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An empirical analysis of the influence of country quality of institutions on gender empowerment in Sub-Saharan Africa

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The Millennium Development Goals (MDGs) recognise gender empowerment as an effective strategy to enhance human development, combat poverty and stimulate sustainable development. Governments in Sub-Saharan Africa (SSA) pledged commitment by undertaking a number of declarations and policy initiatives to address gender issues in development. Putting socially equitable policies into practice may be influenced by the quality of institutions in these countries. We examined the influence of country quality of institutions and gender empowerment in SSA. We used country-level data on and indicators of quality of institutions for the period 2000-2009. We estimated a random effects model of gender empowerment, specified as a function of measures of quality of institutions, sub-regional location, and post-2005 MDG declarations by SSA countries. We found important sub-regional differences in gender empowerment. Measures of gender empowerment increased generally across the regions post-2005 MDG declaration. However, East Africa recorded highest increase (8.1%), whilst Central Africa recorded a decline of -1.6%. We also found differential effects between formal and informal institutions on gender empowerment. The findings provided a context-specific understanding of the factors mitigating or otherwise, the commitment of governments in SSA to improve gender empowerment.

Keywords: Gender empowerment; Institutions; Millennium Development Goals; Random effects model; Sub-Saharan Africa.

INTRODUCTION

Empowerment involves people having greater capacity to make choices and capacity to act on them for the benefit of their well-being and those of their households (Kabeer, 2005). It is generally accepted that promoting gender empowerment, especially women's is essential to achieving the developmental goals of countries in Africa, including human development, poverty eradication and economic growth. The MDGs recognise the importance of gender empowerment as an effective strategy to combat poverty and to stimulate sustainable development (United Nations, 2000).

Promoting women empowerment is recognised as a critical aspect of the gender equality, emphasising policies redressing power imbalances, and affording

women greater opportunities to make informed decisions and manage their own lives and those of their households. Women's empowerment is recognised as vital to sustainable development and ensuring human rights for all (United Nations Population Fund, UNFPA, 2004). As such, reducing gender disparity in education and greater representation of women in national parliaments are recognised as the two related areas to achieve this (UNDP, 2000, 2005).

These related areas have the potentials to make positive changes in the lives of women. Education can initiate a change in power relationships within households (Kabeer, 2005). More educated women are less likely to be victims of domestic violence and are more likely to make informed decisions (e.g. Sen 1999, 12; Schuler et al., 1996). On the other hand, political representation is empowerment, as it relates to women having greater capacity to contribute to policy making process, especially decisions relating to gender issues in the

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country. The two areas are related in the sense that the more educated women are also more likely to participate in the political process in the country.

African governments have undertaken a number of declarations and policy initiatives to address gender issues in development. At the global level, the 2005 World summit in New York provided a platform for African heads of state, amongst others, to pledge their commitment to adopt national policies and strategies for achieving the Millennium Development Goals by 2006 (United Nations, 2005).

At the regional level, African governments pledged to actively promote gender parity principles, and implement legislations that guarantee women's property rights, amongst other commitments (African Union, AU, 2004), this was a major outcome of the Solemn Declaration on Gender Equality in Africa in Addis Ababa in 2004. Also, the various charters and mission statements of the AU recognise gender empowerment as essential element to achieving sustainable development (e.g. United Nations Economic Commission for Africa, UNECA, 2008). In addition, African governments have established various institutional mechanisms to mainstream gender in the formulation of policies and to undertake advocacy (African Development Forum, ADF, 2008).

In assessing the progress made against the background of these global and regional initiatives however, the conclusion has been that the normative gains are yet to be fully realised, suggesting that considerable gaps remain between socially equitable policies and practice (ADF, 2008). The recent progress report on the achievement of the MDGs indicate that despite modest improvement made in other areas, gender-based inequalities in decision-making power has persisted (UNDESA, 2013).

The theoretical literature emphasises the importance of key inter-related institutional areas defining social relations in a country determining the extent to which these goals are achieved (World Bank, 2001; Kabeer 2005; Goetz, 2003). This is particularly important for countries in SSA, where social relations are defined largely by cultural norms and traditional practices that make women generally subservient to men, thereby constrains their access to resources and ownership of productive assets (e.g. property rights) (Golla et al., 2011).

In their descriptive analysis of the major obstacles facing gender equality and empowerment in Africa, the African Development Forum identify institutional factors, including the presence of strong cultural and traditional practices constraining progress in the identified areas (ADF, 2008). These theoretical and descriptive overviews suggest potential relationship between gender empowerment and country institutions. However, there is little empirical analysis exploring this potential relationship.

