new graduates from HEIs struggle to find employment and many would rather remain unemployed than take a job that does not correspond with their educational qualifications. Reflecting this phenomenon, one of the major criticisms of the Mongolian higher education sector is that it is simply delaying unemployment by providing low-quality education that does not meet the demands of the labor market. Further research is needed to understand the true impact of overeducation on employment and earnings.

Fourthly, there is one particular phenomenon that could not be explained in this study. That is the negative coefficients on wages to holding "high-level" jobs compared to elementary jobs when years of adequate education, overeducation, and undereducation are controlled. One potential culprit is a biased data. As discussed in earlier sections, significant number of observations had to be dropped due to missing values. While having large number of observations with missing values is normal in such a survey especially conducted in developing countries, the magnitude of its impact on robustness of the analysis is unknown and if the datasets are truly biased, the validity of all results may be

questioned. Further investigation will therefore be needed to verify the findings of this study.

Fifthly, in order to ensure that the minimum number of workers are included in the job categories, aggregated job categories were used for calculating required, over, and undereducation in this study. While this was necessary in Mongolia where certain job categories have limited workers, the robustness of the analyses may have been compromised. This is one of the challenges using AE or MD approaches especially in developing countries. For future studies, this aspect needs to be further analyzed and any bias should be corrected.

Finally, this study primarily focused on quantitative analysis of the incidence and impact of overeducation and provided limited analysis of policy responses and their processes. This was due to time constraints as well as a need for political sensitivity. The small number of interviewees also made validation of the information extremely difficult. While findings from this study are believed to have shed some light on important aspects of policy formulation in response to overeducation, future studies on this topic could increase the number of informants and could include interviews with parents and students. It would also be useful to increase the number of private companies in order to better understand the types of skills and knowledge demanded by the labor market. Other information collection techniques such as focus group discussions and questionnaires may be utilized to obtain more information.

REFERENCES

Agut, S., Peiro, J.M., and Grau, R. (2009). The effect of overeducation on job content innovation and career-enhancing strategies among young Spanish employees. *Journal of Career Development*, 36: 159.

Alba-Ramirez, A. (1993). Mismatch in the Spanish Labor Market: overeducation? *Journal of Human Resources,* v28 n3, p259-278

Allen, J. M. & De Weert, E. (2007). What do educational mismatches tell us about skill mismatches? A cross-country analysis. *European Journal of Education*, 42(1), p59-73.

Altbach, P., G. (1999). Private higher education: themes and variations in comparative perspective. *Prospect,* v29 n3 p311-323.

Ararat, L., O. (2009). Corruption hierarchies in higher educaiton in the former Soviet Bloc. *International Journal of Educational Development,* v29 p321-330.

Asian Development Bank. (2008). *Key Indicators for Asia and the Pacific 2008.* Retrieved 30 July, 2009, Manila: Asian Development Bank http://www.adb.org/Documents/Books/Key_Indicators/2008/pdf/mon.pdf

Asian Development Bank. (2010). *MONGOLIA: Strengthening Higher and Vocational Education Project. Roadmap for Higher Education.* Technical Assistance Consultant's Report. Manila: Asian Development Bank.

Asian Development Bank. (2011). Proposed Loan Mongolia: Higher Education Reform Project. President's Report. Manila: Asian Development Bank.

Bai, L. (2006). Graduate unemployment: dilemmas and challenges in China's move to mass higher educatioin. *The China Quarterly* 185 p128-144

Baldacchi, E., Clements, B., Gupta, S., Cui, Q. (2008). Social spending, human capital and growth in developing countries. *World Development,* v36 n8, p1317-1431.

Banzragch, O. (2010). *Education and the labor market in Central Asia: The cases of Mongolia and Tajikistan*. Unpublished doctoral dissertation, Columbia University, USA.

Barr, N. (1993). Alternative Funding Resources for Higher Education. *The Economic Journal*, v103 n418 p718-728.

Barr. N. (2003). *Financing higher education: Comparing the Options*. London: London School of Economics and Political Science. http://econ.lse.ac.uk/staff/nb/barr_HE_option030610.pdf (accessed on 8 September 2011).

Bat-Erdene, R., Costa, V., Yeager, J. (1996). *The Impact on Structural Adjustment in the Ministry of Science and Education, Mongolia*. Paper presented at Comparative and International Education Society Conference. 8 March. Williamsburg, Virginia.

Battu, H., Belfield, C.R., and Sloane, P.J. (2000). How well can we measure graduate overeducation and its effects? *National Institute Economic Review*. No 171, p82-93.

Bauer, T.K. (2002). Educational misatch and wages: a panel analysis. *Economics of Education Review*, v21, p.221-229.

Bazeley, P. (2004). Issues in mixing qualitative and quantitative approaches to research. In Buber, R., Gadner, J. & Richards, L. (eds.) (2004). *Applying Qualitative Methods to Marketing Management Research.* UK: Palgrave Macmillan, pp141-156.

Bray, M. (2000). Financing higher education: patterns, trends and options. *Prospects,* v30 n3, p331-348.

Bray, M. and Borevskaya, N. (2001). Financing education in transitional societies: lessons from Russia and China. *Comparative Education,* v37 n3, p345-365.

Büchel, F. (2002). The effects of overeducation on productivity in Germany – the firms' viewpoint. *Economics of Education Review*, v21, p.263-275.

Buonanno, P. and Leonida, L. (2009). Non-market effects of education on crime: evidence from Italian Regions. *Economcis of Education,* v28 n1, p11-17.

Carnoy, M. & Levin, H.M. (1985). *Schooling and Work in the Democratic State*. Stanford: Stanford University Press.

Caboni, T., C. (2004). Diversification of financial resources in Kazakh higher education. In Heymen, S., P. and DeYong, A., J. (Eds.), *The Challenge of Education in Central Asia*. Greenwich: Information Age Publishing.

Cheng, K., C. (2003). *Growth and Recovery in Mongolia during Transition*. IMF Working Paper WP/03/217. Washington, D., C.: IMF

Chen, H. (2005). Educational systems, growth and income distribution: a quantitative study. *Journal of Development Economics,* v76 n2, p325-353.

Coulombe, H., Otter, T. (2009). Mongolia Census-based Poverty Map. Ulaanbaatar: National Statistics Office, UNDP.

Creswell, J. (2003). *Research Design: Qualitative, Quantitative, and mixed Methods Approaches (2nd edition).* Thousand Oaks: Sage Publications.

Dale, R. (1999). Specifying globalization effects on national policy: a focus on the mechanisms. Journal of Education Policy, v14 n1, p1-17.

Daly, M. C., Buchel, F., and Duncan, G.J. (2000). Premiums and penalties for surplus and deficit education. Evidence from the United States and Germany. *Economics of Education Review*, 19, p169-178.

Dolowitz, D.P. and Marsh, D. (2000). Learning from abroad: the role of policy transfer in contemporary policy-making. *Governance: An International Journal of Policy and Administration, v13 n1, p5-24.*

Dolton, P.J., and Vignoles, A. (2000). The incidence and effects of overeducation in the U.K. graduate labour market. *Economics of Education Review,* v19, p179-198.

El-Khawas, E. et al. (1993). *Quality assurance in higher education: recent progress; challenges ahead*. Paper presented at UNESCO World Conference on Higher Education, held in Paris, France on October 5-9, 1998, with support of the World Bank as its contribution to the Conference.

Fagerlind. I. and Sjöstedt, B. (1991). Educational planning and management in Europe: Trends and challenges. *Prospects*, v21 n1, p83-96.

Fish, M.S. (2001). The Inner Asian anomaly: Mongolia's democratization in comparative perspective. *Communist and Post-Communist Studies*, v34 p323-338.

Frank, A.G. (1967). *Capitalism and Underdevelopment in Latin America*. New York: Monthly Review Press.

Freeman, R. (1971). *The Market fo College-Trained Manpower. A Study in the Economics of Career Choice.* Cambridge: Harvard University Press.

Freeman, R. (1976). *The Overeducated American*. New York: Academic Press.

Frenette, M. (2004). The overqualified Canadian graduates: the role of the academic program in the incidence, persistence, and economic return to overqualification. *Economics of Education Review,* v23 n1, p29-45.

Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century*. New York: Farrar, Straus and Giroux

Ginsburg, T. (1995). Political Reform in Mongolia: Between Russia and China. *Asian Survey*, v35 n5 p459-471.

Goyal, H.D. (1999). A development perspective of Mongolia. *Asian Survey*, v39 n4 p633-655.

Groot, W. and Van den Brink, M. (2000). Overeducation in the labor market: a meta-analysis. *Economics of Education Review,* v19 n7, p149-158.

Government of Mongolia (2003). *Economic Growth Support and Poverty Reduction Strategy Paper*. Ulaanbaatar, Mongolia.

Government of Mongolia (2007). *Economic development Strategy*. Ulaanbaatar, Mongolia.

Government of Mongolia (2007). *Millenium Development Goals based Comprehensive National Development Strategy of Mongolia*. Ulaanbaatar, Mongolia.

Grossmann, M. (2005). Education and Non-Market Outcomes *NBER Working Paper 11582*. Cambridge: National Bureau of Economic Research.

Hall, D. and Thomas, H. (1999). Higher education reform in a transitional economy: a case study from the School of Economic Studies in Mongolia. *Higher Education* v38, p441-460.

Hall, D. and Thomas, H. (2003). Higher education policy change in Mongolia. *Higher Education Policy*, n16, p389-402.

