



Media Development and Political Stability: An Analysis of Sub-Saharan Africa

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I. Executive Summary

This paper takes a holistic look at the impact of a healthy media sector on political risk condition of countries in Sub-Saharan Africa, by proxying a healthy media sector by its independence and reach among the population. I hypothesize that the interplay of a free media and greater access to information together will have a significant positive impact on countries' political risk condition. The use of various robust econometric techniques – ordinary least square method, two way fixed effect model, quantile regression analysis and dynamic panel estimation – substantiates the hypothesis with both economically and statistically significant results. The quantile regression analysis further suggests that a free media and greater access to information has a greater impact on improving political risk status for countries with high political risk situations than for countries that are more stable.

This paper has important policy implications. First, by establishing that media independence and reach **together** have a greater impact on political risk condition of a country, it establishes **the importance of a holistic approach to media sector development – both in terms of research and practice**. Second, the quantile regression analysis shows that countries that have more political risk are likely to become more stable by making their media sector more effective. This means that **strengthening the media sector is an important strategy for politically unstable countries**. Third, the dynamic panel estimation helps us address the problem of endogeneity, or reverse causality. This implies that in terms of policy, **establishing a healthy media sector can be seen as a starting point for achieving political stability in a country**.

2. Introduction

The growing literature on economic development, and more that on new institutional economics, has increasingly acknowledged that the media sector of a country is of critical importance in its development process. While factors like human capital, investments, social and other demographic factors have been historically considered to be necessary components of any recipe for development, over time, economists have increasingly recognized the media sector's critical role. An independent media sector, free from either public or private control, informs the populace without bias. It acts as an anchor for many facets of a society and supports its fundamental workings – upholding the ruling party or exposing its vices, bringing out the positives and negatives of industry, making citizens' voices audible to decision makers and most importantly, revealing and spreading economic and other information. However, while independence is clearly important it is not the only characteristic of a healthy media sector. A free media cannot serve its purpose unless it reaches across the whole population, and the majority understands it and uses it as critical source of information. As Islam (2002) points out, the three most critical attributes of an effective media sector are independence, quality and reach. These benchmarks¹ ensure that information is reported without fear of government and other interest groups, views are expressed from a wide variety of perspectives, and media has the capacity to produce political, social, and economic

¹ Independence implies that a media outlet has the ability to report information without the fear of getting penalized and that it is not under the control of any interest group. Islam stresses that second benchmark, quality, is hard to judge. Islam defines quality media as that which objectively reports basic economic, social and political information, publishes a diversity of opinions for which it can be held accountable, and is attentive to providing information that has real value to society. Finally, reach implies the extent of access the populace has to the print, electronic or broadcast media.

information for all segments of the society. By reducing information asymmetry in a society, a free media addresses the principal-agent problem and instates a process of checks and balances by helping to ensure the accountability of forces in power.

Broadly speaking, a healthy media sector should: be free from any control; be supported by an adequate legal framework that ensures freedom of speech, freedom of expression and access to information; have plurality in its news sources; maintain professional and ethical standards; have adequate reach across the population; and should be propagating reliable, high quality information. The media sector should also be financially viable and capable of paying competitive salary to media professionals.

As African countries strive for sustainable development, press freedom and the broader issue of democratization of communication have become primary concerns to stakeholders interested in improving African development and governance. Sustainable development here refers to the empowerment of people to seek not only their own self-improvement but also the improvement of future generations. From this standpoint, information supports sustainable development when the majority of the people have access to the information they need to make informed economic, political, and social decisions. Freedom of the press helps reduce information asymmetry and create a transparent, accountable society. Adequate access to information furthers this goal by ensuring that the unbiased information flows freely and reaches the populace at large. Together, these two elements of a healthy media sector further the goal of successful democratization and strengthen the path of sustainable development.