There is widespread consensus that institutions matter

for development (Trebilock and Prado, 2011), just as gender empowerment. Institutions are the set of formal and informal rules and norms that shape behaviour in a society. A large body of literature indicates that institutions play the most crucial role in the process of empowering people and in the economic and social development of a country (Roy et al., 2008). Empowering people provides incentives for them to use their capabilities to improve their social and economic circumstances, thereby enhancing the level of socioeconomic development of the country. Also, prosperous countries are those where property rights are clearly defined and protected, the rule of law is established and enforced, and citizens irrespective of gender, have political and civil liberties (Coyne and Sober, 2010; Acemoglu and Johnson, 2005).

This paper contributes to the growing body of literature on gender empowerment-institutions relationship by examining empirically, the influence of country quality of institutions on gender empowerment in Sub-Saharan Africa. We model gender empowerment, specifically looking at the influence of quality of institutions on women representation at the national legislatures in 45 Sub-Saharan African countries. We feature the roles of levels of education (primary, secondary, and tertiary), the influence of the post-2005 MDG declaration as well as sub-regional differences in gender empowerment.

Using random effects econometric techniques, we analyse measures of quality of institutions commonly used in the literature. These measures capture the various aspects of institutional development including social, economic, and political institutions. We use country level data on gender-related areas of MDGs (MDG3: gender disparity in education and female representation in national legislatures), complemented with indicators of institutions data obtained from other sources covering the period 2000-2009 (10 years). We also employ model specification that allow for correlated individual country effects.

An empirical analysis of the potential influence of country quality of institutions on gender empowerment is important for some reasons. First, such an analysis enhances a context-specific understanding of the underlying factors that may help explain gaps between policy-making and practice.

The paper is organised as follows. The next section (Section 2) describes the materials and methods used. The descriptive and regression results are presented in Section 3. Section 4 presents the discussion.

MATERIALS AND METHODS

Data

Data for the analysis were obtained from several sources online. The MDGs address key development challenges

relevant to African countries generally, with two explicitly gender-related areas (MGD3: gender disparity in education and female representation in national legislatures, and MDG5: maternal mortality). Data on gender empowerment were obtained from a databank of the official United Nations site for the MDGsⁱ. We obtained data on the gender parity index for various levels of education (e.g. primary, secondary and tertiary education). The gender parity index measures the ratio of literate women to men. The bigger the ratio, the higher the proportion of literate women. It also provides information about the proportion (and number) of women compared to men; indeed any ratio greater than 1 is an indication of a great proportion of literate women compared to men.

Another source of data for this analysis is the World Bank Development Statisticsⁱⁱ, which provides data on several development indicators grouped in terms of health, labour and social protection, economic policy and external debt, education, infrastructure, etc. It is here that we obtain data on measures such as per capita growth in Gross Domestic Product (GDP).

Finally, we source data on the measures of quality of institutions from the Economic Freedom of the World (EFW) data sets, collected by the Frazer Instituteⁱⁱⁱ, and the index of Economic Freedom collected by The Heritage Foundation^{iv,v}. The EFW index is a summary measure of five different areas of a country's quality of institutions, covering 191 countries (Gwartney et al., 2010). From the EFW data set, we use the data on legal structure and security of property rights (Area 2). This is measured on a scale ranging between 0 (least free) to 10 (most free), indicating the degree to which the policies and institutions of a country are supportive of economic freedom in such areas as judicial independence, impartial courts, protection of property rights, adherence to the rule of law, integrity of the legal system, legal enforcement of contracts and regulatory restrictions on the ownership and sale of property^{vi,vii}.

From the Heritage Foundation data set, we used the data on business freedom and regulation (Component 1), and freedom from corruption (Component 9). Each of these was measured on a scale ranging between 0 to 100, where 100 represents the maximum freedom. Business freedom measures the overall burden of regulation of business as well as the efficiency of government in the regulatory process. A score of 100 indicates the most friendly business environment. Freedom of corruption is derived originally from Transparency International's Corruption Perceptions Index, which measures the level of corruption in 180 countries^{viii,ix}.