Halpin, D. and Tryonya, B. (1995). The Politics of Education Policy Borrowing. *Comparative Education*, v31, p.303-310.

Hannum, E. and Buchmann, C. (2005). Global educational expansion and socio-economic development: an assessment of findings from the social sciences. *World Development,* v33 n3, p333-354.

Hartog, J. (2000). Overeducation and earnings: where are we, where should we go? *Economics of Education Review,* v19, p.131-147.

Heyneman, S., P. (2004). One step back, two steps forward: the first stage of the transition for education in Central Asia. In Heymen, S., P. and DeYong, A., J. (Eds.), *The Challenge of Education in Central Asia*. Greenwich: Information Age Publishing.

Hossler, D., Shonia, O., N., Winkle-Wager, R. (2007). A policy analysis of the status of access and equity for tertiary educationn in Russia. *European Education,* v39 n2 p83-102.

Hung, C. (2008). Overeducation and undereducation in Taiwan. *Journal of Asian Economics,* n19, p125-137.

International Monetary Fund (2010). World Economic Outlook October 2010 Database. www.imf.org /external/pubs/ft/weo/2010/02/weodata/index.aspx. Accessed on 1 December, 2010.

Jamison, E., Jamison, D., T. and Hanushek, E., A. (2007). The effect of education quality on income growth and mortality decline. *Economics of Education Review,* v26 n6, p772-789.

Johnson, D. (2006). Comparing the trajectories of educational change and policy transfer in developing countries. *Oxford Review of Education*, v32 n5, p679-696.

Johnson, R.B. & Onwuegbuzie, A.J. (2004). Mixed methods research: a research paradigm whose time has come. *Educational Researcher*, v33 n7, p14-26.

Johnstone, D., B. (1998). *The financing and management of higher education: a status report on worldwide reforms*. Paper presented at UNESCO World Conference on Higher Education, held in Paris, France, October 5-9, 1998.

Johnstone, D., B. (2002). Challenges of financial austerity: imperatives and limitation of revenue diversification in higher education. *The Welsh Journal of Education,* v11 n1 p18-36.

Johnstone, D., B. (2004a). Higher education finance and accessibility: tuition fees and student loans in Sub-Saharan Africa. JHEA/RESA v 2 n2 p11-36.

Johnstone, D., B. (2004b). The economics and politics of cost sharing in higher education: a comparative perspective. *Economics of Education Review,* v23, p403-410.

Karakaya, G., Plasman, R., and Rycx, L. (2007). Overeducation on the Belgian labour market: evaluation and analysis of the explanatory factors through two types of approaches. *Compare*, v37 n4 p513-532.

Kiker, B., Santos, M., and Mendes de Oliveira, M. (1997). Overeducation and undereducation: evidence for Portugal. *Economics of Education Review,* v16 n2, p111-125.

Kler, P. (2005). Graduate overeducation in Australia: A comparison of the mean and objective methods. *Education Eeconomics*, v13 n1, p.47-72.

Korpi , T. and Tahlin, M. (2009). Educational mismatch, wages, and wage growth: Overeducation in Sweden, 1974-2000. Labour Economics, v16, p.183-193).

Landman, T., Larizza, M. and MaEvoy, C. (2005). *State of Democracy in Mongolia: A Desk Study*. Paper prepared for 'Democracy Development in Mongolia: Challenges and Opportunities', National Conference, Ulaanbaatar, Mongolia 30 June to 1 July 2005.

Lee, E. (1993). Initiating transition in a low-income dualistic economy: The case of Mongolia. *International Labour Review*, v132 n5-6 p623-638.

Leech, N. & Onwuegbuzie, A. (2009). A Typology of Mixed Methods Research Designs.*Quality and Quantity*. v43 n2, p265-275.

Li, F., L. and Morgan, W., J. (2008). Private higher education in China: access to quality higher education and the acquisition of labor market qualifications by low-income students. *Education, Knowledge and Economy,* v2 n1 p27-37.

Lindley, J. (2009). The over-education of UK immigrants and minority ethnic groups: Evidence from the Labour Force Survey. *Economics of Education Review*, v28, p.80-89.

Marginson, S. (2000). After globalization: emerging politics of education. *Journal of Education Policy*, v14 n1, p.19-31.

Maynard, D.C., Joseph, T.A., and Maynard, A.M. (2006). Underemployment, job attitudes, and turnover intentions. *Journal of Organizational Behaviour*, v27, p509-536.

McGuinness, S. and Bennett, J. (2007). Overeducation in the graduate labor market: a quantile regression approach. *Economics of Education Review,* v26 n5, p521-531.

McLendon, M.K. (2004). Higher Education Governance and Finance Reform in Kazakhstan. In Heymen., S.P. and DeYong, A.J. (Eds.), *The Challenge of Education in Central Asia*. Greenwich: Information Age Publishing.

McMullen, M. (2004). Hihgher education finance reform in the Czech Republic. Transitions in though and practice. *European Education,* v36 n2 p75-93.

Mendes de Oliveira, M., Santos, C., M., and Kiker, F., B. (2000). The role of human capital and technological change in overeducation. *Economcis of Education Review,* v19, p199-206.

Miles, M.B. and Hubermann, A.M. (1994). *Qualitative Data Analysis (2nd edition)*. Thousand Oaks, CA: Sage Publications.

Mincer, J. (1974). *Schooling, Experience and Earnings*. New York: National Bureau of Economic Research.

Ministry of Education, Culture and Science (June 2009). Higher education statistics. Ulaanbaatar, Mongolia: Ministry of Education, Culture and Science (MECS).

Ministry of Education, Culture and Science (2006). *Master Plan to Develop Education in Mongolia in 2006-2015*. Ulaanbaatar: MECS.

Ministry of Education, Science and Culture, Mongolia (June 2009). Educational Statistical Data. Ulaanbaatar, Mongolia.

Muller, A. (2002). Education, income inequality, and mortality, a multiple regression analysis. *British Medical Journal* 324(7328), p23-25.

Muysken, J. and ter Weel, B. (1999). Overeducation, job competition and unemployment. Paper presented at the European Association of Labour Economists Annual Conference 1999, Regensburg, Germany.

Nanzaddorj, B. (2001). *Educational Financing and Budgeting in Mongolia*. Paris: International Institute for Educational Planning.

National Statistics Office. (2009a). *Poverty Profile in Mongolia. Main Report of Household Socio-Economic Survey 2007-2008*. Ulaanbaatar: National Statistics Office.

National Statistics Office. (2009b). GDP and population data provided by NSO staff. Ulaanbaatar: National Statistics Office.

Oketch, M., O. (2006). Determinants of human capital formation and economic growth of African countries. *Economics of Education Review,* v25 n5, p554-564.

Panfilova, T., V. and Ashin, G., K. (2009). The prospects of higher educaiton in Russia (reform or liquidation?). *Russian Education and Society,* v51 n1 p76-87.

Patton, M.Q. (2002). *Qualitative Research and Evaluation Methods*. Thousand Oaks, CA: Sage.

Patrinos, H.A. (ed) (2012). *Strengthening Education Quality in East Asia: System Assessment and Benchmarking Education Results (SABER).* Washington D.C.: The World Bank and Bangkok: UNESCO

Phuong, L., D. (2006). *The Role of Non-public Institutions in Higher Eductation Development of Vietnam*. Ph.D. dissertation presented to the Faculty of the Graduate School Education, Hiroshima University.

Phillips, D. & Ochs, K. (2003) Processes of policy borrowing in education: some explanatory and analytical devices. *Comparative Education*, v39 n4, p451-461.

Pritchett, L. (2001). Where Has All the Education Gone? *The World Bank Economic Review*, v15 n3 p367-391.

Psacharopoulos, G. (1994). Return education: a global update. *World Development,* v22, p1325-1343.

Psacharopoulos, G. (2004). Returns to investment in education: a further update. *Education Economics,* v12 n2, p111-134.

Psacharopoulos, G. (2006). The value of investment in education: theory, evidence and policy. *Journal of Educaton Finance,* v32 n2, p113-136.

Quinn, M.A. and Rubb, S. (2006), Mexico's labor market: The importance of education-occupation matching on wages and productivity in developing countries. *Economics of Education Review*, v25, p.147-156.

Richards, L. (2005). *Handling Qualitative Data: A Practical Guide (1st editon)*. London: Sage Publications.

Robinson, B. and Solongo, A. (2000). The Gender Dimension of Economic Transition in Mongolia. in Nixon, F., Suvd, B., Luvsandorj, P. and Walters, B. *The Mongolian Economy: A Manual of Applied Economics for a Country in Transition* (p231-255). Edward Elgar Publishing Ltd.

Robst, J. (1999). College quality and overeducation. *Economics of Education Review,* v14 n3, p221-228.

Rostow, W. W. (1960). *The Stages of Economic Growth: A Non-Communist Manifesto*. London: Cambridge University Press.

Rubb, S. (2003). Overeducation in the labor market: a comment and re-analysis of a meta-analysis. *Economics of Education Review,* v22 n6, p621-629.

Schultz, T. (1971). *Investing in Human Capital*. New York: The Free Press.

Schultz, T. (1975). The value of the ability to deal with disequilibira. *Journal of Economic Literature*, v13 n3, p827-846.

Severinghaus, S., R. (2000). Mongolia in 1998 and 1999: Past, present, and future at the new Millennium. *Asian Survey*, v40 n1 p130-139.

