Gender equity and development in the frame of MDGs: A comparison between Asia-Pacific and Africa

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Several decades after gender issues have been at the forefront of human rights, a conceptual framework, if not yet theories, of the role of women empowerment in population processes, development and governance starts to emerge. International organizations: UNIFEM, UNFPA, UNICEF among others, have developed programmes to increase women empowerment in order to accelerate development. After a rather restrictive focus on reproductive rights and population change in trends and structure, research is now also considering the impact of gender equity on economic development. And this impact is not only considered as a consequence of demographic change - or the 'demographic window'-, but it is also directly related to women's participation in formal sector of the labor force (the 'share of women in non agricultural wage work' MDG indicator) and in the public role of women in politics: the 'proportion of seats held by women in national parliaments' MDG indicator, and its offspring indicators : seats held by women in provincial parliaments as well as in decision making positions in ministries and higher administrations. While many countries are still striving to reduce rapid population growth to a sustainable level, the impact of gender equity on demographic processes, from the basic infant mortality rate to more sophisticated indicators like contraceptive prevalence and unmet need for contraception, still draws an important attention. But, the relation between women empowerment and social and economic development starts to be well assessed and it is a major area of the MDGs.

This paper will try to present a framework of the relations between gender equity/women empowerment, demographic processes and social and economic development, through the role of availability of /access to services. The analysis will mostly be based on MDG indicators. In a second section, this framework will be used to study relations between MDG gender equity indicators and indicators of access to services, fertility and mortality. Thus, the role of women in the society, through gender equity in education, participation in paid employment and representation in parliaments will appear as a major contributor of the quality of life and development. The focus will be on countries in Asia-Pacific and Northern and Western Africa.

A- MDGs' approach to population and development

The MDGs (Millennium Development Goals), adopted by the United Nations and more than 200 countries in 2000, are based on the Programme of Action (PoA) of Cairo 1994 ICPD (International Conference on Population and Development).

The MDGs represent actually a new paradigm in population and development. After the debate whether population growth is the cause of under-development or vice-versa led nowhere, the relation between population and development was understood as a wide range of interactions between population, social and economic phenomenon, in the frame of a rights based approach. Rights include, beside human rights, the universal right of women to

reproductive health adopted at the 1994 ICPD PoA. And, in September 2006, the United Nations General Assembly adopted the target of universal access to reproductive health.

The MDGs include 8goals, 21 targets and more than 60 indicators covering a much larger field of social, economic and human development than the HDI (Human Development Index) based on only three indicators: GDP per capita, life expectancy and literacy. However, it does not seem possible to build a synthetic index from the large number of MDG indicators, even at the level of individual goals, due to various statistical difficulties like sometimes imprecise indicators such as the ratio of girls to boys gross enrolment rates in primary education, the employment to population ratio – sensitive to population structure, or the lack of definition of 'skilled health personnel' for the indicator 'proportion of births attended by skilled health personnel'…, or, on the contrary, indicators that need too precise data, like the maternal mortality ratio - that is even not accurately estimated in many developed countries- and unmet need for contraception that is only available from DHS surveys, as well as various bias in figures reported by national governments, like including own account workers in the 'share of women in non agricultural wage employment' indicator. Despite progress in the data approach with the 2007 revision of MDG indicators, many problems remain. However, the enterprise is of inestimable value due to the wide range of factors of social and human development it addresses. - In this paper, we shall mostly use indicators from goal 3 (gender), 4 (infant health) and 5 (maternal health), and as some data are still lacking for many countries, we shall limit the analysis to widely available indicators (see list below).

At the same time as the approach to population and development changed, economic growth in East and South-East Asia draw attention on the relation between development and population structure rather than population growth rate. Low dependency linked with age structures following a steady and decade-long fertility decline was called the 'demographic window of opportunity'. While most countries in East and South-East Asia are already well advanced in the demographic window process with dependency ratio below 60 and often below 50, this not at all the case of Africa (except for Northern Africa and South Africa) where most countries still have ratios above 80 or even 100. This gap is also reflected in most MDG indicators. Therefore, the focus of UN agencies has been to promote the advancement of the demographic window to progress towards MDG attainment. It has appeared that reducing population growth is not as much a matter of contraceptive prevalence linked with availability of services, as a matter of women empowerment. However, both women empowerment and availability of services are necessary and there is a need to reconsider the relation between women, services and demographic processes.