From all the data sources, we also created regional indicators based on the World Health Organisation (WHO) Africa region for Sub-Saharan Africa (SSA) such as West Africa (includes countries such as Cote D'Ivoire, Nigeria), Southern Africa (includes countries such as

South Africa and Zimbabwe), East Africa (includes countries such as Kenya and Uganda), and Central Africa (includes countries such as Cameroon and Central African Republic). Although all data sources cover longer periods of data, for purposes of obtaining more useful data, we restricted attention to indicators for which we have a complete data for the period 2000 to 2009.

Model

We consider a linear random effects model in which there are repeated measurements in periods (*t*) for each individual country (*i*). The model estimated has the general form of an individual-effects model (For a formal presentation of panel data models and estimation, see Baltagi, 2005):

$$y_{it} = X_{it} \beta + \gamma_i + e_{it} \quad (1)$$

i = 1, ... *n*; *t* = 1, ... *T*

Where *y_{it}* is the observed individual country measure of gender empowerment (dependent variable) in each of the *t* years, and *X* is a vector of observed independent variables; and *β* is a vector of parameters to be estimated. The error term in equation (1) consists of two elements: *γ_i* and *e_{it}*; where the term *γ_i* is a random country-specific unobserved effect or unobserved characteristics of country *i* that remains constant overtime with *γ_i* ~ (*γ*, *γ_a²*), and the term *e_{it}* is an idiosyncratic error with *e_{it}* ~ (0, *γ_e²*).

Given the variance of *γ_i* and *e_{it}*, the total variance (*γ_u²*) is given by:

$$\gamma_u^2 = (\gamma_a^2 + \gamma_e^2) \quad (2);$$

and given a covariance *Cov(u_{it}, u_{is}) = γ_a²* for all *s* 0 *t*, the intra-country correlation of the error terms (*ρ*) is given by:

$$\rho = \gamma_a^2 / (\gamma_a^2 + \gamma_e^2) \quad (3)$$

The intra-country correlation coefficient is the proportion of the total variation of the error term attributed to the individual effects.

In panel data models, an important issue to address is whether individual country effects *γ_i* are correlated with the observed independent variables *X*. If this is the case, the regression will yield an inconsistent estimate of *β* (Cameron and Trivedi, 2009). The general approach to address this problem is to eliminate the fixed affects *γ_i*. Therefore, we employ the Mundlak (1978) fixed-effects

Table 1. Summary statistics of variables (2000-2009)

Variable	Mean	SD	MIN	Max
% of parliamentary seats held by women	13.863	9.076	1.20	56.30
Log of % of parliamentary seats held by women	2.419	0.681	0.18	4.03
gender parity index-primary	0.899	0.107	0.61	1.08
Log of gender parity index-primary	-0.114	0.126	-0.49	0.08
gender parity index-secondary	0.810	0.221	0.28	1.38
Log of gender parity index-secondary	-0.252	0.298	-1.27	0.32
gender parity index-secondary	0.599	0.338	0.06	1.66
Log of gender parity index-secondary	-0.683	0.614	-2.81	0.51
GDP per capita growth (annual %)	1.705	4.536	-17.79	29.06
Log of GDP per capita growth (annual %)	0.876	0.989	-3.50	3.37
Legal structure& property rights (out of 10)	4.627	1.355	1.02	8.15
Log of legal structure& property rights	1.485	0.318	0.02	2.10
Business freedom incl. regulation (out of 100)	55.679	11.745	18.30	85.00
Log of business freedom incl. regulations	3.996	0.226	2.91	4.44
Freedom from corruption (out of 100)	27.586	12.903	10.00	70.00
Log of freedom from corruption	3.195	0.519	2.3	4.2
Region1 – West Africa	0.378	0.485	0	1
Region2 – Southern Africa	0.311	0.463	0	1
Region3 – Eastern Africa	0.156	0.363	0	1
Region4 – Central Africa	0.156	0.363	0	1
Post-2005 MDG	0.4	0.490	0	1

approach to dealing with correlated error terms by taking the mean deviations of each of the time-varying covariates as the deviation from within-country means (Another approach is the first differencing approach, by substituting the value of the time varying variables in $t-1$ from the value in period t , e.g. Jones, 2005).

In our analysis, the independent variables (X_{it}) consist of both time-varying indicators of quality of institutions including gender disparities in education (primary, secondary and tertiary), annual GDP growth rate, legal structure and property rights, index of business freedom, and index of freedom from corruption) and a fixed time-invariant factor (sub-region of location). In order to capture the possible effect of the post-2005 MDG declaration, we use the year dummies to create a binary variable (*post2005MDG*) taking the value of 1 in the post-2005 MDG period (i.e. 2006 to 2009) and the value 0, if otherwise^x. We expect the level of gender empowerment to increase with improvement in indicators of quality of institutions, and in the post-2005 MDG period.