Silova, I. (2009). Reclaiming the Empire. Turkish Education Initiatives in Central Asia and Azerbaijan. In Chisholm, L. and Steiner-Khamsi, G. (Eds.), *South-South cooperation in education and development* (p.173-191).

Shofer, E. and Meyer, J., W. (2005). The worldwide expansion of higher education in the twentieth century. *American Sociological Review,* v70 n6 p898-920.

Steiner-Khamsi, G. (2000). Transfering education, displacing reforms, in Schriewer, J. (ed.), *Discourse formation in comparative education*. New York: peter Lang.

Steiner-Khamsi, G. (2005). Vouchers for Teacher Education (Non) Reform in Mongolia: Transitional, Postsocialist, or Antisocialist Explanations? *Comparative Education Review,* v49 n2, p148-172.

Steiner-Khamsi, G. (2006). The economics of policy borrowing and lending: a study of late adopters. *Oxford Review of Education*, v32 n5, p679-696.

Steiner-Khamsi, G. and Stolpe, I. (2004). Decentralization and recentralization reform in Mongolia: tracing the swing of the pendulum. *Comparative Education,* v40 n1, p29-53.

Steiner-Khamsi, G. and Stolpe, I. (2006). *Educational Import: Local Encounters with Global Forces in Mongolia*. New York: Palgrave MacMillan.

Strauss, A. & Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques.* Newbury Park: Sage Publications.

Suruga, T. and Dairii, A. (2009). Education and Labor Market in Mongolia (in Japanese). *Journal of International Cooperation Studies,* v16 n3, p51-66.

Tilak, J., B., G. (2009). Higher education: a public good or a commodity for trade? Commitment *to* higher education or commitment *of* higher education to trade. *Prospects,* v38 p449-466.

Torres, C., A. and Schugurensky, D. (2002). The political economy of higher education in the era of neoliberal globalization: Latin America in comparative perspective. *Higher Education,* v43 p429-455.

Tsang, M., C. (1987). The impact of underutilization of education on productivity. *Economics of Education Review,* v6 n3, p239-254.

Tsang, M., C. and Levin, H. (1985). The economics of overeducation. *Economics of Education Review,* v4 n2, p93-104.

Tsang, M., C., Rumberger, W., and Levin, H. (1991). The impact of surplus schooling on worker productivity. *Industrial Relations* v30 n2 p209-228.

Thurow. L.C. (1975). *Generating Inequality*. New York: Basic Books.

UNDP (2007). *Mongolia Human Development Report*. *Employment and Poverty in Mongolia.* Ulaanbaatar: UNDP.

UNESCO (2002). *EFA Global Monitoring Report 2002 Education for All: Is the World on Track?* Paris: UNESCO.

UNESCO (2003). *EFA Global Monitoring Report 2003/2004*. Paris: UNESCO.

UNESCO (2009). *EFA Global Monitoring Report 2009*. Paris: UNESCO.

UNESCO (2009b). *Trends in Higher Education: Tracking an Academic Revolution. A Report Prepared for the UNESCO 2009 World Conference on Higher Education.* Paris: UNESCO.

UNESCO Regional Office for Education in Asia (1971). *Education in the Mongolian People's Republic*. Bangkok: UNESCO.

UNESCO Beijing Office (2008). *UNESCO National Education Support Strategy: Mongolia.* Beijing: UNESCO. Unpublished document.

UNESCO Beijing Office (2010). *Current State of Higher Education in Mongolia.* Forthcoming. Beijing: UNESCO. Unpublished document.

United Nations Department for Economic and Social Information and Policy Analysis Population Division (1995). *Women's Education and Fertility Behavior*. New York: United Nations.

Van der Meer, P. H., (2006). The validity of two education requirement measures. *Economics of Education Review*, 25, p211-219.

Verdugo, R. and Verdugo, N. (1989). The impact of surplus schooling on earnings. *Journal of Human Resources,* v24 n4, p629-643.

Verhaest, D. and Omey, E. (2006). The impact of overeducation and its management. *Social Indicators Research,* v77 n3, p419-448.

Viera, J. (1997). Evolution of wage structure in Portugal 1986-1992. Working Paper Tinbergen Institute, 07-04-97.

Wallerstein, I. (1976). *The Modern World-System: Capitality Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. New York: Academic Press.

Weidman, J., C. (2002). Developing the Mongolia Education Sector Strategy 2000-2005: Reflections of a Consultant for the Asian Developing Bank. *Current Issues in Comparative Education,* v3(2), p99-108.

Weidman, J., C., Chapman, D., W., Cohen, M. and Lelei, M., C. (2004). Access to education in five newly independent states of Central Asia. In Heymen., S., P. and DeYong, A., J. (Eds.), *The Challenge of Education in Central Asia*. Greenwich: Information Age Publishing.

Wilkinson, R. and Yussof, I. (2005). Public and private provision of higher education in Malaysia: a comparative analysis. *Higher Education,* v50 p361-386.

Wong, M., D., Shapiro, M. F., Boscarding, W., J., and Ettner, L. (2002). Contribution of major diseases to disparities in mortality. *New England Journal of Medicine,* v347 n20, p1585-1590.

World Bank (2002). *Mongolia Public Expenditure and Financial Management Review*. Washington, D.C.: World Bank.

World Bank (2002b). Constructing Knowledge Societies: New Challenges for Tertiary Education. Washington, D.C.: World Bank.

World Bank (2010a). Tertiary Education in Mongolia: Meeting the Challenges of the Global Economy. Policy Note. Washington, D.C.: World Bank.

World Bank (2010b). Financing Higher Education in Africa. *Directions in Development. Human Development.* Washington, D.C.: World Bank.

Wu, B., K. (1994). Mongolia: Financing Education during Economic Transition. *World Bank Discussion Papers no.226*. Washington, D.C.: World Bank

Wu, X. (2008). The impact of overeducation on earnings in China. *Frontiers of Education in China,* v3 n1, p123-136.

Zajda, J. and Zajda, R. (2007). Policy shifts in higher education in the Russian Federation. Autonomy, standards, and quality. *European Education,* v39 n3 p16-38.

Zha, Q. (2009). Diversification or homogenization: how governments and markets have combined to (re)shape Chinese higher education in its recent massification process. *Higher Education,* v58 p41-58.

APPENDIX 1: INFORMED CONSENT FORMS (ENGLISH AND MONGOLIAN)

Informed Consent Form – Individual In-depth Interview

My name is Satoko Yano. I am a graduate student at Teachers College, Columbia University, currently pursuing a doctoral degree in Comparative & International Education. I am writing to invite you to participate in my doctoral dissertation research. The purpose of my research is to study the impact of education on individual income and employment pattern in Mongolia.

People who are willing to participate will be asked to join an individual interview lasting for half an hour to one hour. For research purposes, the interview will be recorded upon your approval. All information collected during the interview will be kept confidential and anonymous. Your name will not appear in any papers or reports. Pseudo names will be used to ensure confidentiality and privacy.

Your participation in this research is completely voluntary. You are free to refuse to participate in this study or to withdraw from this study at any time. Your decision to withdraw will bring no negative consequences. There is no direct benefit to participants. The indirect benefits of participation include improved policies and resources regarding education in Mongolia, particularly in higher education. The long term benefits also include improved educational outcomes for improved education-labor transition among the graduates. The potential risks involved in this study are minimal yet similar to answering questions about education policies. In order to minimize the risk, identity of participants and locations will be kept confidential.

If you agree to participate in the study, please sign this consent form. Should you have any questions or concerns, please feel free to contact me by my email: satokoyn@hotmail.com.

Thank you very much for your participation!
Sincerely,
Satoko Yano, Ph. D. Student
Department of International & Transcultural Studies
Teachers College Columbia University

~~~~~~

I agree to participate in the individual in-depth interview of this study.
Signature: _____
Date: _____
~~~~~~

Ганцаарчилсан ярилцлага өгөхийг зөвшөөрсөн мэдэгдэх хуудас

Миний нэрийг Яано Сатоко гэдэг. Би Колумбын Их Сургуулийн дэргэдэх Багшийн Дээд Сургуулийн оюутан бөгөөд Харьцуулсан ба Олон улсын боловсролын чиглэлээр докторын зэрэг хамгаалахаар суралцаж байгаа болно. Энэхүү захидлаар дамжуулан би таныг миний докторын ажлын судалгаанд оролцохыг урьж байна. Судалгааны зорилго нь Монголд хувь хүний орлого болон ажил эрхлэлтэд боловсролын үзүүлэх үр нөлөөг судлахад чиглэж байгаа юм.

Энэхүү судалгаанд хамрагдахыг хүссэн хүмүүсийг 30 минутаас 1 цаг үргэлжлэх ганцаарчилсан ярилцлагад уриж байна. Ярилцлагын үед авсан бүх мэдээллийг нууцлан хадгалах бөгөөд таны нэр ямар ч тайлан болон бусад материалд тавигдахгүй болно. Зөвхөн зохиомол нэрийг хэрэглэнэ.

Энэ судалгаанд оролцох эсэх нь таны сайн дурын асуудал байх бөгөөд та судалгаанд хамрагдахаас татгалзах эсвэл судалгааны явцад ярилцлагыг орхиж болно. Судалгаанд оролцохгүй байснаар таньд ямар нэгэн сөрөг үр дагавар үүсэхгүй бөгөөд шууд хүртэх ашиг тус байхгүй. Гэхдээ та энэхүү судалгаанд оролцсоноор Монгол улсын боловсролын бодлого ялангуяа дээд боловсролын бодлогыг сайжруулахад хувь нэмэр болох юм. Цаашид мөн сургууль төгсөгчдийн хөдөлмөрийн зах зээлд өрсөлдөх чадварыг дээшлүүлэхэд ач тустай байх болно. Боловсролын бодлогын талаарх асуултуудад хариулах нь таньд бага зэрэг эрсдэлтэй санагдаж болох учир энэхүү эрсдлийг багасгахын тулд судалгаанд оролцогчдын нэр, хаягийг нууцлан хадгалах болно.