B- From women status to demographic processes

1) How it works in the fields

The path to reduce maternal and infant mortality does not necessarily follow assumptions behind the usual scientific approach of proximate determinants and socio-economic characteristics of women.

Let's first consider maternal mortality. Any woman whatever her educational level or occupation can experience a risky pregnancy or delivery. Thus, other factors intervene in the relationship between education of women and maternal or infant health and mortality. These factors are related to services. Service infrastructures need to be available and accessible, staff needs to be qualified and the woman needs to go to a health center.

Imagine an illiterate woman in a rural area: she is likely to refer symptoms that could be related to risky delivery to a traditional healer who may tell her that 'it is normal' or give her some useless medicine. If she goes beyond this advice and considers going to a health center, she would need money to travel there and she would probably also need her husband's agreement, mostly if she has no own income to pay for transport. To be willing to visit a health center, she has also to trust health services. - There are lots of examples of hospitals that are not widely used by women because the quality of services is (thought) too poor.

An educated woman would be more likely to feel that something is going wrong with her pregnancy and want to visit a health center; if she is working, she could talk to colleagues or go to worksite health unit. She could also chose a better health center or clinic. But, if there is none, she may also experience a fatal issue.

The path to reducing infant mortality is not so much different from the above one. Mothers need to be able to make a judgement whether the condition of their children is severe enough to need visit a health center, they need empowerment to decide to go to the health center and the quality of services has to be appealing and effective.

The same applies for contraceptive prevalence. But, there is an additional condition : the way women are welcomed at family planning centers. … In some countries or regions, because of traditional or religious beliefs, contraception is not well accepted, especially for unmarried women. In such cultural context, unmarried youth are not supposed to have sexual intercourse and therefore not suppose to visit reproductive health centers. It is not enough to build a health center and provide condoms and other contraceptives to reduce the prevalence of sexually transmitted infections (STI), including HIV, increase contraceptive prevalence and reduce teenage pregnancies. If the health center is located in an area where a lot of people can see who is entering the building and if the staff rebukes unmarried youth, the impact of developing reproductive health services will be low. The response of UNFPA has been to develop 'youth friendly health services' through relocating reproductive health services, training staff in human and reproductive rights and informing youth, through media and community groups.

Thus, the path to mortality reduction is both education and empowerment of women -these are usually closely connected-, and availability and quality of services, not only technically but also as regards social aspects in the frame of human and reproductive rights. Then, we can expect mortality to decline, family size to be chosen freely, population growth to be contained at sustainable levels and the age structure to advance towards the demographic window and become more favourable to economic development.

2) What are the implications for research?

It is clear from the stories above that the roles of services and women empowerment are central in reducing maternal and child mortality. Thus, MDGs' focus on the coverage of health and other services represents a real progress in the approach to population and development. The rights-based approach to health (including reproductive health) addresses both issues of availability : the obligation for the state to provide its population with health and education services, and their utilization by women and men : the need for women to be able to decide on matters related to their own health, and their children health and education.

3) Data approach

At the data analysis level, it is difficult to separate between availability and utilization of services with the information currently available, because availability of services is not recorded in surveys at micro data level. Even with additional information on infrastructures, it would still be difficult to separate the role of lack of empowerment, costs and perceived quality of services.

We shall try to estimate relationships between various MDG indicators to see which of the above relations appear at the macro level. Are the relationships between services, women empowerment and health indicators strong enough to be significant at the macro level? Are there other significant relationships between these indicators and other demographic indicators like population trends and structures that would show other important factors of demographic processes and MDGs attainment?

We shall separate MDG indicators into indicators of services availability/utilization (or service coverage) and health indicators. As MDGs include little demographic indicators besides mortality indicators, except adolescent birth rate, we shall also use population growth and structure indicators, and an economic indicator : GDP.

- Services indicators used in this study are child immunization and births attended by skilled health personnel[1]. - These indicators translate both availability and utilization of services. Thus, if the indicator is high, obviously both availability and utilization are high. But if it is low, we cannot know if it is because services are not available or because they are underused and for what reasons : cost, transport cost, women empowerment or other reasons mentioned above.