In the past two decades, the Sub-Saharan African (SSA) region has seen mixed growth and developmental outcomes. According to IMF statistics, the region has shown a steady rate of growth in the past two decades. However, during the same time,

when we look at the condition of governance and institutional development in the region, the statistics are not as promising. The conflicting development story in the region can be attributed to a large number of social, political, cultural, and demographic factors. Of these, political stability is often cited as a key determinant of the state of development in the region (Armah and Amoah, 2010). As mentioned earlier and established by the academic literature (discussed later), a free and independent media sector (mostly proxied in the literature by its independence from state or other control) is considered to be a precondition of development in a country. A free and independent media sector holds the key both to ensure greater accountability and exchange between the powerful and the greater populace, and to lessen corruption. However, for the independent media sector to perform its role effectively, other key conditions need to be in place. Most importantly, the media sector of a country should have adequate reach such that information reaches throughout the population and enables informed decision making. A free and independent media with inadequate reach is cannot fulfill its objective. Similarly, a captured media with extensive reach does society no good.

In sum, freedom and independence of the media, together with adequate reach, are the key measurable elements of a healthy media sector. Such a media is more effective in reducing information asymmetry and bringing about greater transparency. This paper explores how independence and reach of the media affect the political stability of SSA countries. I hypothesize that the independence and reach of the media together will have a positive impact on political stability.

There are many elements – such as independence, quality, reach and financial viability – that comprise the components necessary to make a media sector healthy. However, there is no one comprehensive indicator that capture all of these elements and help researchers take a holistic look at the sector. Of all these aspects, quality and professionalism are the hardest to quantify.

Further, there is no comprehensive quantification of financial viability of the sector that can be used to compare different countries. Therefore, I focus on independence, extent of plurality, comprehensive political-social-economic environment (all of which are captured by Freedom House's Freedom of the Press index) together with media reach, to represent the media sector's health in a country.²

The linkage between a healthy media sector and political stability is particularly important because the media can play a critical role as a watchdog, and thus has the potential to hold the government to account to its people and curb extractive rent seeking and exploitative practices. The context is particularly important for the SSA region because of the political dynamics in the region, what has been called the "third wave of democratization" (Huntington, 1991) over the last two decades. The West African countries of Ghana, Benin, Niger and Mali witnessed the decades old military regimes getting replaced by democratically elected governments. In the wake of these new developments, it becomes even more imperative to investigate the role a healthy media sector can potentially play to support and strengthen the emergence of democracy in the region. As the example below illustrates, political leaders well understand the influence of information and the media in shaping public opinion.

..... On 27th July, 2006, 48 hours before the first run of the presidential election, Jean-Pierre Bemba's militants walked out of a campaign meeting at the stadium and ransacked at least three buildings in the neighborhood: the HAM (high media authority), Pastor Sony Kafuta's church and the Zamba Playa Studio belonging to the singer Werrason. All three were accused of a biased involvement in the campaign and of supporting Bemba's major challenger, Kabila. The incident is worth mentioning because it shows that religion, music and media regulators are all viewed as actors in the political landscape.

–Marie-Soleil Frere, "Popular TV Programs and Audiences in Kinshasa," 2010

² Freedom House's Freedom of the Press captures the aspects of independence, plurality and the political-social-economic environment in which the media sector of a country operates. For quantifying reach, I rely on the proxies of how much access people have to various types of media.

This paper explores how a healthy media sector has an impact on the political risk condition³ of SSA countries. The paper is important because it adds to the very scarce pool of literature that looks at the role of a healthy media sector in development in the SSA region. Secondly, this research considers a more holistic approach, proxying a healthy media sector not only by independence but also by access to information. The premise of considering the interaction of independence and access to information is to acknowledge the fact that higher levels of both these aspects are necessary for a media sector to perform its desired functions effectively.

The next section reviews the literature that studies the importance of media development for economic development and the literature that explains the importance of political risk factors in shaping the development discourse. Section 4 explains the data used for the analysis and section 5 details the empirical specifications and results. Section 6 enlists the robustness checks and section 7 concludes.

³ Political risk in this paper refers to various components of political institutions that can affect government's performance and destabilize a regime.