RESULTS

Descriptive results

Table 1 shows the descriptive statistics of the variables.

More than half of the data used in this analysis covered countries in West Africa (38 percent) and Southern Africa (31 percent). Descriptive statistics of other variables showed mean differences in gender parity index for primary education (9 percent), secondary education (8 percent) and tertiary education (6 percent). This suggested that over the period, women were less empowered relative to men, at higher levels of education.

There was also a great variation in gender parity index at higher levels of education. GDP per capita grew at an average annual rate of 2 percent, even as there was a 5 percent variation between all the countries analysed. The average score for legal structure and property rights was about half (5 out of 10), and business freedom was a little above half (56 out of 100), and freedom from corruption was well below 30% (28 out of 100). The variations in these institutional variables were generally low at approximately 14%, 12% and 13%, respectively.

Looking at the share (%) of parliamentary seats held by women on average, women in SSA held about 14 percent of the total seats in parliament in their respective countries over the period from year 2000 to 2009. This is consistent with the global average found by Goetz (2003). This proportion ranged from 1 percent to 56 percent, and also varied over time and between countries and regions. Figure 1 presents the distribution of the proportions of parliamentary seats held by women over the study period, broken down into four SSA sub-regions.

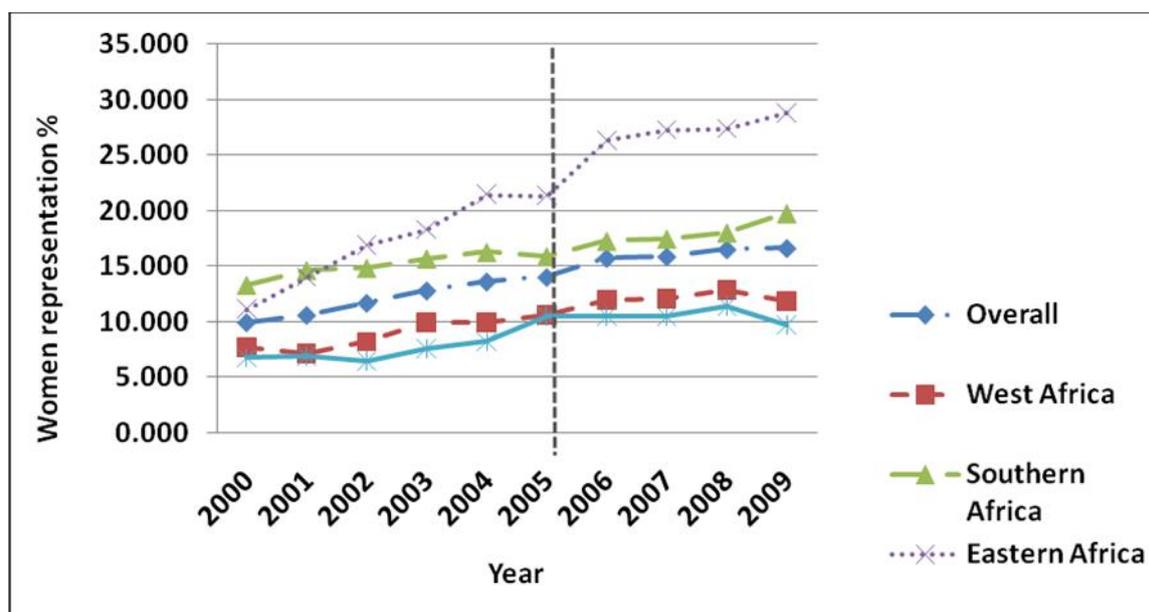


Figure 1: Distribution of gender empowerment overtime

Table 2. Changes in share of women in national legislatures (2000-2009)

Year	Overall	West Africa	Southern Africa	East Africa	Central Africa
2000	-	-	-	-	-
2001	6.657	-7.072	10.099	25.976	2.217
2002	10.412	15.219	1.368	20.756	-6.602
2003	9.505	21.100	5.708	8.206	17.389
2004	6.375	0.251	3.780	17.358	8.571
2005	2.998	6.721	-2.399	-0.533	27.733
2006	12.260	12.466	8.821	23.309	-0.023
2007	0.918	0.595	1.117	3.585	-0.408
2008	4.108	6.830	3.190	0.425	9.141
2009	0.645	-8.128	9.711	5.269	-15.000
average annual	5.986	5.331	4.599	11.594	4.780
Av. post_MDG	4.483	2.941	5.710	8.147	-1.572

There were general upward trends in women empowerment in all sub-regions, although the rates of empowerment differed by sub-region. For example, East Africa had overall greater levels as well as changes in the levels of empowerment compared to the average SSA regional levels and to the levels in other sub-regions. This was followed by Southern Africa, which also recorded above regional average levels of women empowerment. Central Africa has the lowest levels of women empowerment overtime.