- Gender indicators are ratio of girls to boys' enrolment rates in 1/2/3ary education, share of women in wage employment in the non-agricultural sector and proportion of seats held by women in national parliament

- Demographic process indicators are: for mortality : infant mortality rate (IMR) and maternal mortality ratio (MMR); for fertility : adolescent birth rate (15-19ASFR) and contraceptive prevalence rate (CPR)[2].

- Population change indicators: population growth rate, total fertility rate (TFR), dependency ratio.

- Economic indicator: PPP GDP[3].

It should be noted that it is difficult to decide in which group of indicators contraceptive prevalence rate should be included. It is related to availability and quality of services and, as such, it is a service coverage indicator, but it is also related to female empowerment and

[1] Antenatal care coverage is a new indicator of goal 5 since 2007 and it is not yet available for most countries.
[2] We would have liked to include unmet need for contraception, but this indicator is still rarely available.
[3] We use PPP GDP rather than the proportion of population living in poverty because PPP GDP shows higher correlations. Poverty estimates are subject to comparability problems; surprisingly more developed countries like Fiji have higher poverty rate than poorer Solomon Is. or Vanuatu that have also much lower service coverage.

fertility decision and can be considered as a reproductive health indicator. We shall consider it alternatively in each group.

4) Theoretical framework

If the role of services utilization is important on health outcomes, then a strong relation should appear between service coverage and fertility/mortality indicators.

If women status is important in the use of services, then a strong relation should appear between gender equity and service coverage indicators. And, as a consequence of the two previous relations, a relation is also likely to appear between gender equity and fertility/mortality indicators.

As the demographic transition usually starts with decline in infant mortality, later followed by fertility decline, there should also be a strong relationship between fertility/mortality indicators and population indicators, and consequently again between gender and population indicators. We shall also check if a relation appears between demographic indicators and services indicators and what it could mean.

The countries included in the study are, for the Pacific, twelve countries that present data for most of MDGs indicators: Papua New Guinea, Solomon Is., Vanuatu, Fiji, Kiribati, Federated States of Micronesia, Marshall Is., Palau, Cook Is., Samoa, Tonga and Tuvalu. Nauru, Niue and Tokelau have been dropped due to many indicators being not available.

For Asia, we selected, in South-East Asian: Brunei, Cambodia, Indonesia, Lao, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam; in South Asia: Bangladesh, India, Nepal, Pakistan and Sri Lanka. We dropped Timor Leste, whose figures are still affected by war or recent conflict, as well as Bhutan due to reliability of data. We included PR China but not other countries in East Asia, because Japan, Korea, Hong-Kong China and Macao China are developed countries that would increase correlations while data for Democratic People's Republic of Korea may be less reliable.

For Africa, we considered countries in Western and Northern African as these regions are defined by the UN, excluding Libya, Western Sahara and Liberia, due to data reliability.

Given the small number of countries and lack of data for some indicators, specifically in Africa, it is not possible to carry multivariate analysis and we shall present correlations.

C- What do MDG indicators tell us?

1.- Relation between services, mortality and fertility

We shall first comment results for Asia that has the most reliable data, and compare with the Pacific.

For Asian countries, all correlations of service coverage with mortality indicators are significant at 1% level and, for Pacific island countries, most correlations are significant at 5% level or higher, except for immunization and MMR.

In Asia, deliveries attended by skilled health personal are strongly negatively correlated with maternal mortality ratio (MMR) (> -0.9). They are also strongly negatively correlated with IMR (> -0.8) and there is a rather strong correlation of IMR with MMR (0.77). - This is not surprising as the conditions of delivery affect both maternal and infant mortality and women who give birth with an attendant or in a health center receive information on baby care and are more likely to follow on with postnatal care.- Correlations of immunization against measles with infant mortality rate (IMR) are weaker but still significant at 1% level. Immunization occurs later and would rather have more impact on 1-4 mortality rate.

Table 1: Correlation coefficients of services coverage indicators with mortality and fertility MDG indicators

	IMR	MMR	15-19ASFR	CPR
Asia (a)				
IMR		0,77 **	0,45	-0,72 **
MMR	0,77 **		0,83 **	-0,55 *
immunization against measles	-0,66 **	-0,70 **	-0,50	0,45
skilled attended deliveries	-0,82 **	-0,91 **	-0,79 **	0,63 **
Pacific (a)				
IMR		0,68 *	0,56 *	
MMR	0,68 *		0,36	
immunization against measles	-0,59 *	-0,39	0,12	
skilled attended deliveries	-0,84 **	-0,93 **	-0,52	

** significant at 1% level ; * significant at 5% level.
(a) see text for countries included.
source: author's calculation from MDG database, http://unstats.un.org/unsd/mdg/Data.aspx ; accessed in October 2009.