3. Literature Review

An extensive literature has investigated how media can make governments transparent about their actions and accountable to the masses.⁴ Sen (1984, 1999) emphasized media's role in overcoming critical public choice problems, like the prevention of famines. Stiglitz (2002) pointed out the significance of the media in mitigating principal-agent problems and also in improving government accountability and transparency. The main idea of all these studies is that the populace needs access to information about the government's decisions and actions and when media can make such information available to masses, it gives them the power to analyze the government's actions and act accordingly. Norris and Zinnbauer's (2002) thesis follows this line of argument, and they find that an independent press is strongly associated with good governance and human development. In particular, nations with a free press are characterized by less corruption, greater administrative efficiency, a politically stable environment, effective rule of law and better economic development in general. Bandyopadhyay (2009) finds that mass media and information-communication penetration is associated with lower levels of corruption and poverty. Dutta, Pal and Roy (2011) find that a free and independent media acts as a means of enhancing socio-political stability which in turn leads to higher economic growth via increased domestic investment. Freille, Haque and Kneller (2007) find evidence that both political and economic influences on the media are robustly related to corruption, while detrimental laws and regulations influencing the media are not. Guseva et. al (2008) emphasize the role of a free press in economic development. Kaufmann (2006) recognizes the key role of media as a part of the good governance,

⁴ There is a much less extensive literature looking at the impact of other factors on the presence of a free press. However, Dutta and Roy (2009) establish that higher foreign direct investment inflows to a nation contribute to a free press.

anticorruption, and poverty alleviation endeavors of international organizations, especially the World Bank. He also emphasizes the need to popularize other measures of media development in mainstream academic literature to expand and improve analysis. Norris (2010) emphasizes the need to recognize media as an integral part of the core institutional framework that empowers a democracy. In this context she also points towards the necessity of undertaking a holistic approach towards media development instead of the present piecemeal short-term efforts.

Based on a study on India, Besley and Burgess (2001) show that in regions where newspaper circulation is high and government is accountable, calamity relief expenditure and public food distribution is more likely to reach their intended targets. Jensen and Oster (2009) use data from rural households in four Indian states and explore the effect of the introduction of cable television on women's status in rural India. They find introduction of cable television to be associated with greater women's empowerment (in terms of domestic abuse) and with a decrease in fertility. Their study shows how mass media affects informal institutions and paves the way for economic development. Other literature has also stressed the role of media as a watchdog on the government thus, enabling vulnerable citizens to monitor the government's exercise of its power (Besley and Burgess (2001)). Besley, Burgess and Prat (2002) identify the mechanisms through which mass media can enhance government accountability. Other studies in political science have also emphasized the role of the media as the primary source of information to the electorate (Brians and Wattenberg (1996); Mondak (1995)).

There are other studies which are critical of state ownership of the media sector. Economies with intense government ownership of the media have been shown to suffer from poverty, high infant mortality rates, less access to sanitation, higher corruption and less developed capital markets (Djankov, McLiesh, Nenova and Shleifer, 2003). Coyne and Leeson (2004) emphasize that, with a state-controlled media, politicians get an additional edge in manipulating information, reaching the public, and serving their private interests at the expense of society. Further, Leeson (2008) finds that in countries where government has direct or indirect control (by controlling vital infrastructural and distributional facilities) of the media sector, and restricts the free flow of information in society, citizens are more politically ignorant and apathetic.

A separate strand of literature has looked into the role political stability and political institutions play in economic growth and development of nations. Asiedu (2006) analyzes a sample of 22 SSA countries during 1984-2000 and establishes that political stability is an important factor that determines the inflow of FDI into SSA countries.⁵ In other cross country studies, Roe and Siegel (2011) confirm a strong linkage between political instability and financial backwardness. Sekkat and Veganzones-Varoudakis (2007) find that openness, sound infrastructure and robust economic and political conditions of countries make them more conducive to FDI inflows. Similarly, Dutta and Roy (2009) find that a developed financial market of a nation works more efficiently to attract foreign funds in the presence of political stability. Busse and Hefeker (2007) show that government stability, absence of internal conflicts and ethnic tensions, democratic accountability, and good law and order play a vital role in attracting foreign direct

⁵There is some literature that looks at the importance of a free press in Africa (Armah and Amoah, 2010) and also the impact of greater access to information in specific African economies (Reinikka and Svensson, 2004). However, there is plenty of room for more research.

investment. Hess (2004) also confirms that in terms of its role in attracting FDI, political stability is more important than a good political regime (i.e. democracy). A positive linkage between political stability and economic growth is confirmed by Alesina, Ozler, Roubini and Swagel (1996) and Feng (1997). Zablotsky (1996) proposes a two way relationship between political stability and economic growth.