Хэрэв та судалгаанд оролцохыг зөвшөөрч байвал энэхүү хуудсанд гарын үсгээ зурна уу. Тодруулах асуулт байвал надтай дараах хаягаар холбоо барина уу: satokoyn@hotmail.com.

Таны оролцоонд талархан, хүндэтгэсэн
Сатоко Уано, Колумбын Их Сургуулийн дэргэдэх Багшийн Дээд Сургуулийн Олон улс ба соёл дамнасан судлалын тэнхимийн
Докторын курсийн оюутан

~~~~~~

Миний бие энэхүү судалгааны ганцаарчилсан ярилцлагад оролцохыг зөвшөөрч байна.
Гарын үсэг: _____
Огноо: _____
~~~~~~

APPENDIX 2: INTERVIEW PROTOCOLS (ENGLISH AND MONGOLIAN)

I. Interview Protocol for Government Officials:

Background information

1. What are the roles and responsibilities of your department?
2. What is your responsibility?
3. How long have you been in this position?
4. What is your educational background? Prior to this position, what kind of jobs have you occupied?

Impression of Higher Education Expansion in Mongolia

1. What do you think is the biggest factor behind the higher education expansion in Mongolia?
2. What are the differences between public and private universities?
3. Who regulates/accredits the universities and colleges?
4. What kind of quality assurance mechanism do you have in Mongolia?
5. If your view, is the quality assurance mechanism working?
6. What kind of changes do you think the higher education expansion has caused in Mongolia?
   (1) Who are the providers of the new universities and colleges?
   (2) How long does it take for a new HEI to be approved?
   (3) Do you think the universities and colleges changed much in terms of quality since the transition?
   (4) What do you think of new graduates?
7. What, in your opinion, is the role of higher education? Is Mongolian higher education fulfilling that role?
8. In which areas do you think Mongolian higher education should improve most?

II. Interview Protocol for University/college deans and owners:

Background information

1. When was your institution established?
2. What is the size of your institute?
   (1) How many students do you have?
   (2) How many faculty members do you have?
   (3) How many administrative staff do you have?
   (4) How many departments/academic programs do you have?
3. What is your responsibility?
4. How long have you been in this position?
5. What is your educational background? Prior to this position, what kind of jobs have you occupied?

Finance

1. Do you receive government's funding (e.g., operation, research)?

2. What is the percentage of students receiving government's scholarships?
3. Do you receive any donations from the private sector?
4. Do you receive any donations from parents?

Impression of Higher Education Expansion in Mongolia

9. What do you think is the biggest factor behind the higher education expansion in Mongolia?
10. What kind of changes do you think the higher education expansion has caused in Mongolia?
    (5) Who are the providers of the new universities and colleges?
    (6) How long does it take for a new HEI to be approved?
    (7) Do you think the universities and colleges changed much in terms of quality since the transition?
    (8) What do you think of new graduates?
11. What, in your opinion, is the role of higher education? Is Mongolian higher education fulfilling that role?
12. In which areas do you think Mongolian higher education should improve most?

III. Interview Protocol for Business Owners

Background information

1. What is your business?
2. When was it established?
3. What is your responsibility?
4. How long have you been in this position?
5. What is your educational background? Prior to this position, what kind of jobs have you occupied?

Impression of Higher Education Expansion in Mongolia

1. What do you think is the biggest factor behind the higher education expansion in Mongolia?
2. What kind of changes do you think the higher education expansion has caused in Mongolia?
    (1) Who are the providers of the new universities and colleges?
    (2) Do you think the universities and colleges changed much in terms of quality since the transition?
    (3) What do you think of new graduates?
    (4) Do you see any differences between public university graduates and private university graduates?
    (5) Do you see any changes in educational backgrounds of the new recruits?
3. What, in your opinion, is the role of higher education? Is Mongolian higher education fulfilling that role?
4. In which areas do you think Mongolian higher education should improve most?

IV. Interview Protocol for Officials from development agencies and NGO staff

Background information

1. What are your agency's priorities for the education sector?
2. How much is the budget and for how many years?
3. Do you have any major program for higher education in Mongolia? How much is the budget? What are the focus areas?

Impression of Higher Education Expansion in Mongolia

1. What do you think is the biggest factor behind the higher education expansion in Mongolia?
2. What are the differences between public and private universities?
3. Who regulates/accredits the universities and colleges?
4. What kind of quality assurance mechanism do you have in Mongolia?
5. If your view, is the quality assurance mechanism working?
6. What kind of changes do you think the higher education expansion has caused in Mongolia?
7. What, in your opinion, is the role of higher education? Is Mongolian higher education fulfilling that role?
8. In which areas do you think Mongolian higher education should improve most?

I. Төрийн байгууллагын ажилтануудтай хийх ярилцлагын төлөвлөгөө:

Суурь мэдээлэл

1. Танай байгууллагын үүрэг, хариуцлага ямар чиглэлд байдаг вэ?
2. Таны үүрэг хариуцлага юу вэ?
3. Та энэ албан тушаалд хир удаж байна вэ?
4. Та ямар боловсролтой вэ? Энэ ажлыг эрхлэхээс өмнө та ямар алба хашиж байсан бэ?

Монголын Дээд боловсролын тэлэлтийн талаар

1. Таны бодлоор Монголд дээд боловсрол өргөжин тэлсэн гол хүчин зүйл нь юу вэ?
2. Төрийн болон хувийн дээд сургуулийн ялгаа нь юунд байдаг вэ?
3. Их дээд сургууль болон коллежуудийг хэн зохицуулж магадлан итгэмжилдэг вэ?
4. Монголд чанарын баталгааны ямар тогтолцоо хэрэгжиж байна вэ?
5. Таны бодлоор чанарын баталгааны тогтолцоо хэрэгжиж чадаж байгаа юу?
6. Монголд дээд боловсролын тэлэлтээс шалтгаалан ямар өөрчлөлтүүд гарсан бэ?
    a. Шинэ дээд сургууль болон коллежийг хэн үүсгэн байгуулж байна вэ?
    b. Шинээр их дээд сургуулийн зөвшөөрөл авахад хир хугацаа шаардагддаг вэ?
    c. Шилжилтийн үеэс хойш их дээд сургуулиудын сургалтын чанарт өөрчлөлт гарсан гэж та үздэг үү?

   d. Шинээр төгсөгчдийн талаар та юу гэж боддог вэ?
7. Таны бодлоор дээд боловсролын үүрэг юу вэ? Монголын дээд боловсрол энэ үүргийг гүйцэтгэж чадаж байна уу?
8. Таны бодлоор монголын дээд боловсрол аль чиглэлд илүүтэй хөгжих шаардлагатай вэ?

II. Их дээд сургууль болон коллежийн захирал, өмчийн эздээс авах ярилцлагын төлөвлөгөө:

Суурь мэдээлэл

1. Танай сургууль хэзээ үүсэн байгуулагдсан бэ?
2. Танай сургуулийн хэмжээ ямар вэ?
   a. Танай сургууль хичнээн оюутантай вэ?
   b. Танай сургууль хэдэн багштай вэ?
   c. Танай сургууль хэдэн захиргааны ажилтантай вэ?
   d. Танай сургууль хэдэн тэнхим/сургалтын хөтөлбөртэй вэ?
3. Таны үүрэг хариуцлага юу вэ?
4. Та энэ албан тушаалд хир удаж байна вэ?
5. Та ямар боловсролтой вэ? Энэ ажлыг эрхлэхээс өмнө та ямар алба хашиж байсан бэ?

Санхүүжилт

1. Та төрөөс санхүүжилт авдаг уу (ө.х, үйл ажиллагаа болон судалгаанд зориулсан)?
2. Төрийн тэтгэлэгт хамрагддаг оюутнуудын хувь ямар вэ?
3. Та хувийн хэвшлээс ямар нэгэн хандив дэмжлэг авдаг уу?
4. Та эцэг эхчүүдээс ямар нэгэн хандив дэмжлэг авдаг уу?

Монголын Дээд боловсролын тэлэлтийн талаар

1. Таны бодлоор Монголд дээд боловсрол өргөжин тэлсэн гол хүчин зүйл нь юу вэ?
2. Монголд дээд боловсролын тэлэлтээс шалтгаалан ямар өөрчлөлтүүд гарсан бэ?
3. Шинэ дээд сургууль болон коллежийг хэн үүсгэн байгуулж байна вэ?
4. Шинээр их дээд сургуулийн зөвшөөрөл авахад хир хугацаа шаардагддаг вэ?
5. Шилжилтийн үеэс хойш их дээд сургуулиудын сургалтын чанарт өөрчлөлт гарсан гэж та үздэг үү?
6. Шинээр төгсөгчдийн талаар та юу гэж боддог вэ?
7. Таны бодлоор дээд боловсролын үүрэг юу вэ? Монголын дээд боловсрол энэ үүргийг гүйцэтгэж чадаж байна уу?
8. Таны бодлоор монголын дээд боловсрол аль чиглэлд илүүтэй хөгжих шаардлагатай вэ?