As regards fertility indicators, CPR shows strong negative correlations with IMR and secondarily MMR, and positive correlation with attended deliveries, showing that women who visit family planning centers receive information and are more likely to attend ante and postnatal care and have deliveries attended by skilled health personal. It is also well known that birth spacing and smaller number of births are related to lower maternal and infant mortality (Setty-Venugopal. and Upadhyay 2002; Miller and al. 1992; Mosley and al. 1984). Similar results have been found for a larger number of countries in all of Asia (Choe, Chen 2006)[4].

Adolescent fertility rate shows a strong positive correlation with MMR and a negative correlation with attended deliveries. As teenage mothers are frequently subjected to maternal or infant mortality, lower teenagers' fertility is associated with lower mortality, but when teenage fertility is low, attended deliveries are high because both are associated with visiting reproductive health centers. No significant correlation appears for the Pacific with these indicators, except of 15-19ASFR with IMR. - CPR data for the Pacific are incomplete not taking into account contraceptives delivered by private clinics and NGOs and have not been considered.

[4] Choe and Chen's study also considered progress towards MDG attainment in maternal and child mortality, with significant correlations appearing for the latter, but they are weaker than for mortality rates. This is probably due to data quality issues for the baseline estimates around 1990 that sometimes come from different sources: census based estimates, while recent data come more often from DHS or MICS. For the Pacific where this data situation is general, no significant correlation appears with progress toward MDG attainment.

2.- Relation between gender equity and services coverage indicators

In Asia, the share of women in non agricultural wage employment is strongly positively correlated with deliveries attended by skilled health personal and gender equity in secondary education[5] is correlated with both immunization and attended deliveries. There are also positive correlations, significant at 5% level, of gender equity in primary and secondary education with CPR. There is no significant correlation of the proportions of seats held by women in national parliament with any services indicator. - It should be noted that the relation between gender equity in educational enrolment and service indicators is not very relevant because there is no direct relation between them as mostly different women are involved in schooling and reproductive ages, except somewhat for secondary and tertiary[6] education. But it translates general status of women.

Table 2: Correlation coefficients of services coverage indicators with gender equity indicators

	Measles immunization	Attended deliveries	CPR
Asia			
Women in non agri. wage employment	0,49	0,64 **	0,31
Gender equity in 1ary education	0,43	0,44	0,56 *
Gender equity in 2ary education	0,65 **	0,62 **	0,59 *
Parliamentary seats held by women	-0,12	-0,09	-0,07
Pacific			
Women in non agri. wage employment	0,30	0,86 **	
Gender equity in 1ary education	-0,11	0,57 *	
Gender equity in 2ary education	-0,10	0,73 **	
Parliamentary seats held by women	0,20	0,42	

** significant at 1% level ; * significant at 5% level.
source: author's calculation from MDG database, http://unstats.un.org/unsd/mdg/Data.aspx ; accessed in October 2009.

In the Pacific, there are strong positive correlations of gender indicators (except female parliamentary representation) with skill attended deliveries, but not with immunization.

Whenever significant correlations of gender equity with service indicators appear, they are not as strong as for services and fertility/mortality indicators. This may be due to the fact that service coverage/utilization is dependent on availability of services and not only on women empowerment.

3.- Relation between gender equity and fertility/mortality indicators

The relation between gender and demographic processes indicators is actually mediated by services and is the combined result of the two relations considered above.

In Asia, correlations of gender indicators with mortality indicators are significant only for gender equity in secondary education and infant and maternal mortality, not for adolescent fertility. It is not much a surprise that correlations are not strong enough to occur all the way

[5] the ratio of female to male gross enrolment rates in secondary education.
[6] Tertiary education enrolment data are not much reliable as they often do not take into account all students, missing private students abroad, and they can be affected by various other biases. Thus, no significant correlation appeared with gender equity in tertiary enrolment in Asia and results are not presented in tables.

from women status to services and demographic processes, in the frame of weak correlations of women status and service coverage indicators (see above).