The two separate strands of literature discussed above thus look into the important role a developed media sector on the one hand, and political stability on the other hand, plays in the context of governance, growth, and development of countries. This paper brings the two strands together and investigates whether the condition of the media sector impacts the political stability of a country. Theoretically, a developed media sector can affect political stability through multiple channels. First, captured media is subject to be manipulation by governments, and hence can be used to trigger political unrest that benefits ruling political parties. For instance, in post-independence India, a largely government-controlled media played a vital role in several incidents of politically motivated riots. Some have argued that the government-controlled monopoly press by and large displayed anti-Muslim prejudices and helped breed mutual hatred between Muslims and Hindus (see Engineer 1991, Ch.I for details).

Secondly, free media and better media coverage improves the authorities' responsiveness by making the government more transparent and answerable to the public. This, in turn, reduces chances of social, ethnic and religious conflict, all of which are key elements of political stability. In a study on government efficiency, Besley and Burgess (2001) examine data from India on the responsiveness of state governments in situations of food crisis by evaluating the public distribution system and find that states that

have higher numbers of newspaper circulation, electoral turnout and literacy also have more local governments that are more effective in mitigating the food crisis. In Besley et al. (2002) the authors suggest that the media helps to overcome the principal-agent problem that typically characterizes the relationship between citizens and their governments. There is usually a considerable amount of asymmetry in the information that the principals (citizens) and agents (the elected officials) possess. According to Besley et al., newspapers, by closing the information gap between the authorities and the masses, incentivize the government to act in the interest of the people. This dynamic is visible in reverse as well: in the absence of a free media, and hence a lack of adequate information, governments tend to shirk their promises. Non-captured media, however, sorts efficient political agents and disciplines the incumbent. It enables the incumbents who act in the interest of citizens to stay in power. Better media coverage has been shown to decrease corruption connected to the distribution of educational funds in Uganda by increasing transparency and enabling citizens to hold their government to account for the funds they receive (Reinikka and Svensson, 2005).

For the media to matter, information that media provides must reach the population. Thus, the better the reach of information, the more impact a free press should have. If the information infrastructure is inadequate, the dissemination of information will be slower and unequal. Lack of information infrastructure (often termed information gap) has been identified as a major problem facing anticorruption efforts in Africa (TI, 2007). The information-gap argument is used in Djankov et al. (2002). Strömberg (2004) examines the effect of radios on public spending and finds that an increase in the number of radio listeners in certain US counties accounts for those counties obtaining greater relief funds for which they were eligible than those with fewer

radio listeners. Therefore, it is reasonable to hypothesize that there is an interaction effect between the freedom of the press and the reach of information.

A third way that a free media is theorized to promote socio-political stability is that an uncensored media has greater ability to disseminate news internationally. This international flow of information may help create external pressure on governments to act less in their own interests and more in the interests of their citizens. For example, there was little international outcry in the early 1970s when several Sub-Saharan African governments did little in the face of devastating famines. Sen (2000, Ch.7) connects the lack of international outcry to a lack of media freedom, and thus the lack of information flowing out of these countries.

(In South Africa) Talk radio contributes to a discursive or deliberate democracy, in which public participation and citizen deliberation is considered more important than voting alone...with a proliferation of stations emerging in post-apartheid South Africa after media liberalization...the broader and more diverse audience of commercial talk radio generates public and collective discussions of nationally salient issues.

In the South African context talk radio becomes the main authoritative site for mediated discussions. Press Conferences centered on fairly major political events are frequently held at the studios of Talk Radio 702 in Johannesburg. Here we see the newsmakers coming to the journalists, instead of vice versa, as is usually the case for press conferences. One example was the press conference delivered by former ANC chairperson, Mosiuoa Lekota, in the run up to the formation of the breakaway political party, Congress of the People (COPE) live on Redi Dierko show on 8 October, 2008....