The dashed vertical line in Figure 1 indicates the 2005 MDG declaration. The year 2006 corresponds to the year that African heads of state pledged their commitment to put in place policies and strategies for achieving MGDs.

Two interesting points are worth noting. Firstly, the overall rate of increase in the share (%) of women in national legislatures in SSA increased during 2005/06 was significantly higher than the increase during 2004/05, but this increase appeared to level off afterwards. In terms of annual changes (Table 2), this result corresponds to an increase from 3% during 2004/05 to 12.3% during 2005/06, representing more than 4 times as great, but has declined generally afterwards.

Secondly, at the sub-regional level however, similar trends were observed for all of the sub-regions, except Central Africa, which recorded a significant decline (-0.023%) during 2005/06. More generally, countries in East Africa appear to respond to the post-2005 MDG

declaration more significantly than countries in any other sub-regions in SSA. The change in the share (%) of parliamentary seats held by women post-2005 MDG declaration is highest for East Africa (8.1%), whilst it declined by about -2% annually in Central Africa. In addition, the gap between East Africa and the other sub-regions in terms of gender empowerment, continued to widen more significantly since the post-2005 MDG declaration (Figure 1).

Regression results

Tables 3 and 4 show the regression results for the random effects estimation and random effects estimation with Mundlak (1978) specification, respectively. The Mundlak specification provides a way of relaxing the assumption of uncorrelated individual effects. The dependent variable was gender-empowerment as measured by the share (%) of parliamentary seats held by women. We used the Stata vs. 11 for estimations. Separate models were estimated for the three stages of education attainment; that is, primary, secondary and tertiary^{x1}. In estimation, we used a stepwise approach, which allowed us to use an education variable at a time and observe how the results change as more indicators of quality of institutions were included. Firstly, we estimated a model with only education (Basic model), sub-region of location and post-MDG declaration, and a model with additional institutional variables ('with added institutions') included. In order to aid interpretation, the coefficients on the time-varying variables are the elasticities measuring the percentage change in gender-empowerment attributed to 1% percentage change in a particular covariate, whilst controlling for other covariates.

Firstly, we examined the elasticities measuring the relative changes in gender-empowerment attributed to relative changes in gender parity index by levels of education (primary, secondary and tertiary). When gender parity index in primary education was used and controlling for other covariates, the result indicates that 1% increase in gender parity index in primary education increased the share of women representation by 2.24% on average, which was elastic and highly statistically significant. This inelastic result remained consistent when other indicators of quality of institutions were controlled for.

When gender parity index in secondary education was used and controlling for other covariates, the coefficient of elasticity was positive but statistically not different from zero. With the inclusion of other indicators of quality of institution however, the result indicated that 1% increase in gender parity index in primary education increased the share of women representation by only 0.92% on average (inelastic), which narrowly missed the unit elasticity threshold of 1), but statistically significant at the 5% level. The relative change in gender empowerment

attributed to gender parity index in tertiary education was negative and statistically not different from zero. The results suggest that the level of education has differential impacts on gender-empowerment, with primary education showing the strongest impact.

Next, we examined the effect of sub-region of location pre- and post-2005 MDG declaration. Again, the results differ according to the education variable used in the model. In the pre-MDG period (2000-2005), the share of women in national legislature increased significantly in Eastern Africa than in West Africa (reference sub-region). There was no statistical difference between the reference sub-region, Southern Africa and Central Africa. In the post-MDG period (2006-2009) however, the share of women in national legislature increased significantly in all of the sub-regions but Central Africa, where the increase was statistically not different from zero. Comparing between the pre- and post-2005 MDG periods, gender empowerment improved in most of the sub-regions, except for Central Africa.

Controlling for gender parity in higher levels of education (i.e. secondary and tertiary), both Southern and Eastern Africa sub-regions have statistically significant increase in gender empowerment in the pre-2005 MDG declaration compared to West Africa. Also, the estimate and level of statistical significance appeared to increase with the level of education. For example, the decline in gender-empowerment in Central Africa pre-2005 MDG, became statistically significant in the models controlling for gender parity in secondary and tertiary education.