Table 3: Correlation coefficients of gender equity MDG indicators with mortality and fertility indicators

	IMR	MMR	15-19ASFR
Asia			
Women in non agri. wage employment	-0,45	-0,51	-0,41
Gender equity in 1ary education	-0,50	-0,30	-0,03
Gender equity in 2ary education	-0,75 **	-0,60 *	-0,25
Parliamentary seats held by women	0,08	-0,14	-0,12
Pacific			
Women in non agri. wage employment	-0,67 *	-0,81 **	-0,28
Gender equity in 1ary education	-0,12	-0,69 *	-0,40
Gender equity in 2ary education	-0,57 *	-0,59 *	-0,61 *
Parliamentary seats held by women	-0,42	-0,32	-0,18

** significant at 1% level ; * significant at 5% level.
source: author's calculation from MDG database, http://unstats.un.org/unsd/mdg/Data.aspx ; accessed in October 2009.

Differently from Asia, there are significant negative correlations of most gender equity indicators with mortality indicators in the Pacific. This is probably related with very strong correlations of attended deliveries with both MMR and women in non agricultural wage work. There is also a significant correlation of gender equity in secondary enrolment with adolescent fertility.

In both Asia and the Pacific, there is no significant correlation of the proportions of seats held by women in national parliament with any service, fertility or mortality indicator. The reason is probably the generally low level of female representation in national parliaments, so that this variable is not much discriminative.

4.- Relation between services and population trends and structure

The relations between services and population trends and structure are different from the previously analysed relations between service coverage and demographic processes like mortality and fertility because of a time lag between fertility and mortality decline and declines in population growth and dependency ratios. Population trends are the first to be affected by changes in mortality and fertility. At the very onset of the demographic transition, mortality decline slightly increases population growth. Later, fertility adjusts to increased child survival and population growth starts to decline. Population structure changes more slowly because the beginning of decline in birth cohort size affects only the younger ages, and it is only after 15 years that it affects all of the 0-14 years old and has higher impact on dependency ratio. Thus, whenever the role of services in reducing mortality and fertility has obvious impact on population growth and the advancement in the demographic window of opportunity, this impact takes time to appear. Actually, this impact is both way. High service coverage helps reducing population growth and dependency, and reduced population growth helps increase service coverage. The reduced growth, stabilization and then decline in birth cohort size following the decline in fertility are beneficial for services coverage. Once birth cohort size starts to stabilize and decline, the state no longer needs to increase ante- and postnatal care infrastructures and staff to provide service for growing numbers of deliveries

and infants. Increase coverage rate appears automatically due to declining denominator. - This actually leaves money available to improve the quality of services.

Thus, we can expect different relations between services coverage indicators and the various population trends and structure indicators because of the different timing of changes in these phenomena.

Table 4: Correlation coefficients of services coverage indicators with population trends and structure indicators

	Measles immunization	Attended deliveries	CPR
Asia			
Dependency ratio	-0,60 **	-0,84 **	-0,79 **
Total growth	-0,18	-0,46	-0,62 **
natural growth	-0,37	-0,65 **	-0,78 **
TFR	-0,55 **	-0,74 **	-0,86 **
PPP GDP/capita	0,32	0,53 **	0,34
Pacific			
Dependency ratio	-0,28	-0,28	
Total growth	-0,27	-0,70 **	
natural growth	-0,26	-0,50	
TFR	-0,35	-0,44	
GDP/capita	0,50	0,43	

** significant at 1% level ; * significant at 5% level.
source: author's calculation from MDG database, http://unstats.un.org/unsd/mdg/Data.aspx ; accessed in October 2009.
UN DESA, World Population Prospects 2008.

In Asia, population (total) growth is not significantly negatively correlated with immunization and skill attended deliveries, but it is with CPR. However, correlations with population growth are less strong than with natural growth. Correlations of services coverage with TFR are even stronger than for growth rates. And correlations of dependency ratios with service coverage appear to be the strongest with immunization and deliveries and second behind TFR with CPR. The reason is that dependency ratio is more discriminative than population growth in Asia because while most countries are already engaged in fertility decline, some started much earlier than others and a few ones have already completed fertility transition with even TFR below replacement. Correlations with PPP GDP are the weakest and most often not significant. – Would it mean that there is another time lag between entry into the demographic window and GDP growth, so that this indicator is not yet as discriminative as expected? It should be reminded that the demographic window, according to its complete name 'demographic window of opportunity', is just an opportunity and its positive effect on development is conditional on employment of the youth bulge it creates.