During the 1999 national elections several live debates were held between representatives of political parties, allowing listeners to address them directly.... In this way, the radio station becomes an intermediary between the public and policy-makers, and a space where citizens can directly speak to policy makers and politicians, and receive instant feedback.

...the role of commercial talk radio, despite its commercial imperative, has expanded to allow an authentic space where the public can hold policy-makers accountable, with talk radio playing a kind of “watchdog” role as an authentic “fourth estate.”

–Tanja Bosch, “Talk Radio, Democracy and Citizenship in (South) Africa,” (2010)

Existing cross-country studies on media's impact on development have mostly focused on press freedom. Country-specific analysis on the sector's role in development has, on the other hand, focused on access to information.⁶ However, press freedom and access to information are complementary features that are necessary for the sector to fulfill its desired function – disseminate unbiased information throughout the population to generate an aware and informed society. I analyze how these two aspects of the media sector together affect the political risk condition in countries in order to test the hypothesis that *greater press freedom and better access to information reduce political risk*. I further test whether or not the two together have a greater impact on political stability than either factor's independent impact.

4. Explaining the Data

Data for this study has been taken from various sources (listed in Appendix I). I consider a sample of 46 SSA countries based on World Bank classification over the years 1994-2009. The choice of years is driven by the availability of all data used for the analysis.

⁶ For a detailed survey of literature refer to the Literature Review Matrix (2011) and the Overview Report (2011) in <http://www.mediamapresource.org/research-and-resources/>.

For Press Freedom, I use the most widely used Freedom House Freedom of Press Index⁷. Freedom House provides quantitative scores beginning in 1994. The index runs from 0 to 100. Countries are categorized as having a “Not Free,” “Partly Free,” or “Free” press. Freedom House uses 0 as the best score (Free Press) and 100 as the worst (Not Free Press). For ease of understanding, the scores have been rescaled for this research so that 0 is the worst score (Not Free Press) and 100 is the best score (Free Press). The choice of this proxy follows the extensive literature and adequately acknowledged reliability of the data. Also, this index has the most comprehensive country and time coverage, making it very useful for empirical research.

Access to information has been proxied by four indicators. These are collected from the World Development Indicator database (2010), published by the World Bank. Proxies include measures of household with a radio (%), fixed internet subscribers (per 100 people), telecom investment (as a % of revenue) and internet users (per 100 people)⁸.

The dependent variable, political risk condition, has been proxied by the Political Risk Score compiled by the International Country Risk Guide (ICRG) database. The *political risk-rating* category provides an assessment of the political stability in a specific country at a specific time. The methodology assigns a numerical value to a predetermined range of risk components, according to a preset weighted value. Each scale is designed to give the greatest value to the lowest risk and the lowest value to the highest risk.

⁷ The level of press freedom in each country is based on twenty three methodology questions divided into three categories: the legal environment, the economic environment and the political environment. The legal environment category judges laws and criterions that could influence media content, the ability of journalists to operate freely, and government use of regulations to curb media operations. The degree of political control over the content of news media forms the basis for the political environment. The economic environment includes the structure of media ownership, transparency and concentration of ownership and the impact of corruption and economic institutions on media.

⁸ There is a lack of adequate data on television and newspaper penetration that can be used for comparison across countries.

The political risk rating is based on points, which are assigned to a number of components and sub-components. The maximum number of points is one hundred: the higher the total number of points, the lower the risk, and the lower the number of points, the higher the risk⁹. The rating is such that a score between 0 - 49.9 denotes Very High political risk. A score between 50 - 59.9 represents High Risk. Scores between 60 – 69.9 and 70 – 79.9 represent Moderate and Low Risk conditions respectively. Scores beyond 80 imply Very Low political risk.

Various economic, geographic and demographic indicators are included in the econometric specifications as control variables to ensure the analysis considers important factors that can affect the political risk situation of a country other than the media sector.

