Sub-Saharan Africa's progress towards MDGs 4 & 5: Do changes in coverage of maternal and child health interventions enlarge or lessen the equity gap?

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1. Introduction

As the year 2015 draws near, the assessment of progress towards the achievement of maternal, newborn and child health (MNCH) Millennium Development Goals (MDGs) in sub-Saharan Africa yields mixed results. Encouragingly, the region has witnessed a consistent acceleration in reducing under-five deaths, particularly since 2000, and the Eastern and Southern sub-regions are reported to have halved their rates of under-five mortality since 1990 (UNICEF, 2013). Maternal mortality on the other hand, declined from 850 per 100,000 live births in 1990 to 500 per 100,000 live births in 2010, for reduction of 41% (UN, 2013). As many MDG-related reports now acknowledge, meeting the MNCH MDG targets will require accelerated interventions along the continuum of care (UN, 2013), coupled with more active efforts to reap the benefits of family planning (FP) on the health of mothers and their infants (Cleland et al., 2012; Cleland et al., 2006).

The health MDGs did not include any equity focus, yet for many regions of the developing world and sub-Saharan Africa in particular, inequity in health is a result of, and contributor to socioeconomic inequalities, and constitutes a major barrier to development (Braveman, 2013; Marmot, 2007; Victora et a., 2003). As a WHO report argues, the goal of the health system is two-fold: attaining the best average level possible, and aiming for the smallest feasible differences between groups (WHO, 2000). Because of continued inequities, there is increasing attention to the study of health inequities recently (Barros et al., 2012; Chopra et al., 2013; Fotso et al., 2013; Victora et al., 2012; Countdown 2008 Equity Analysis Group, 2008).

This paper seeks to contribute to this growing debate. It aims to: a) examine trends in the coverage of MNCH interventions, with attention to identifying any accelerated progress in the recent past; b) compare trends in coverage of interventions with changes in poor-rich inequities over time; and c) draw implications and lessons for applying equity lenses to MNCH programming and for the post-2015 agenda.

2. Data and Methods

We use data from the Demographic and Health Survey (DHS) and the Multiple Indicator Cluster Survey (MICS) programs, selecting all sub-Saharan African countries with four surveys since the 1990s, the first of which was conducted between 1990 and 1995. Working with four data points allows us to estimate not only an overall trend, but also early and recent trends, based on the first three surveys, and the last three, respectively. As of January 2014, there were 15 qualifying countries, including eight countries in Eastern and Southern Africa (ESA), and seven in West and

Central Africa (WCA), as presented in Table 1. Only Cote d'Ivoire has a mix of DHS and MICS datasets. As can be seen, the first surveys took place between 1990 (Nigeria) and 1995 (Uganda); the second surveys were conducted between 1996 (Tanzania) and 2000 (Uganda); the third surveys were between 2001 (Zambia) and 2006 (Uganda); and the fourth and most recent surveys were conducted between 2007 (Zambia) and 2012 (Niger). Guinea and Mali would have also qualified but the data from the 1992 Guinea DHS is not publicly available, and data from 2012 Mali DHS is not yet available.

Selected MNCH Indicators

For the purpose of this analysis, we select three MNCH indicators along the continuum of care: Modern contraceptive use among currently married women; Skilled birth attendance, based on births in the three years preceding the surveys; and full vaccination coverage (BCG, DPT 1-3, Polio 1-3, Measles) among children aged 12-23 months.

Equity variables

Studies on health inequities have used different equity variables, reflecting the different dimensions of poverty (Hong et al., 2010; Wu et al., 2012; Fotso et al., 2013). In this paper, we define two equity variables, both derived from the household wealth: the rich-poor ratio in the total sample, and the same in the urban sample. Our focus on intra-urban disparities is informed by the urban population explosion which is unfolding in the Africa and the newly assembled evidence on the plight of the urban poor (Fotso, 2006; Ezeh et al., 2010).