In the Pacific, natural growth and dependency ratios do not provide significant correlations with service indicators. Only total growth shows significant negative correlation with attended deliveries. The reason of the role of total growth is the varied situations of Pacific island countries with more developed emigration countries in Polynesia (Tonga, Samoa, Cook Is.) and part of Micronesia (Marshall Is. and Federated States of Micronesia), and less developed and rapidly growing populations with negligible migration in Melanesia (Papua New Guinea, Solomon Is. and Vanuatu). While Micronesian and Polynesian countries have rather similar natural growth as Melanesian countries, most of it is erased by migration and population is

nearly stable, but population growth is high in Melanesia[7]. Thus, total growth, not natural growth, makes a difference. – This is also confirming the role of birth cohort growth on service coverage (see above)[8]. - The same applies to dependency ratio. Due to combined rather high fertility[9] and mass migration in many Polynesian and Micronesian countries, these countries have nearly the same dependency ratios as Melanesian countries, and this indicator is not discriminative.

5.- Relation between women status and population trends and structure

This relation is a 'distant' one according to our conceptual framework. It is mediated by the role of services on mortality and fertility indicators and, on a longer time frame, by their role in the advancement of the demographic transition and demographic window. In Asia, most gender equity indicators are significantly negatively correlated with population trends and structure, but correlations are frequently weaker than in the above relations, due to the distant link mentioned. Nevertheless, this is a confirmation of the important role of gender equity on population trends and structure.

Table 5: Correlation coefficients of gender MDG indicators with population trends and structure indicators.

Asia	Dependency ratio	Total growth	natural growth	TFR	PPP GDP/capita
W non agri	-0,58 *	-0,56 *	-0,65 **	-0,54 *	0,32
F/M1ary	-0,63 *	-0,45	-0,49	-0,69 **	0,25
F/M2ary	-0,63 *	-0,25	-0,36	-0,57 *	0,26
seats	0,12	-0,01	0,02	0,03	0,03

** significant at 1% level ; * significant at 5% level.
source: author's calculation from MDG database, http://unstats.un.org/unsd/mdg/Data.aspx ; accessed in October 2009.
UN DESA, World Population Prospects 2008.

Similar relation is not obvious in the Pacific with only a weak correlation, significant at 5% level, of gender equity in 2ary education with population growth rate.

6.- Western and Northern Africa

The picture in Western and Northern Africa taken together is not much different from what we have observed in Asia and the Pacific. However, correlations are less strong, with -0.7 for skill attended deliveries with MMR or IMR[10]. It is rather surprising, in comparison to Asian and Pacific countries, to see a stronger correlation of immunization with MMR (-0.76) than for attended deliveries with IMR or MMR – such differences may be due to data quality-, but the correlation of IMR with MMR is high (0.8). There are also strong positive or negative correlations of service coverage with fertility indicators: CPR and 15-19 ASFR, ranging from 0.67 to -0.79; and there is a strong correlation (-0.79) of CPR with 15-19ASFR

[7] A few countries are in intermediate situations (Fiji, Tuvalu, Kiribati, Palau).
[8] The same correlations of population indicators appear with primary education enrolment, showing that coverage of services in health and education are affected in the same way by the growths in birth cohort size and population.
[9] In the first half of the 2000s, TFR was between 3.5 and 4.0 in emigration countries and between 4.0 and 5.0 in the three Melanesian countries mentioned.
[10] Data quality is also an issue in Northern and mostly Western Africa. For instance, it is hard to believe that war-torn Sudan has MMR of 450 p. 100,000.

Table 6: Correlation coefficients of service coverage and gender equity MDG indicators with mortality, fertility and population trends and structure indicators, Northern and Western Africa.