We also examined the elasticities measuring the relative changes in gender-empowerment attributed to relative changes in the other indicators of quality of institutions. The results indicated that 1% increase in freedom of corruption decreased the share of women representation by -0.05%, -0.018%, and -0.071% on average, respectively. These coefficients of elasticity were within the inelastic range but were statistically significant. None of the remaining indicators of quality of institutions were statistically significant. In the model controlling for gender parity in tertiary education however, the coefficient of elasticity was positive and statistically significant, suggesting that 1% increase in legal structure and property rights index increased the share of women representation by 0.165% (inelastic).

Some differences were observed in the models with Mundlak (1978) specification. Firstly, the results on levels of education were not sensitive to model specification. However, eliminating the unobserved individual-effects (α_i) in the Mundlak specification improved our understanding of the results to some extent. The degree of response of gender-empowerment to changes in gender parity in primary education increased to approximately 3.00%, whilst the inclusion of other indicators of quality of institution made little difference to the previous results.

Largely because of the structure of our data with little

Table 3: Random effects regression results

Variable: ^{1,2}	Primary		Secondary		Tertiary	
	Basic	with added institutions	Basic	with added institutions	Basic	with added institutions
Log (gender parity-primary)	2.239*** (0.490)	2.074*** (0.679)				
Log (gender parity-secondary)			0.229 (0.289)	0.919** (0.413)		
Log (gender parity-tertiary)					-0.0976 (0.139)	-0.0699 (0.194)
Log(economic growth)		-0.00149 (0.0372)		-0.00664 (0.0454)		0.0371 (0.0585)
Log(legal & property rights)		-0.0955 (0.116)		-0.207 (0.140)		0.165* (0.092)
Log(business freedom)		0.196 (0.141)		0.118 (0.179)		0.0560 (0.232)
Log(freedom from corruption)		-0.0547* (0.0312)		-0.0184** (0.0076)		-0.0707* (0.0401)
Region2(Southern Africa) ³	0.103 (0.216)	0.319 (0.337)	0.406* (0.244)	0.566 (0.373)	0.436* (0.246)	0.392 (0.426)
Region3 (East Africa)	0.516** (0.248)	0.503 (0.372)	0.681*** (0.264)	0.625* (0.361)	0.562** (0.248)	0.760* (0.413)
Region3 (Central Africa)	-0.0588 (0.251)	-0.210 (0.192)	-0.0615 (0.284)	-0.332* (0.183)	-0.0943 (0.073)	-0.299* (0.150)
Post_mdg#(West Africa)	0.242*** (0.0784)	0.0090 (0.0866)	0.361*** (0.0880)	0.0698 (0.0931)	0.550*** (0.114)	-0.0337 (0.156)
Post_mdg#(Southern Africa)	0.397* (0.220)	0.596* (0.345)	0.762*** (0.252)	0.882** (0.384)	0.836*** (0.267)	0.852* (0.449)
Post_mdg#(East Africa)	0.904*** (0.257)	0.799** (0.383)	1.182*** (0.267)	1.017*** (0.361)	1.276*** (0.273)	1.253*** (0.426)
Post_mdg#(Central Africa)	0.172 (0.255)	0.123 (0.420)	0.311 (0.290)	0.217 (0.417)	0.134 (0.272)	-0.155 (0.596)
Constant	2.410*** (0.165)	3.464*** (0.652)	2.064*** (0.186)	3.100*** (0.796)	1.900*** (0.193)	2.111* (1.133)
Wald (Chi2) test ⁵	120.7	95.2	82.8	76.1	62.5	33.0
Obs.	355	142	284	113	192	75
No. of country	43	23	41	20	36	19

Notes: ¹ The dependent variable = Log (% of women in national legislature); ² Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1; ³Reference sub-region = West Africa; ^{4,5}The p-value for each of the models =0.000.

within variations overtime, the coefficients on the mean deviation variables were of interest. The coefficient on the mean deviations indicated that whilst indicators of quality of institutions such as the economy imposes a positive and statistically significant individual effects on gender-

empowerment, legal structure and property rights, freedom from corruption imposed negative and statistically significant individual effects on gender empowerment. Notice also that except for East Africa, the effect of sub-region of location disappeared once the