Out of the 60 datasets (15 countries and four surveys) used, six (Madagascar-1992, Tanzania 1991/92, Zambia-1992, Niger-1992, Nigeria-1999 and Senegal 1992/93) did not contain the inbuilt household wealth index. For these cases, we constructed the wealth index from the available household assets (e.g. presence of electricity and ownership of durables) and housing characteristics (type of toilet, drinking water source, and type of flooring, roof and wall). For all the datasets, the wealth index was recoded as quartiles in the national samples, with categories labeled poor, lower-middle, upper-middle, and rich. Similarly, we reconstructed an urban wealth variable with categories named urban poor, urban lower-middle, urban upper-middle, and urban rich. The resulting equity variables were defined as rich/poor ratio (the value of the indicator in the upper wealth category divided by the value in the lower category) in the national and in the urban samples.

Of interest to the paper is the aggregation of countries by region. We used the population figures of the individual countries from the United Nations Population Division to generate weighted averages of indicators (total values and breakdown by wealth and urban wealth) for West & Central Africa, Eastern & Southern Africa, and the overall total. To account for differential population growth in the selected countries, we used population figures for the years 1992 (to generate regional aggregate for first surveys), 1998 (second surveys), 2004 (third surveys) and 2010 (fourth surveys).

Trend analysis

The time variable, measured by the number of years between the surveys was used to assess trends in the coverage of the selected indicators, and in the associated equity gaps. We used the median date of interview for this purpose. For Tanzania as an example, the median interview date were December 1991, September 1996, December 2004 and March 2010, for survey 1, survey 2, survey 3 and survey 4, respectively. The Time variable takes the values t_1=0 (survey 1), t_2=4.8 (survey 2), t_3=13.0 (survey 3), and t_4=18.3 (survey 4).

3. Preliminary Results

Table 1 present the number of women, births and children used in the analyses.

3.1. Big picture (regional level)

Figures 1-3 present the summary findings for modern CPR (Figure 1), skilled birth assistance (Figure 2), and child vaccination (Figure 3).

3.2. Profile (country level)

Dominant profiles will be extracted from the country-level analyses (not shown).

3.3. Implications and lessons for applying equity lenses to MNCH programming

To be drafted later.

4. Discussion and Conclusion

Table 1. Selected countries, surveys and sample of women, births and children

	Survey year				Sample sizes (total four surveys)					
					Women[1]		Births[2]		Children[3]	
	Survey 1	Survey 2	Survey 3	Survey 4	Total	Urban	Total	Urban	Total	Urban
1. Kenya	1993	1998	2003	2008/09	19,347	4,306	13,365	2,533	4,404	851
2. Madagascar	1992	1997	2003/04	2008/09	24,829	8,551	12,727	3,715	4,219	1,225
3. Malawi	1992	2000	2004/05	2010	36,680	5,651	18,444	2,823	6,335	948
4. Rwanda	1992	2000	2005	2010/11	20,881	3,673	12,096	2,217	3,859	694
5. Tanzania	1991/92	1996	2004/05	2009/10	24,591	5,061	17,772	3,148	6,032	1,071
6. Uganda	1995	2000/01	2006	2011	20,292	4,723	10,865	2,528	3,859	855
7. Zambia	1992	1996/97	2001/02	2007	18,463	6,540	14,905	4,896	5,044	1,601
8. Zimbabwe	1994	1999	2005/06	2010/11	18,026	5,349	10,334	2,611	3,366	880
9. Burkina Faso	1992/93	1998/99	2003	2010	33,059	8,082	16,067	3,451	5,236	1,155
10. Cameroon	1991	1998	2004	2011	23,249	10,426	9,708	4,117	3,319	1,412
11. Cote d'Ivoire	1994	1998/99	2006[a]	2011/12	21,561	8,786	12,361	4,906	4,014	1,652
12. Ghana	1993/94	1998/99	2003	2008	13,077	4,295	7,706	2,170	2,598	767
13. Niger	1992	1998	2006	2012	28,290	7,735	13,798	4,035	4,314	1,336
14. Nigeria	1990	1999	2003	2008	41,615	12,599	23,065	6,958	7,391	2,243
15. Senegal	1992/93	1997	2005	2010/11	31,505	10,248	7,948	2,592	2,595	845
Regional grouping										
ESA[4]					183,109	43,854	110,508	24,471	37,118	8,125
WCA[5]					192,356	62,171	90,653	28,229	29,467	9,410
All 15 countries					375,465	106,025	201,161	52,700	66,585	17,535