	IMR	MMR	15-19ASFR	CPR
IMR		0,81 **	0,71 **	-0,72 **
MMR	0,81 **		0,81 **	-0,67 **
immunization against measles	0,81 **	-0,76 **	-0,74 **	0,67 **
Skilled attended deliveries	-0,72 **	-0,71 **	-0,79 **	0,75 **

	Measles immunization	Attended deliveries	CPR	IMR	MMR	15-19 ASFR
Women in non agri. wage employment	0,01	0,06	-0,11	-0,02	-0,21	-0,12
Gender equity in 1ary education	0,48 *	0,43	0,27	-0,45	-0,37	-0,59 **
Gender equity in 2ary education	0,63 **	0,57 *	0,63 **	-0,63 **	-0,58 **	-0,78 **
Parliamentary seats held by women	0,04	0,12	-0,14	-0,11	0,04	-0,15

	Measles immunization	Attended deliveries	CPR
Dependency ratio	-0,70 **	-0,77 **	-0,87 **
Total growth	-0,56 *	-0,47	-0,70 **
natural growth	-0,64 **	-0,61 **	-0,78 **
TFR	-0,76 **	-0,75 **	-0,86 **
PPP GDP/capita	0,59 **	0,82 **	0,91 **

	Dependency ratio	Total growth	natural growth	TFR	PPP GDP/capita
W non agri	-0,16	-0,18	-0,14	-0,12	-0,11
F/M1ary	-0,44	-0,14	-0,34	-0,47 *	0,38
F/M2ary	-0,74 **	-0,51	-0,70 **	-0,74 **	0,78 **
seats	-0,03	0,07	-0,08	-0,05	0,02

** significant at 1% level ; * significant at 5% level.
source: author's calculation from MDG database, http://unstats.un.org/unsd/mdg/Data.aspx ; accessed in October 2009.
UN DESA, World Population Prospects 2008.

Correlations of gender indicators with services coverage, including CPR, are not significant except for gender equity in secondary education and the same applies to correlations of gender indicators with demographic processes: IMR or MMR. There are strong negative correlations of gender in 2ary education and secondarily gender in 1ary education with 15-19ASFR. Parliamentary seats held by women do not show any significant correlation in Western and Northern Africa, like in Asia and the Pacific.

The correlations of service coverage with population trends and structure are stronger with dependency ratio (-0.70 with immunization and -0.77 with attended deliveries) and natural growth (respectively -0.64 and -0.61) than with population growth rate (respectively -0.56 and -0.47).

As regards indicators at both ends of our framework, there are also strong correlations (-0.7 or stronger) of gender equity in 2ary education with population trends and structures: TFR, natural growth and dependency ratio, as well as with PPP GDP/capita (-0.78); and there is

also a weak correlation of gender equity in 1ary education with TFR. Correlations are much weaker with population growth rate. Whenever, these correlations are stronger than in the Pacific and Asia, they were observed for more indicators in these regions.