III. Бизнес эрхлэгчдээс авах ярилцлагын төлөвлөгөө:

Суурь мэдээлэл

1. Та ямар бизнес эрхэлдэг вэ?
2. Хэзээ энэхүү бизнесээ үүсгэн байгуулсан бэ?
3. Таны үүрэг хариуцлага юу вэ?
4. Та энэ албан тушаалд хир удаж байна вэ?
5. Та ямар боловсролтой вэ? Энэ ажлыг эрхлэхээс өмнө та ямар алба хашиж байсан бэ?

Монголын Дээд боловсролын тэлэлтийн талаар

1. Таны бодлоор Монголд дээд боловсрол өргөжин тэлсэн гол хүчин зүйл нь юу вэ?
2. Монголд дээд боловсролын тэлэлтээс шалтгаалан ямар өөрчлөлтүүд гарсан бэ?
3. Шинэ дээд сургууль болон коллежийг хэн үүсгэн байгуулж байна вэ?
4. Шинээр их дээд сургуулийн зөвшөөрөл авахад хир хугацаа шаардагддаг вэ?
5. Шилжилтийн үеэс хойш их дээд сургуулиудын сургалтын чанарт өөрчлөлт гарсан гэж та үздэг үү?
6. Шинээр төгсөгчдийн талаар та юу гэж боддог вэ?
7. Таны бодлоор дээд боловсролын үүрэг юу вэ? Монголын дээд боловсрол энэ үүргийг гүйцэтгэж чадаж байна уу?
8. Таны бодлоор монголын дээд боловсрол аль чиглэлд илүүтэй хөгжих шаардлагатай вэ?

IV. Хөгжлийн байгууллага болон ТББ-ын ажилтануудаас авах ярилцлагын төлөвлөгөө:

Суурь мэдээлэл

1. Танай байгууллагын боловсролын салбар дахь тэргүүлэх чиглэл юу вэ?
2. Энэ салбарт хичнээн төгрөгийн санхүүжилттэй ба хэдэн жилийн төсөвтэй вэ?
3. Танайх Монголын дээд боловсролын чиглэлээр тусгай хөтөлбөр хэрэгжүүлдэг үү? Хичнээн төгрөгний төсөвтэй вэ? Аль чиглэлд илүүтэй анхаарч байгаа вэ?

Монголын Дээд боловсролын тэлэлтийн талаар

1. Таны бодлоор Монголд дээд боловсрол өргөжин тэлсэн гол хүчин зүйл нь юу вэ?
2. Төрийн болон хувийн дээд сургуулийн ялгаа нь юунд байдаг вэ?
3. Их дээд сургууль болон коллежуудийг хэн зохицуулж магадлан итгэмжилдэг вэ?
4. Монголд чанарын баталгааны ямар тогтолцоо хэрэгжиж байна вэ?
5. Таны бодлоор чанарын баталгааны тогтолцоо хэрэгжиж чадаж байгаа юу?
6. Монголд дээд боловсролын тэлэлтээс шалтгаалан ямар өөрчлөлтүүд гарсан бэ?
7. Таны бодлоор дээд боловсролын үүрэг юу вэ? Монголын дээд боловсрол энэ үүргийг гүйцэтгэж чадаж байна уу?

8. Таны бодлоор монголын дээд боловсрол аль чиглэлд илүүтэй хөгжих шаардлагатай вэ?

APPENDIX 3: LIST OF VARIABLES FOR QUANTITATIVE ANALYSIS

Variables	Definition
SCHOOL	Actual years of schooling
ADESCH	Years of adequate schooling: the most frequently observed years of schooling for the individual's occupation
OVERSCH	Years of overschooling: years of schooling exceeding ADSCH if SCHOOL>ADSCH, 0 otherwise
UNDERSCH	Years of underschooling: years of schooling below ADSCH if SCHOOL<ADSCH, 0 otherwise
ADED	Dummy variable for adequately educated individuals: 1 if SCHOOL=ADESCH 0 otherwise
OVERED	Dummy variable for overeducated individuals: 1 if SCHOOL>ADESCH 0 otherwise
UNDERED	Dummy variable for undereducated individuals: 1 if SCHOOL<ADESCH 0 otherwise
LnWAGE	Natural logarithm of the monthly wage
AGE	Age of the individual
MALE	Dummy variable: 1 if individual is male, 0 otherwise
EXP	Years of labor market experience: AGE-SCHOOL-8
EXP2	EXP squared
MARRIED	Dummy variable: 1 if individual is married, 0 otherwise
URBAN	Dummy variable: 1 if individual resides in urban area, 0 otherwise
MANAGERS	Dummy variable: legislators, senior officials and managers
PROFESSIONALS	Dummy variable: professionals (i.e., lawyers, medical doctors)
TECHNICIANS	Dummy variable: technicians and associate professionals
OFFICE_CLERK	Dummy variable: office clerks
SERVICE	Dummy variable: service workers and shop/market sales workers
FARMER	Dummy variable: skilled agricultural and fishery workers
CRAFTSMEN	Dummy variable: craft and related trade workers
MACHINE_OPERATOR	Dummy variable: plant and machine operators and assemblers
ELEMENTARY	Dummy variable: elementary workers
AGRICULTURE	Dummy variable: agriculture, forestry and fishing
MINING	Dummy variable: mining and quarrying
MANUFACTURING	Dummy variable: manufacturing and utilities
CONSTRUCTION	Dummy variable: construction
TRADE	Dummy variable: wholesale and retail trade, accommodation and food service activities
COMMUNICATION	Dummy variable: transportation, information and communication
FINANCE	Dummy variable: financial and insurance activities, business activities
PUBLIC	Dummy variable: public administration and defense, education, human health and social work activities
EDUCATION	Dummy variable: education

HEALTH	Dummy variable: health
SERVICE_JOB	Dummy variable: other service workers
OTHERS	Dummy variable: others (e.g., international organizations)
PRE_REFORM	Dummy variable: 1 if older than 18 in 1990; 0 otherwise
PAID	Dummy variable: 1 if paid job; 0 otherwise
UNPAID	Dummy variable: 1 if unpaid job; 0 otherwise
OWN_ACCOUNT	Dummy variable: 1 if working on own account; 0 otherwise
QUARTER_1	Dummy variable: 1 if the interview took place in the 1st quarter of the year; 0 otherwise
QUARTER_2	Dummy variable: 1 if the interview took place in the 2nd quarter of the year; 0 otherwise
QUARTER_3	Dummy variable: 1 if the interview took place in the 3rd quarter of the year; 0 otherwise

APPENDIX 4: COMPARISON OF RESULTS, 2002/2003 AND 2007/2008

Table 1: Effects of schooling on wages

OLS	2002/2003 (n=2,271)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.154***	8.09	0.157***	7.38
URBAN	0.250***	9.43	0.271***	7.42
MARRIED	0.024	0.95	0.087***	3.62
SCHOOL	0.049***	11.96	0.136***	25.96
EXP	0.007	1.02	0.049***	9.04
EXP2	-0.0002	-1.16	-0.001***	-7.43
PRE_REFORM	-0.003	-0.06	-0.175***	-4.15
Quarter_1	-0.014	-0.42	0.120***	2.99
Quarter_2	-0.046	-1.40	0.350***	9.22
Quarter_3	-0.009	-0.26	-0.260***	-5.86
Constant	10.016***	141.29	8.78***	96.53
Prob>F	0.0000		0.0000	
R^2	0.1708		0.2365	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

Table 2: Effects of schooling on wages: occupational category

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.127***	6.43	0.157***	6.94
URBAN	0.243***	9.05	0.268***	7.49
MARRIED	0.020	0.76	0.069***	2.90
SCHOOL	0.041***	7.91	0.100***	17.27
EXP	0.006	0.94	0.049***	9.16
EXP2	-0.0001	-1.06	-0.001***	-7.83
PRE_REFORM	0.0001	0.00	-0.170***	-4.08
MANAGERS	0.290***	5.26	0.488***	9.36
PROFESSIONALS	0.199***	5.04	0.368***	8.08
TECHNICIANS	0.145***	3.80	0.354***	7.30
OFFICE_CLERK	0.108	2.16	0.269***	4.55
SERVICE	0.074**	1.91	0.035	0.76
FARMER	-0.246*	-2.55	-0.432***	-5.10
CRAFTSMEN	0.208***	4.71	0.139***	2.68
MACHINE_OPERATOR	0.217***	4.04	0.269***	5.28
QUARTER_1	-0.018	-0.54	0.129***	3.30
QUARTER_2	-0.050	-1.55	0.346***	9.26

QUARTER_3	-0.006	-0.19	-0.259***	-5.95
Constant	9.980***	126.11	8.997***	92.96
Prob>F	0.0000		0.0000	
R^2	0.2022		0.2643	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

Table 3: The effects of years of overeducation and undereducation on wages

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.161***	8.18	0.192***	9.20
URBAN	0.254***	9.42	0.297***	8.23
MARRIED	0.021	0.026	0.071***	2.99
ADSCH	0.052***	11.97	0.179***	27.42
OVERSCH	0.036***	4.47	0.100***	10.70
UNDERSCH	-0.047***	-7.69	-0.106***	-14.19
EXP	0.006	1.00	0.050***	9.46
EXP2	-0.0002	-1.17	-0.001***	-8.12
PRE_REFORM	0.001	0.03	-0.167***	-4.01
QUARTER_1	-0.012	-0.36	0.125***	3.14
QUARTER_2	-0.045	-1.36	0.346***	9.17
QUARTER_3	-0.007	-0.21	-0.260***	-5.94
Constant	9.99***	132.73	8.24***	78.53
Prob>F	0.0000		0.0000	
R^2	0.1743		0.2532	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