[1]Currently married women 15-49 years; [2]Births in the 3 years preceding the surveys; [3]BCG, DPT 1-3, Polio 1-3 and Measles among children 12-23 months
[4]Eastern & Southern Africa: Kenya-Zimbabwe; [5]West & Central Africa: Burkina Faso-Senegal
[a]From the MICS program; all other datasets are from the DHS program

Figure 1: Trends in coverage (solid lines and left Y-axis) and equity gap (dotted lined and right Y-axis): Modern CPR

Figure 1.a: All countries

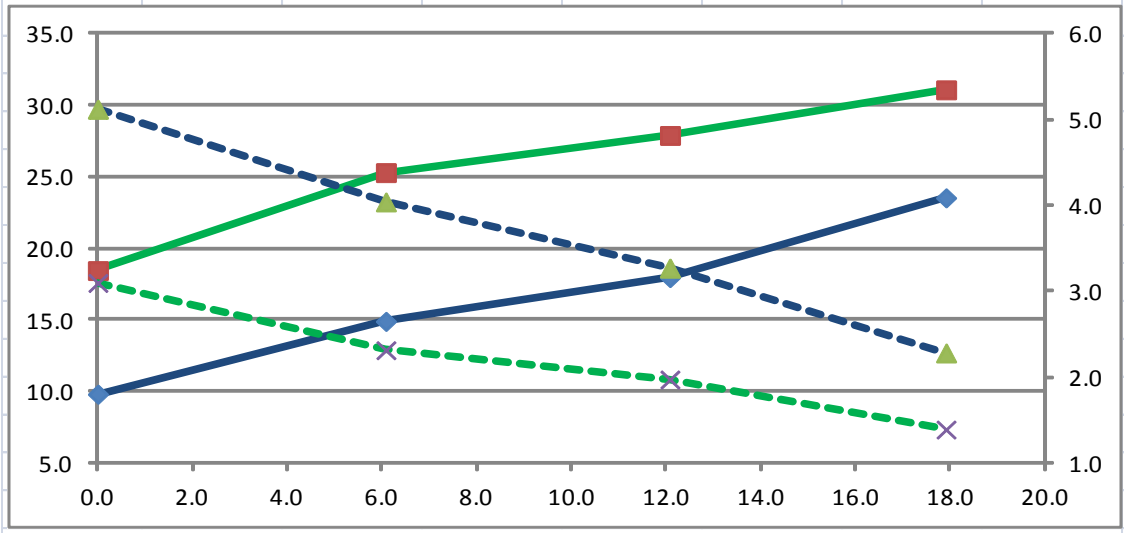


Figure 1.b: Eastern and Southern African countries

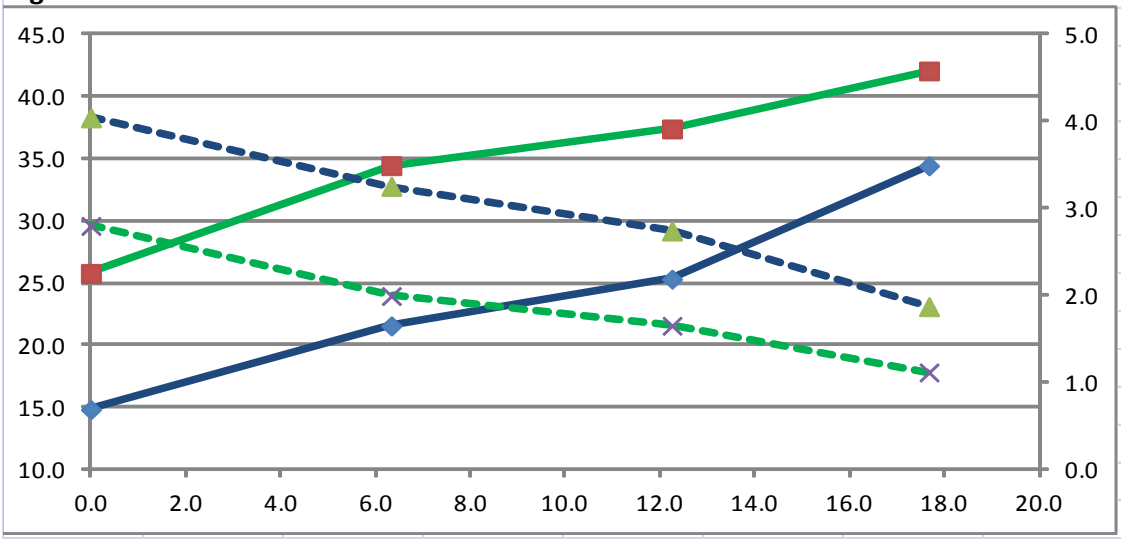


Figure 1.c: West and Central African countries

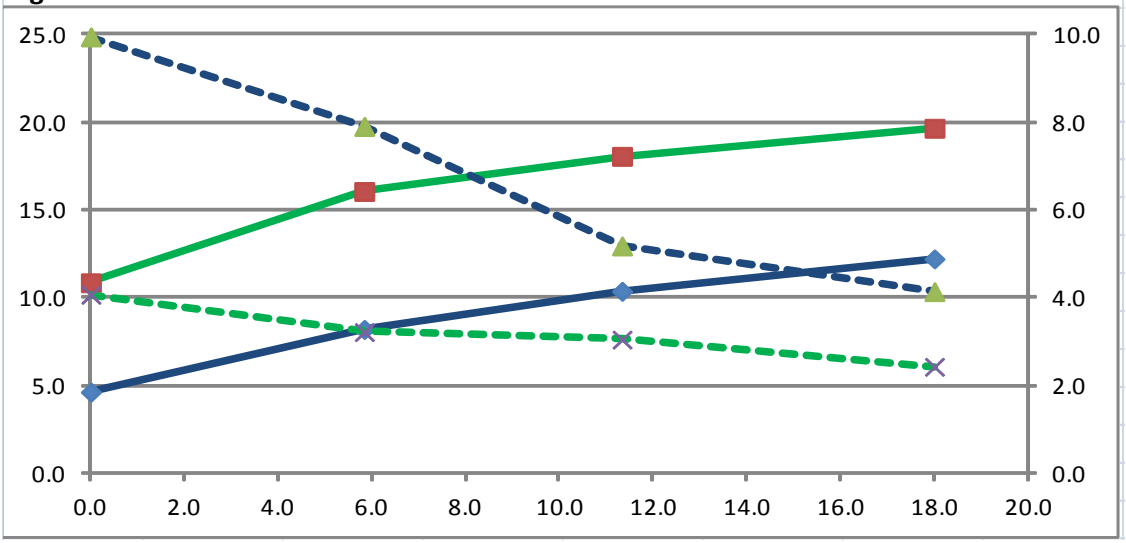


Figure 2: Trends in coverage (solid lines and left Y-axis) and equity gap (dotted lined and right Y-axis): Skilled birth attendance