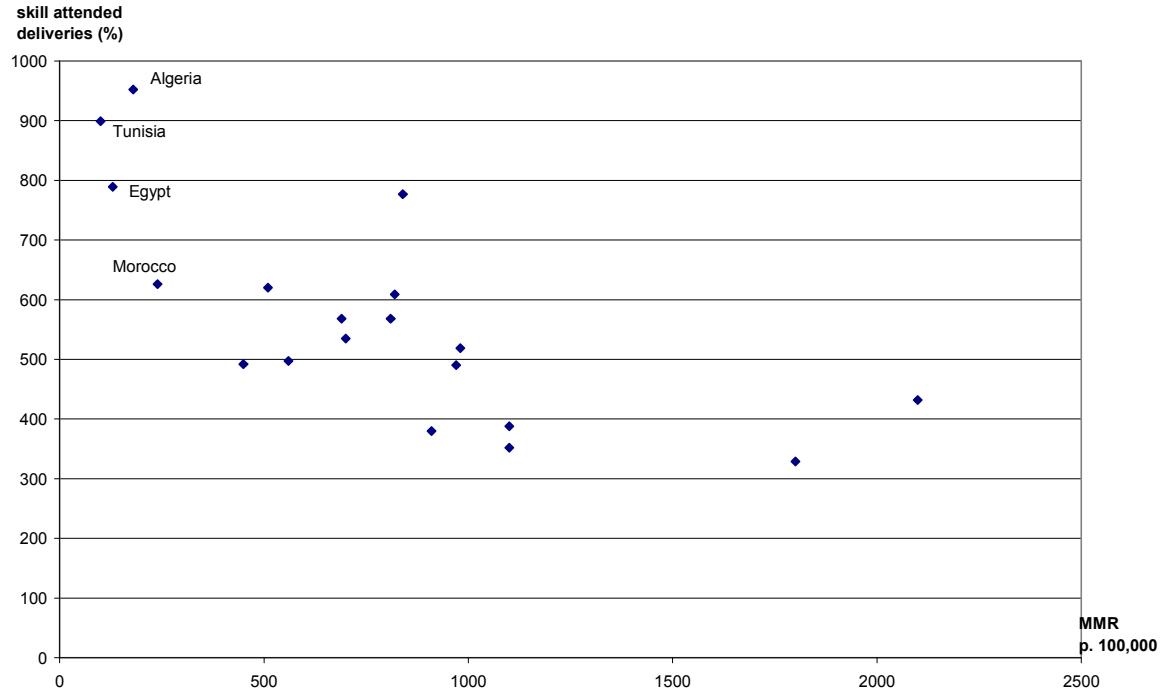

Figure 1: Relation between maternal mortality ratio and deliveries attended by skilled health personal in Western and Northern Africa.
source: MDG database, http://unstats.un.org/unsd/mdg/Data.aspx ; accessed in October 2009.

Actually, in the African regions studied, most of significant correlations are due to Northern Africa and they disappear when we consider only Western African countries, except for weak correlations of MMR with immunization (-0.61) and attended deliveries (-0.55), as well as of the latter with 15-19ASFR (-0.61). Gender indicators also show rarely significant correlations except for gender equity in 1ary education and 15-19ASFR (-0.71) and TFR (-0.56). However, gender in 1ary and 2ary education appears again to be correlated (0.57) with PPP GDP/capita. And the latter is also correlated with 15-19ASFR (-0.59). Contrary to both Asia and the Pacific, no significant correlation appears of service coverage with population trends or structure in Western Africa, except a weak correlation of immunization with TFR (-0.58). Figure 1 shows the big gap that exists between Northern and Western Africa as regards levels of attended deliveries and MMR and this is the reason of the strong relation found within these countries, but little relation appears inside Western Africa alone.

It may be surprising to see that considering Northern African countries results in significant relation between gender indicators and service coverage, demographic processes and trends. Actually, Northern African countries experienced rapid fertility decline, and they already caught up with South Central Asia for TFR and dependency ratios. Thus, CPR, teenagers' fertility, TFR and population growth are low in Northern Africa. Gender indicators are not especially high by international standards: the share of women in non agricultural wage employment reaches only 28% in Morocco, 25% in Tunisia, 18% in Egypt and 15% in Algeria. This is well below an average of 35% in Asian countries under study with often

figures above 40%. However, this is much higher than in the poorest Western African countries where it is around 10%. Gender equity in 1ary and mostly 2ary education is also much higher in Northern Africa than in many Western African countries, reaching above 90 or even above 100 for 2ary education[11] in Algeria and Tunisia.

Conclusion

The relations between MDG indicators of service availability/utilization and demographic processes indicators, as well as the relation of these indicators with gender equity indicators are as expected. Correlations of service coverage and fertility or mortality indicators are the strongest. Correlations of gender equity with services coverage/utilization are often strong and significant, but weaker than the previous ones because service coverage is not only dependent on women empowerment, but also on availability of services, and this further affects the relation between gender equity and demographic processes. Correlations of service coverage with population trends and structure are often the strongest after those with fertility and mortality levels. This is most probably related to the feedback of slower population growth – mostly growth in birth cohort size – on service coverage. Altogether, gender equity appears to have significant impact on demographic processes and social or economic development as the latter is also partly dependent on population trends and mostly age structures, as shown by the theory of the demographic window.

Considering world regions separately to have more homogenous regions has enabled us to see less predictable effects related to migration in the Pacific. Despite the Pacific is the region that has the lowest level of parliamentary seats held by women, the impact of other gender indicators on demographic processes is significant. While the situation in Northern and Western Africa altogether is not much different from Asia-Pacific, Western Africa appears to be very late in the process that leads from service availability and gender equity to demographic change. Increasing service availability, as well as gender equity, would be the starting point of population change and development. Then feedback would occur between population trends or structure and service availability.

[11] These indicators are based on gross enrolment that can be higher than 100%.

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