Table 4: The effects of years overeducation and undereducation on wages: occupational category

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.127***	6.43	0.157***	6.94
URBAN	0.242***	9.00	0.268***	7.48
MARRIED	0.020	0.77	0.069***	2.90
ADSCH	0.098***	9.51	0.222***	17.57
OVERSCH	0.035***	4.38	0.101***	10.35
UNDERSCH	-0.044***	-7.05	-0.100***	-13.32
EXP	0.006	0.91	0.049***	9.16
EXP2	-0.0001	-1.02	-0.001***	-7.82
PRE_REFORM	0.001	0.02	-0.170***	-4.08

MANAGERS	(omitted)		(omitted)	
PROFESSIONALS	-0.091**	-2.03	-0.120***	-3.36
TECHNICIANS	-0.143***	-2.90	-0.134***	-3.16
OFFICE_CLERK	-0.123**	-2.27	0.268***	4.50
SERVICE	0.195***	3.72	0.034	0.76
FARMER	-0.134	-1.29	-0.188**	-1.97
CRAFTSMEN	0.207***	4.69	0.139***	2.68
MACHINE_OPERATOR	0.335***	5.08	0.269***	5.29
QUARTER_1	-0.017	-0.52	0.129***	3.29
QUARTER_2	-0.049	-1.52	0.346***	9.25
QUARTER_3	-0.006	-0.18	-0.259***	-5.96
Constant	9.41***	67.94	7.78***	45.63
Prob>F	0.0000		0.0000	
R^2	0.2024		0.2643	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

Table 5: Effects of years of overeducation and undereducation on wages: industrial category

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
MALE	0.114***	5.67	0.154***	6.86
URBAN	0.222***	8.46	0.288***	8.01
MARRIED	0.012	0.48	0.068***	2.92
ADSCH	0.064***	15.77	0.166***	22.70
OVERSCH	0.040***	5.23	0.098***	1036
UNDERSCH	-0.047***	-7.89	-0.098***	-13.48
EXP	0.006	0.96	0.049***	9.29
EXP2	-0.0001	-0.94	-0.001***	-7.73
PRE_REFORM	0.002	0.04	-0.177***	-4.33
AGRICULTURE	-0.142**	-2.09	-0.645***	-6.48
MINING	0.405***	6.26	0.199***	3.00
MANUFACTURING	0.106***	2.61	-0.170***	-3.54
CONSTRUCTION	0.146***	2.80	-0.170***	-3.15
TRADE	0.066	1.59	-0.189***	-3.97
INFORMATION	0.210***	4.95	0.140***	3.12
FINANCE	0.216***	4.17	-0.032	-0,68
EDUCATION	-0.061**	-2.22	-0.124***	-3.11
HEALTH	-0.111***	-3.35	-0.083**	-1.96
SERVICE_JOB	-0.033	-0.84	-0.279***	-4.27
OTHERS	-0.019	-0.26	(omitted)	3.67
QUARTER_1	-0.024	-0.76	0.141***	9.80

QUARTER_2	-0.046	-1.51	0.357***	-5.47
QUARTER_3	-0.002	-0.08	-0.240***	72.43
Constant	9.842***	131.27	8.524***	
Prob>F	0.0000		0.0000	
R^2	0.2438		0.2775	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

Table 6: Effects of years of overeducation and undereducation on wages: gender

OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
ADESCH	0.063***	10.32	0.188***	22.89
OVERSCH	0.050***	3.70	0.123***	10.17
UNDERSCH	-0.057***	-7.29	-0.123***	-10.99
ADESCH_M	-0.020**	-2.24	-0.014	-1.39
OVERSCH_M	-0.022	-1.37	-0.048***	-2.62
UNDERSCH_M	0.185	1.43	0.092**	2.25
MALE	0.428***	3.72	0.271**	2.04
URBAN	0.246***	7.68	0.244***	5.89
MARRIED	0.026	0.87	0.024	0.83
PRE_REFORM	0.027	0.57	-0.080*	-1.83
URBAN_M	0.016	0.41	0.108**	2.07
MARRIED_M	0002	0.04	0.143***	3.19
PRE_REFORM_M	-0.061	-1.31	-0.195***	-4.64
EXP	0.006	0.99	-0.049***	9.15
EXP2	-0.0001	-1.11	-0.001***	-7..70
QUARTER_1	-0.017	-0.49	0.125***	3.13
QUARTER_2	-0.047	-1.40	0.345***	9.14
QUARTER_3	-0.009	-0.28	-0.262***	-5.99
Constant	9.83***	100.53	8.19	66.69
Prob>F	0.0000		0.0000	
R^2	0.1789		0.2578	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

Table 7: Effects of overeducation and undereducation on wages: gender

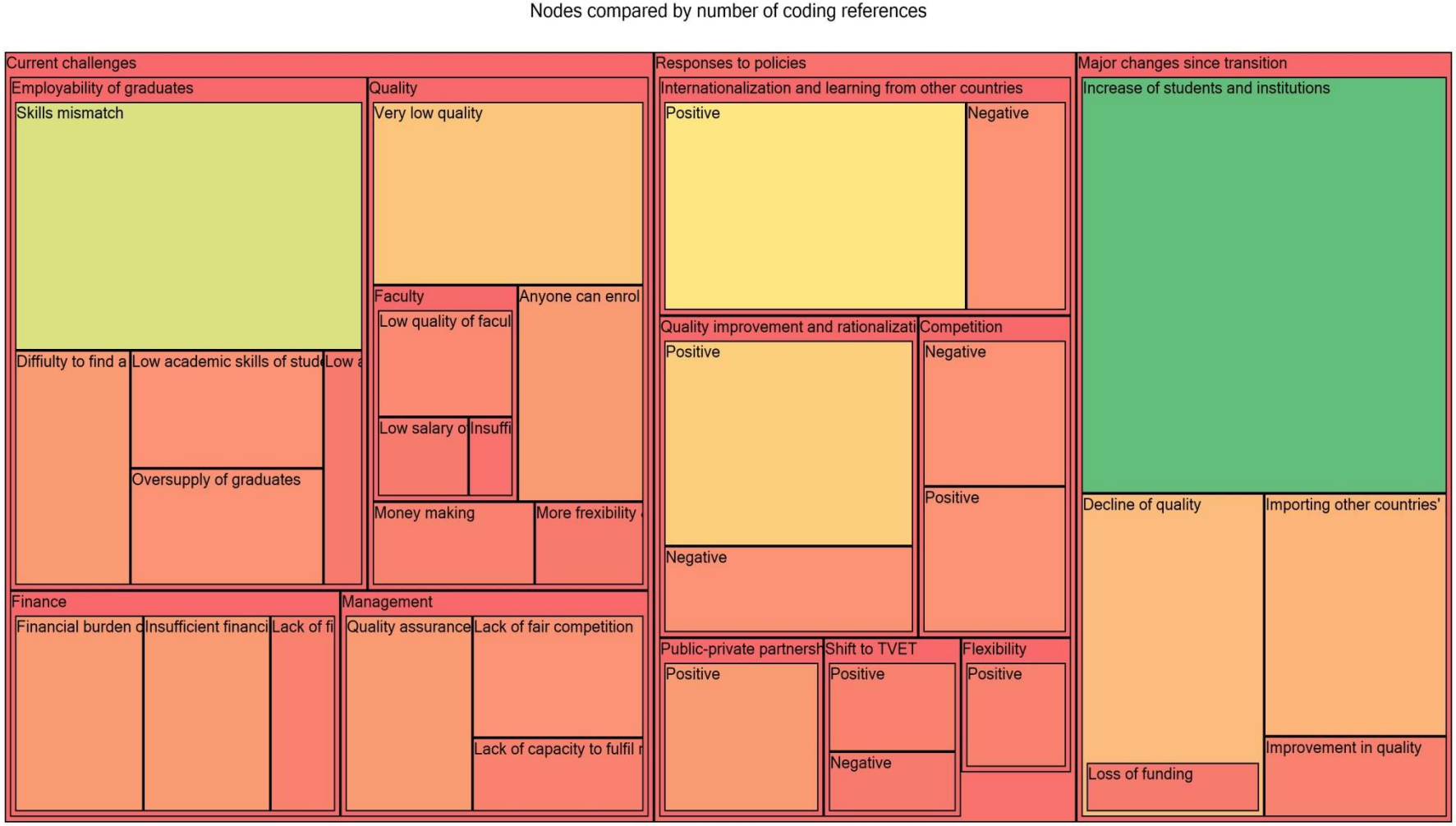
OLS	2002/2003 (n=2,274)		2007/2008 (n=7,997)	
	Coefficients	*t*-value	Coefficients	*t*-value
OVER_ED	-0.094***	-2.67	-0.158***	-4.37
UNDER_ED	-0.041	-1.37	0.129***	3.62
OVER_ED_M	0.039	0.75	-0.020	-0.40