Real gross domestic product (GDP) is an important variable that is controlled for. According to neoclassical investment theory, real output is positively related to real investment through the accelerator effect. This has been empirically shown by Fielding (1997), Wai and Wong (1982) and Ndikumana (2000). In the context of socio-political stability the variable captures the idea that recessions may instigate mass discontentment, thus resulting in higher instability. For instance, in Acemoglu and Robinson (2001), the

⁹The first component of the *political risk rating*, government stability, attempts to capture the extent to which the government is able to carry out its policies as well as its ability to stay in office. A measure of socioeconomic conditions is included in order to assess the socioeconomic pressures, which could constrain government action or fuel social discontent. The third component, investment profile, assesses factors affecting the risk to investment that are not covered by other political, economic and financial risk components. Data on external and internal conflicts is included, as conflicts tend to have a disruptive impact on governance. Corruption is included in the model, as it is a threat to investment through its ability to distort the economic and financial environment, and reduce the efficiency of government and business, and as it introduces an inherent instability into the political process. Furthermore, estimates of the influence of the military on politics as well as of religion on politics are introduced, as these two factors might contribute to a reduction in democratic accountability. The law and order indicator assesses the strength and impartiality of the legal system as well as popular observance of the law. The ethnic tensions component is an assessment of the degree of tension within a country, which is attributable to racial, nationality or language divisions. Democratic accountability and bureaucratic quality, finally, are included to assess the responsiveness of government and the institutional strength and quality of the bureaucracy.

authors argue that in a non-democratic society, "the initially disenfranchised poor" may contest for power by threatening revolution, especially in times of recessions when the opportunity cost of such actions is relatively low. The variable also controls for the fact that economically backward countries typically have more risk of political instability compared to developed countries, often due to the absence of effective legal institutions. I use real GDP per capita data from the World Bank database.

The next important control variable is size of total population. Research has shown that population can be a determining factor for political stability of a country. A higher population growth might be desirable in situations of political conflict since the government would need bigger military, and thus a bigger youth population to draw from (Lehmijoki and Palokangas, 2009)¹⁰. The Kremerian theory of population and economic growth suggests that population growth enhances economic growth by providing a greater number of innovative minds. There are greater incentives to invest when research and development progresses as more brains work on them.

The model also controls for human capital or education by using the percentage of literate adult population. The data is taken from the World Bank database. The correlation between education and socio-political stability may be ambiguous. Education may generate greater awareness about consequences of political or social violence and give the government incentives to act in the

¹⁰ At the same time, the paper also stresses in such situations, the government would be prone to deter women from joining the labor force. Thus, though I have controlled for total population in the benchmark specifications, I have controlled male population solely as part of robustness tests later.

interest of the people thereby lowering possibilities of instability. However, in some contexts, educated citizens have participated in incidents of socio-political unrest.¹¹

Trade openness is included as a control. The trade openness data is obtained from the World Bank database and measure openness as the share of exports and imports in GDP. Trade openness is a proxy of the extent of a country's globalization. Openness increases a country's contact with outsiders, which may stimulate productivity and growth, and improve domestic institutions (Donovan et. al, 2005).

Ethno-linguistic fractionalization (Roeder, 2001) has been used as a determinant for political risk¹². As Annet (2000) notes, greater fractionalization causes conflict in the society and leads to political instability.

Infrastructural conditions are proxied by electricity consumption per capita and road density. I also control for percentage of population who were Catholics, Protestants and Muslims. I control for geographic conditions by latitude, land area and a dummy for landlocked countries. Later for robustness I include dummies for the colonial history of country, a proxy for what is popularly called "the resource curse" (namely share of primary exports to GNP) as suggested by Sachs and Warner (1995) in all the specifications. The data for resource curse has been taken from the authors' own database. The inclusion of resource curse as a determinant of political stability follows the established argument that presence of natural resource promotes rent seeking activities and perpetuates political instability.

¹¹ Dasgupta(1973) provides an account of the Naxal movement in India which started off as a protest against landlords by peasants but eventually took over the intellectual class of the society and was joined by students and the educated elite.