Figure 2.a: All countries

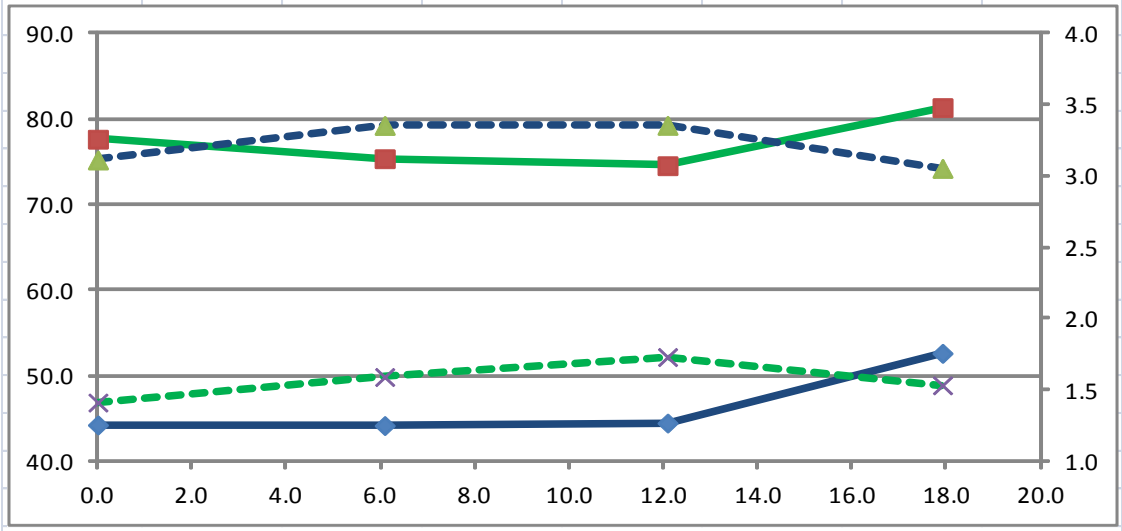


Figure 2.b: Eastern and Southern African countries

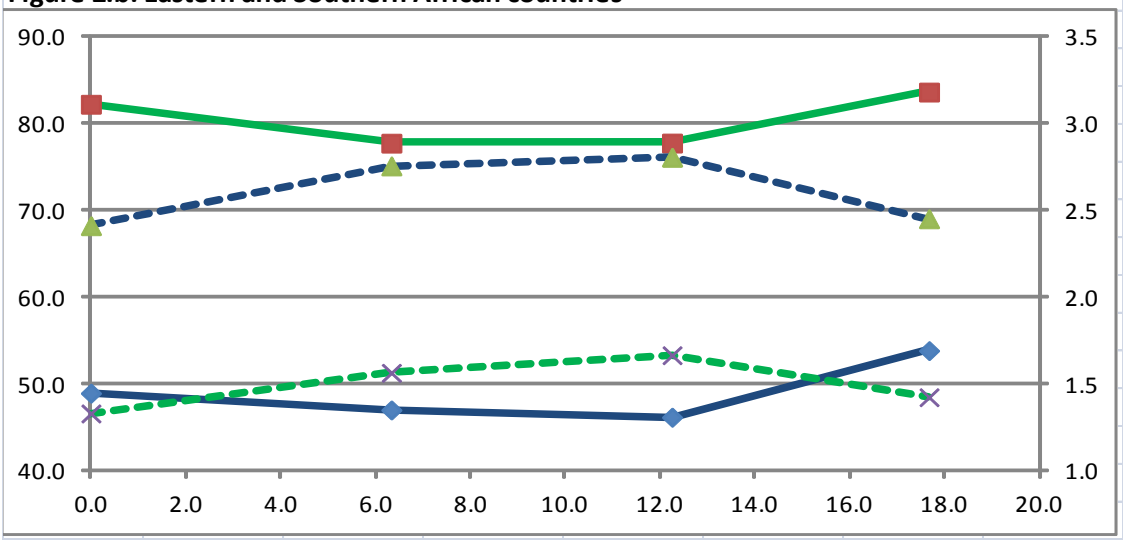


Figure 2.c: West and Central African countries