UNDER_ED_M	0.058	1.23	-0.072	01.45
MALE	0.366***	3.16	0.523***	4.17
SCHOOL	0.060***	10.35	0.172***	21.79
URBAN	0.240***	7.36	0.238***	5.77
MARRIED	0.027	0.90	0.030	1.03
PRE_REFORM	0.024	0.49	-0.070***	-1.58
SCHOOL_M	-0.019**	-2.26	-0.035*	-3.722
URBAN_M	0.023	0.57	0.094***	1.80
MARRIED_M	-0.001	-0.02	0.144***	3.25
PRE_REFORM_M	-0.054	-1.16	-0.212***	-4.96
EXP	0.006	0.94	0.049***	9.01
EXP2	-0.0001	-1.09	-0.001***	-7.33
QUARTER_1	-0.014	-0.41	0.121***	3.02
QUARTER_2	-0.043	-1.29	0.346***	9.21
QUARTER_3	-0.006	-0.17	-0.261***	-6.00
Constant	9.92***	103.04	8.376***	67.83
Prob>F	0.0000		0.0000	
R^2	0.1807		0.2490	

*** Statistically significant at 1% level
** Statistically significant at 5% level
* Statistically significant at 10% level

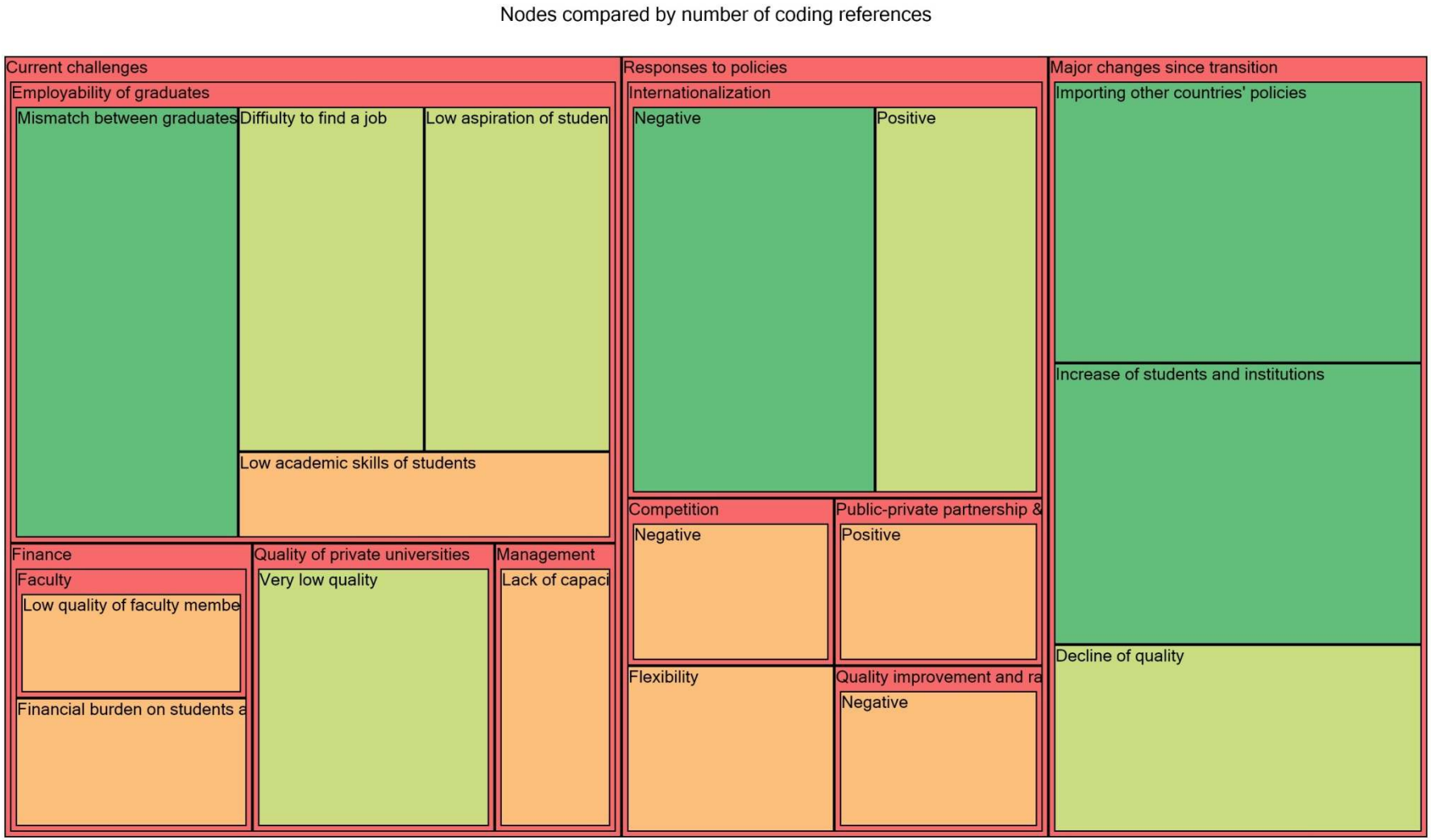
APPENDIX 5: NVIVO MAPS

All interviewees



Senior officials

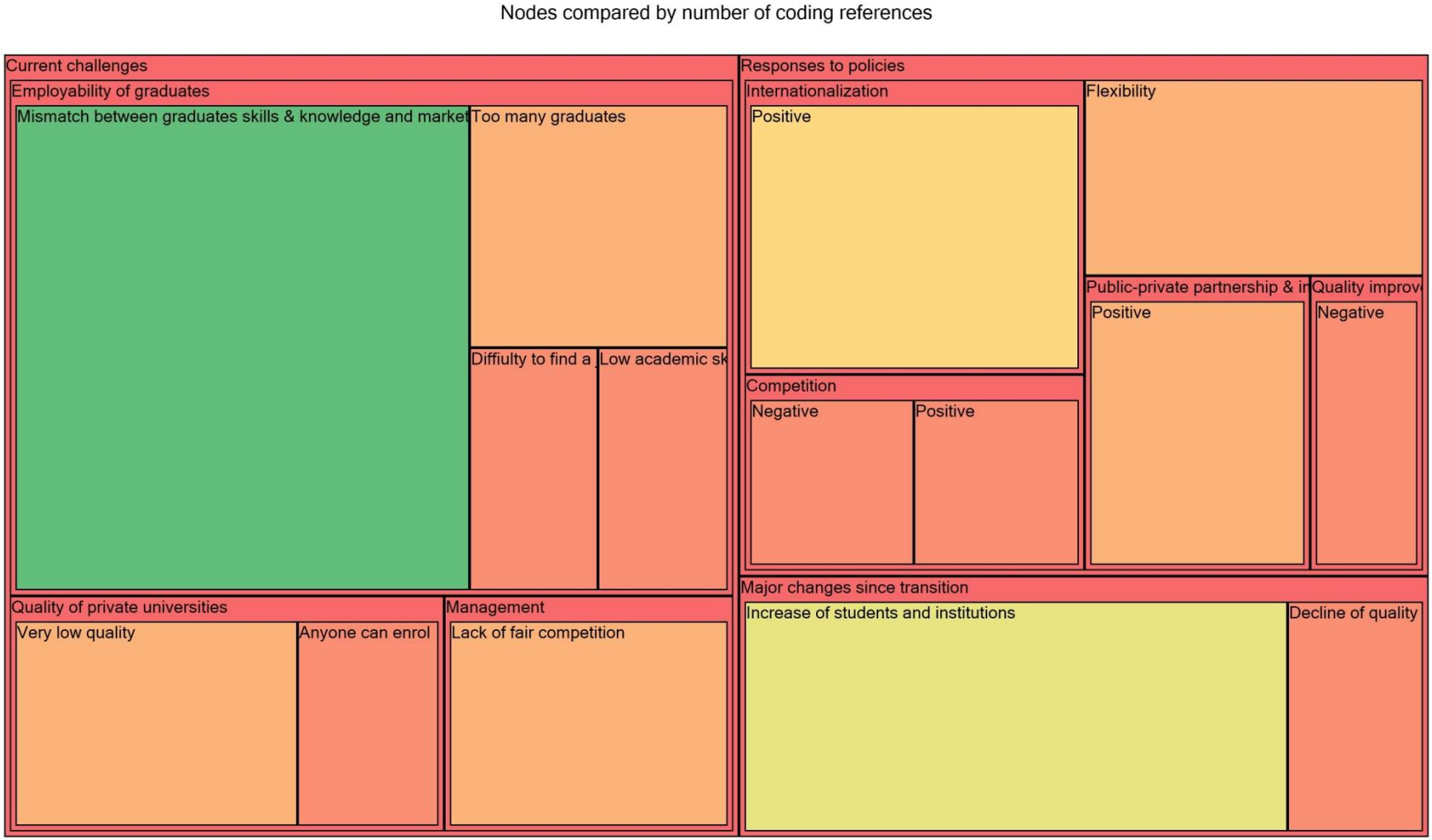
Public university staff



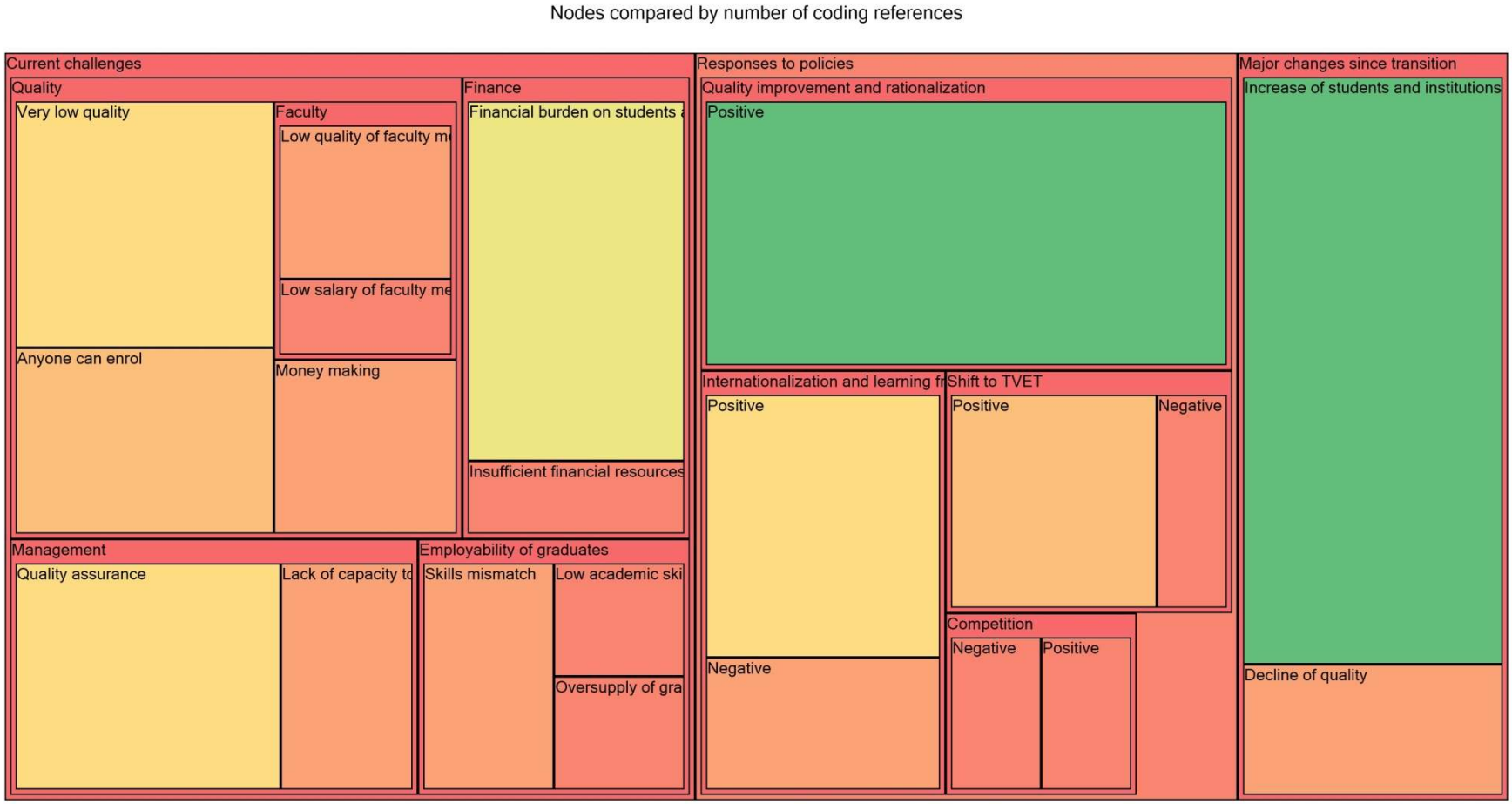
Private university staff

Nodes compared by number of coding references

Employers


Nodes compared by number of coding references
Current challenges
Employability of graduates
Mismatch between graduates skills & knowledge and market
Too many graduates
Diffiulty to find a
Low academic sk
Quality of private universities
Very low quality
Anyone can enrol
Management
Lack of fair competition
Responses to policies
Internationalization
Positive
Flexibility
Public-private partnership & in
Positive
Quality improv
Negative
Competition
Negative
Positive
Major changes since transition
Increase of students and institutions
Decline of quality

Development agency staff



APPENDIX 6: SUMMARY OF THE KEY POLICY DOCUMENTS: ROLES AND ISSUES OF HIGHER EDUCATION

Documents	Role of higher education	Issues faced by higher education
Government documents		
Economic Growth Support and Poverty Reduction Strategy (2003)	Foundation of knowledge-based economic growth	• Gender inequality (in favor of women) • Low quality • Supply-demand mismatch
National Development Strategy (2007)	Source of international competitiveness	• Lack of international level higher education institutions
Master Plan to Develop Education of Mongolia in 2006-2015 (2006)	An integral part of the education system	• Low quality • Supply-demand mismatch • Weak management and governance • Inadequate funding
International development partners' documents		
Roadmap for Higher Education, (Consultant's report, ADB, 2010)	Necessary for developing and strengthening the nation and enhancement of competitiveness in the international arena	• Inconsistent laws and policies • Insufficient financial investment • Lack of partnership and information sharing with private sector • Excessive number of students and low quality • Weak capacity of the universities
Higher Education Reform Project (President's report, ADB, 2011)	A principal investment option for the country's long-term economic competitiveness	• Low quality and relevance, and weak quality assurance • Low staff quality and inadequate learning and research environment • Ineffective governance and management, lack of autonomy, and weak leadership • Inadequate financing, • Lack of equity in access.
UNESCO National Education Support Strategy (2008)	An integral part of the education system	• Poor quality • Mismatch between demand and supply • Outmoded and irrelevant curricula and teaching methods • Inadequate funding • Poor governance and management practices
Current State of Higher Education in Mongolia (UNESCO	The source of the knowledge generation and dissemination for the benefit	• Lack of systematic reform and a vision of higher education • Political interference

Beijing, 2010)	of the society	• Heavy dependence on tuition fees and its impact on students' selection • Rigid and overloaded academic programs • Insufficient focus on research • Ineffective quality assurance system and lack of incentives for quality improvement • Insufficient funding • Lack of equity in access to higher education.
Constructing Knowledge Societies: New Challenges for Tertiary Education (WB, 2002)	Has a critical role in supporting knowledge-driven economic growth strategies and the construction of democratic, socially cohesive societies	• Expansion of higher education under severe resource constraints • Inequalities in access and outcomes • Inadequate educational quality • Low relevance to economic needs • Rigid governance and management structures
Mongolia: Building the Skills for the New Economy (WB, 2007)	N/A	• Joblessness • Prevalence of informal jobs • Skills mismatch