Table 4: Random effects regression results with Mundlak (1978) specification

Variable: ^{1, 2}	Primary		Secondary		Tertiary	
	Basic	with added institutions	Basic	with added institutions	Basic	with added institutions
Log (gender parity-primary)	2.975*** (0.618)	1.904** (0.789)				
Mean(gender parity-primary)	-2.131* (1.111)	-1.424 (2.070)				
Log (gender parity-secondary)			0.211 (0.412)	0.987* (0.578)		
mean(gender parity-secondary)			0.045 (0.032)	-1.116 (1.464)		
Log (gender parity-tertiary)					-0.0955 (0.184)	-0.261 (0.204)
mean (gender parity-tertiary)					-0.0129 (0.469)	1.354 (1.374)
Log(economic growth)		-0.0138 (0.0370)		-0.0164 (0.0456)		0.0287 (0.0551)
Mean(economic growth)		0.162*** (0.0553)		0.157** (0.0647)		0.136** (0.0669)
Log(legal & property rights)		-0.0849 (0.116)		-0.168 (0.139)		0.159 (0.277)
Mean(legal & property rights)		-0.468** (0.203)		-0.473** (0.232)		-0.556* (0.329)
Log(business freedom)		0.230* (0.140)		0.160 (0.176)		0.201* (0.114)
Mean(business freedom)		-0.0133 (0.0031)		-0.0116 (0.0276)		-0.0115 (0.0491)
Log(freedom from corruption)		-0.0780* (0.0433)		-0.0536** (0.0247)		-0.145 (0.101)
Mean(corruption)		-0.0494** (0.0238)		-0.0508** (0.0223)		-0.0675** (0.0327)
Region2(Southern Africa) ³	0.246 (0.230)	0.386 (0.414)	0.399 (0.265)	0.570 (0.468)	0.441 (0.275)	-0.0243 (0.684)
Region3 (East Africa)	0.612** (0.255)	0.566 (0.472)	0.680** (0.267)	0.660 (0.431)	0.562** (0.253)	0.599 (0.528)
Region3 (Central Africa)	-0.0691 (0.253)	-0.200 (0.352)	-0.0606 (0.287)	-0.0494 (0.369)	-0.0946 (0.277)	-0.164 (0.709)
Post_mdg#(West Africa)	0.189** (0.0827)	0.0132 (0.0911)	0.362*** (0.0909)	0.0552 (0.0942)	0.549*** (0.116)	-0.106 (0.147)
Post_mdg#(Southern Africa)	0.529** (0.231)	0.665 (0.417)	0.756*** (0.270)	0.886* (0.470)	0.842*** (0.293)	0.462 (0.690)
Post_mdg#(East Africa)	0.952*** (0.260)	0.866* (0.472)	1.181*** (0.269)	1.049** (0.432)	1.276*** (0.280)	1.135** (0.535)
Post_mdg#(Central Africa)	0.139 (0.257)	0.122 (0.381)	0.315 (0.298)	0.160 (0.401)	0.133 (0.279)	0.0468 (0.740)
Constant	4.342*** (1.020)	4.509** (2.050)	2.025*** (0.657)	3.903*** (1.458)	1.907*** (0.382)	3.188 (2.206)
Wald (Chi2) test ⁵	120.7	116.5	82.4	93.7	62.3	44.3
Obs.	355	142	284	113	192	75
Num. of country	43	23	41	20	36	19

Notes: ¹ The dependent variable = Log(% of women in national legislature); ² Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1; ³ Reference sub-region= West Africa; ^{4, 5}The p-value for each of the models =0.000.

Table 5. Comparing models, using overall R-squared values

R-squared	Standard random effects		Random effects with Mundlak specification	
	Basic	With institutions	Basic	With institutions
Primary				
Overall ¹	0.278	0.409	0.303	0.616
Secondary				
Overall	0.289	0.409	0.612	0.186
Tertiary				
Overall	0.187	0.262	0.288	0.379

Note: ¹The R^2 reported for 'overall' are based on the random effects estimator.

other indicators of quality of institutions were included in the models.

The coefficient on the Wald (Chi2) tests provided a test of the joint significance of the effects of individual variables on gender empowerment. Each of the coefficient has a p -value=0.000, suggesting that the individual effects were jointly significantly significant. Also, the goodness of fit of each of the models was assessed using the R^2 measures for overall (random effects) estimator across the models (Table 5)^{xii}. On the basis of the R^2 values, the random effects model with Mundlak (1978) specification was preferred generally (Table 5).