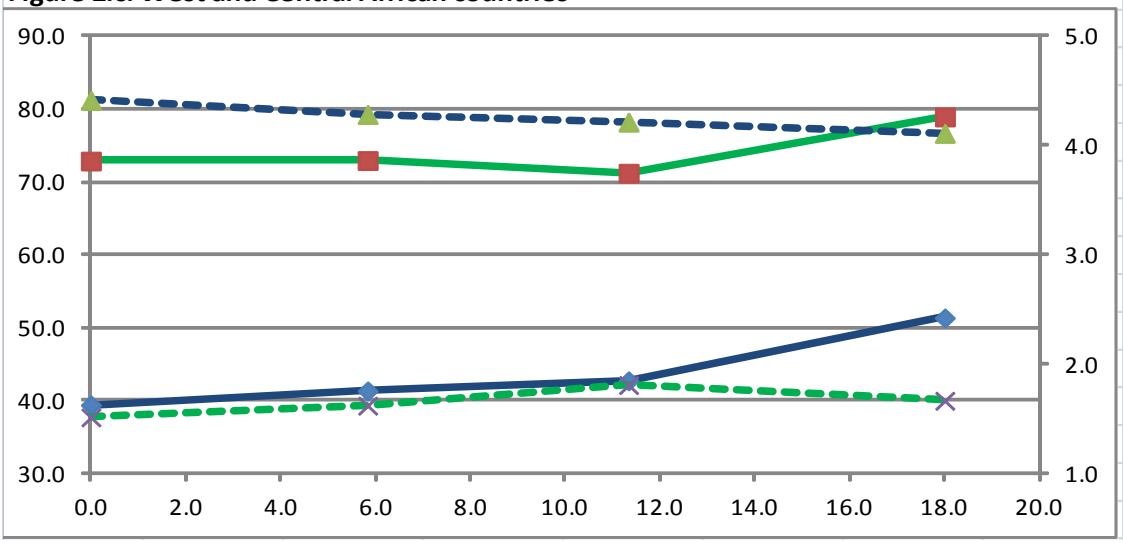


Figure 3: Trends in coverage (solid lines and left Y-axis) and equity gap (dotted lined and right Y-axis): Child vaccination