Tertiary Education in Mongolia: Meeting the Challenges of the Global Economy (WB, 2010).	Universities educate future leaders and develop the high-level technical and managerial capacities that underpin economic growth; universities facilitate regional development and are an integral mechanisms of national development	• Low-cost and low-quality • Poor labor market outcomes and mismatch of skills • Inequitable access

APPENDIX 7: SUMMARY OF THE KEY POLICY DOCUMENTS: POLICIES AND POLICY RECOMMENDATIONS

Documents	Policies & recommendations
Government documents	
Economic Growth Support and Poverty Reduction Strategy (2003)	• Regulating enrolment • Supporting employment • Upgrading Mongolian higher education to the international level
National Development Strategy (2007)	• Increase competitiveness and prestige of Mongolian higher education • Create 2 international level universities
Master Plan to Develop Education of Mongolia in 2006-2015 (2006)	• Develop accreditation and quality assurance systems corresponding to international standards • Streamline higher education programs with the national economic structure and labor market demand • Improve state student loans system • Rationalize enrolments, institutes and programs • Strengthen management capacity • Expanding TVET
International development partners' documents	
Roadmap for Higher Education, (Consultant's report, ADB, 2010)	• To reform and amend a state policy and legislation on higher education of Mongolia • To built a high quality, needs based and cost effective higher education system through restructuring of training programs, ensuring cooperation and integration of training, researching and practical work, reengineering of the processes of the universities and management and professional capacity building • To reform a higher education technology through introducing a high communication • technologies, teaching process reengineering and training program restructuring • Improve effectiveness and efficiency of higher education system through supporting a different sources for financing and introducing a conditional public financing for higher education system and capacity building for State Education Fund in coordination and financial management
Higher Education Reform Project (President's report, ADB, 2010)	• Improvement of the accreditation system • Strengthening linkage between education and industry through public-private partnership • Introduction of financial incentives for institutions to improve quality and relevance through competitive funding

	• Improving governance and accountability • Increasing for those studying in priority areas (e.g., science and technology) • Introduction of open and distance learning in rural areas to improve equitable access to higher education
UNESCO National Education Support Strategy (2008)	• Strengthening TVET system • Quality assurance • Governance and management • Funding mechanisms • Cross-border education • Qualification recognition • Diversification, privatization and massification of higher education
Current State of Higher Education in Mongolia (UNESCO, 2010)	• Improving admission procedures • Improving universities outside the capital city, Ulaanbaatar • Introduction of credit-hour system and student information system, with credit transfer system • Improving quality assurance mechanism to international level • Creating curricula responsive to changing needs • Enhance faculty development • Reform scholarship and grant systems
Constructing Knowledge Societies: New Challenges for Tertiary Education (WB, 2002)	• Introducing more flexible and less specialized curricula • Promoting shorter programs and courses • Making the regulatory framework less rigid • Relying on public funding approaches that encourage institutions to respond to market demands for quality and diversity • Improving access through the provision of financial aid to students • Requiring external participation in governance • Professionalizing university administration
Mongolia: Building the Skills for the New Economy (WB, 2007)	• Improve TVET • More flexible and open higher education • Quality control • Introducing well-designed and unified higher education admission tests • Enhancing public-private partnership • Linking funding to performance
Tertiary Education in Mongolia: Meeting the Challenges of the Global Economy (WB, 2010).	• Improve quality assurance mechanism • Link funding to quality improvement and performance • Shift students to disciplines relevant to the labor markets • Reform State Training Fund (scholarships and grants)