Finally, these results have important implications for our understanding of the role of institutions in the process of improving gender empowerment. Firstly, the findings are generally consistent with Coyne and Sobel (2010), who used time-series analysis to examine the relationship between indicators of quality of institutions in 190 countries covering 35 years^{xiii}. Their findings suggested that whilst the changes in the formal aspect of a country's institution such as economic and political institutions were non-stationary (changes were permanent), the changes in informal aspects of institutions such as measures of civil liberties, legal structure and property rights may take a long time to manifest. Their study also indicated that most of a country's institutions are co-integrated, suggesting that reforms are jointly undertaken across various indicators of institutions for a sustainable institutional change.

We also found differential effects between formal and informal institutional variables on gender empowerment. The degree of response of gender empowerment to changes in primary education was (elastic) much greater than the response to changes on the informal institutions such as legal structure and property rights, which was largely inelastic.

Discussion

The motivation for this paper was based on the view that the various declarations and policy initiatives undertaken

by African governments to address gender-related issues in development have not translated into the expected normative gains, thereby leaving gaps between socially equitable policy-making and practice. We contributed to this literature by examining empirically, the influence of country quality of institutions on gender empowerment in 45 countries in Sub-Saharan Africa.

Our findings highlighted the context-specific understanding of underlying factors mitigating or otherwise of meeting the commitments of African governments to improve gender empowerment. Firstly, we found indications of improvement in gender empowerment following the 2005 MDG pledge by African heads of state. However, this improvement had not been sustained overtime. Secondly, the response of governments in Sub-Saharan Africa to gender issues in development appeared to differ according to the sub-region of location, with East Africa accounting for the strongest improvement in gender empowerment during the period under consideration, compared to other sub-regions. By implication, the gap between policy initiatives and practice is wider for these other sub-regions relative to East Africa.

Secondly, we found important differences between the influence of indicators of formal and informal institutions. Whilst the relative change in gender empowerment attributed to changes in primary and secondary education (formal institutions) was highly elastic (at least 2%), the relative changes attributable to changes in property rights and corruption (informal institutions) were inelastic. Rather, these informal institutional variables imposed some unobserved country individual effects generally. These institutions were largely informal in Sub-Saharan Africa, as they may be reflecting some strong cultural and traditional ways of doing things, which were slow to change and constraining progress towards achieving gender empowerment.

Also, the joint statistical significance of the institutional variables suggested that institutional reforms to nurture effective gender empowerment need to be jointly undertaken across various institutions. As a previous study has demonstrated, this is because a change in one institutional variable may require a simultaneous change

in another. In future research, we hope to collect more data and extend the analysis to examine the capacity of governments in Sub-Sahara to effect joint institutional changes.

An implication of our findings is that they highlight the importance of understanding the context-specific underlying issues such as determinants of gender empowerment, for an effective linkage between policy initiatives and practice. Improved quality of institutions will enhance women's capacity to exercise their rights, greater access to resources and actively participate in and initiate policy dialogue, advocacy, and operationalising gender-related development policies.

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Endnotes

- I. <http://unstats.un.org/unsd/mdg/Data.aspx>.
- II. <http://data.worldbank.org/indicator/SP.DYN.LE00.IN/countries>
- III. <http://www.freetheworld.com/index.html>
- IV. <http://www.heritage.org/Index/>
- V. Both data sets are freely available to the public.
- VI. For technical details of the components and derivation of the EFW index, see Gwartney et al (2010).
- VII. Over 250 academic papers have used the EFW data set since 1994. The list is available at <http://www.freetheworld.com/papers.html>.
- VIII. http://www.transparency.org/policy_research/surveys_indices/cpi/2010/in_detail.
- IX. For details of the components and derivation of index of Economic Freedom, see Heritage Foundation (2011).
- X. The post-2005 MDG declaration relates to the 2005 World Summit, held from 14 to 16 September at United Nations Headquarters in New York, when more than 170 Heads of State and Government pledged intention to address issues surrounding development, security, human rights in their respective countries (UN 2005).
- XI. All the three measures of education attainments tend to affect each other. For example, completion of secondary education requires initial completion of primary education.

XII. The R^2 has the interpretation as the squared correlation between the actual and fitted values of the dependent variable, where the fitted values ignored the estimated individual effects (Cameron and Trivedi 2009, p.258).

XIII. The authors carry out stationarity and co-integration tests. The former relates to whether changes to a particular indicator of quality of institution are permanent or tend to revert back to where they started. The later relates to whether two indicators tend to move together over time.