Figure 3.a: All countries

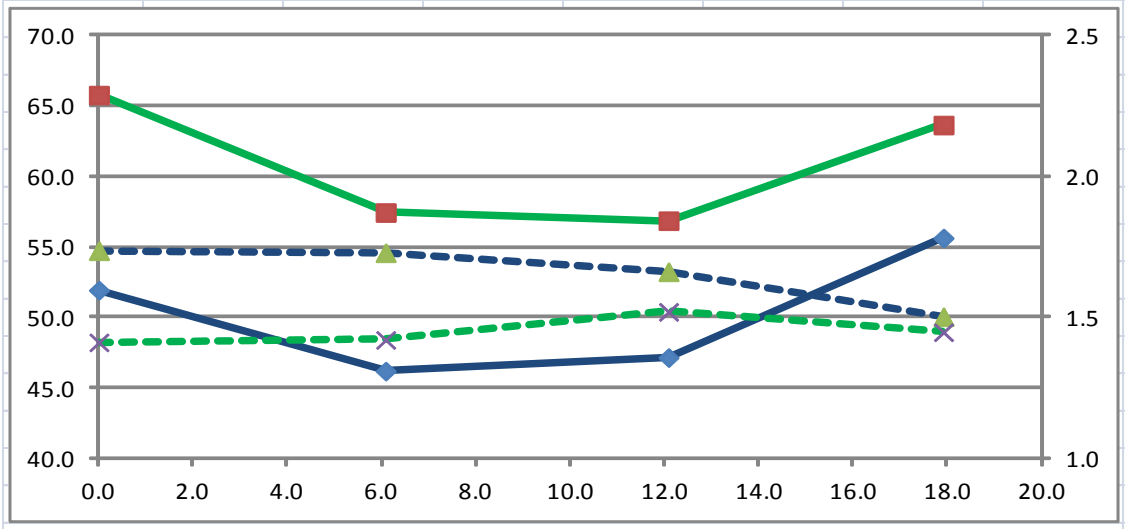


Figure 3.b: Eastern and Southern African countries

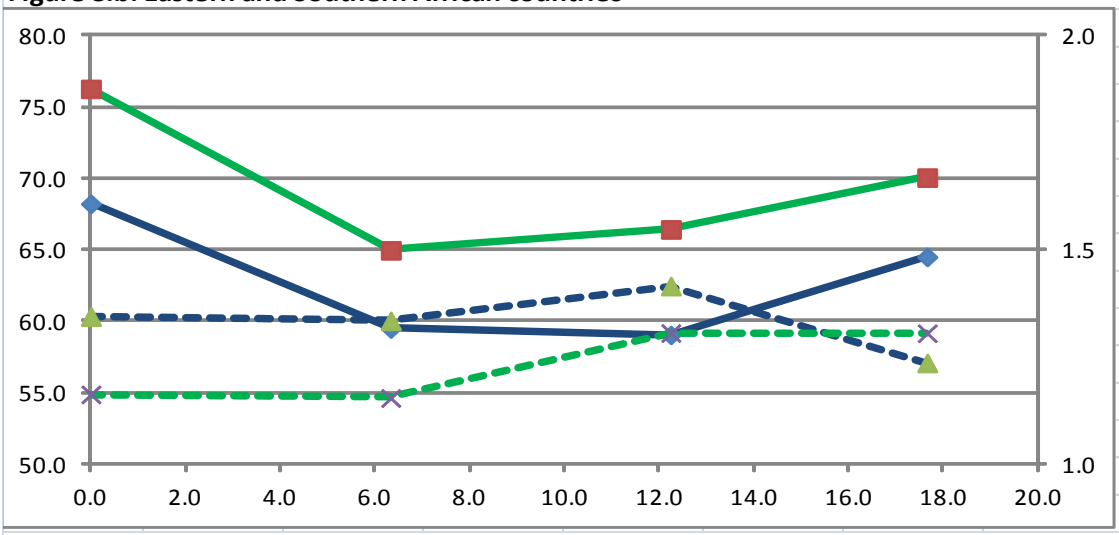
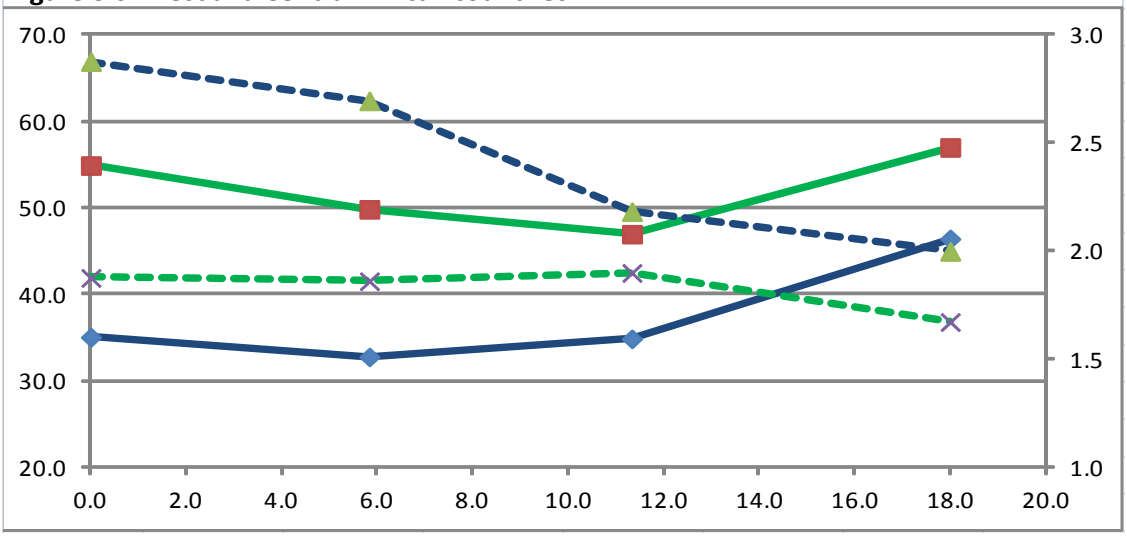


Figure 3.c: West and Central African countries



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