¹² It is calculated using a simple Herfindahl concentration index from data compiled by a team of Soviet ethnographers in the early 1960s and published in the Atlas Narodov Mira (1964). It is defined as the probability that two individuals randomly drawn from a society are from the same ethnolinguistic group

Lastly, share of foreign aid to GNI has also been considered as an explanatory variable for robustness. As Armah and Amoah (2010) note, the impact of foreign aid on political stability is ambiguous. While aid can promote growth and stability, it also can encourage rent-seeking behavior, thereby leading to instability. The data for foreign aid is taken from the World Development Indicator Database, 2010, published by the World Bank.

5. Empirical Specifications and Results

To summarize, this paper investigates the relation between a healthy media sector and the political stability of a country. A healthy media sector is proxied by the interplay of the extent of press freedom and access to information in a country. The primary hypothesis of the paper is that a free press together with greater access to information brings about more political stability than just the presence of either element.

To begin with, I consider a specification where I analyze the impact of each media proxy on political risk individually. I do not introduce any interactive effect in this specification. The model in this case is specified as:

$$Y_{it} = \alpha + \beta_1 \text{Media Proxy}_{it-1} + \beta_2 X_{it} + \epsilon_t \quad (1)$$

where Y_{it} is the dependent variable of interest: the proxy of political risk condition of country “i” in year “t” and X_{it} is the matrix of control variables. At the outset I consider the value of the media sector proxies lagged by a year.¹³

Next, to highlight the importance of the complementarity of press freedom and access to information, an interaction of media freedom and the access to information is included in the model as shown in equation (2).

$$Y_{it} = \alpha + \beta_1 \text{Press Freedom}_{it-i} + \beta_2 \text{Access to information}_{it-i} + \beta_3 (\text{Press Freedom} * \text{Access to information})_{it-i} + \beta_4 X_{it} + \varepsilon_t \quad (2)$$

Since here I am considering the interactive effect of press freedom and access to information, I look at the total effect on the dependent variable of interest, as shown in equations (3) and (4).

$$\frac{\delta Y_{it}}{\delta \text{Press Freedom}_{it-1}} = \widehat{\beta}_1 + \widehat{\beta}_3 \text{Access to Information}_{it-1} \quad (3)$$

$$\frac{\delta Y_{it}}{\delta \text{Info. Penetration}_{it-1}} = \widehat{\beta}_2 + \widehat{\beta}_3 \text{Press Freedom}_{it-1} \quad (4)$$

I begin the analysis with **Ordinary Least Square (OLS)** regression to ascertain the association between the independent variables and the dependent variables of interest. Tables (1a) and (1b) report the results based on equations (1) and (2). From Table (1a) I find that press freedom, as expected, has a positive impact on the political risk condition. The coefficient of press freedom is

¹³ I use a lagged value of the media proxies because regulations of the media sector are policy issues and policies take time to show impact. While this is my benchmark specification, I do take care of the endogeneity problem later in the analysis.

positive and has statistical significance implying that greater press freedom reduces political risk. The desired results, however, are not seen for the proxies of access to information (reported in columns 2 through 5). The coefficients in case of the proxies for radio, internet and mobile phones do not have the expected sign and none of the coefficients for the four proxies have statistical significance.

The results in Table (1b) reflect that the interactive impact of media freedom and access to information has a stronger effect in improving the political risk situation of countries than that of media freedom alone. This is ascertained by the magnitude of the total impact calculated as per equations (3) and (4) as well as the statistical significance of the coefficients. For example, as per equation (1), a 10 unit rise in press freedom would improve political risk condition of a country by 2.2 units. However, when I control for the condition of access to information and introduce the interactive effect, as shown in equation (2), a 10 unit increase in press freedom improves political risk condition by 4 to 5 units. Similarly, while in table (1a) the results for the impact of access to information on political risk condition was ambiguous, in table (1b), the results not only show the desired sign of the coefficients (i.e. improvement in access to information improves political risk condition), but also have statistical significance. For example, increases in the % of households with radio always improve political risk condition. A unit increase in telecom investment (as share of revenue) and mobile cellular subscribers (per 100 people) improve the political risk indicator by 0.4 and 0.8 units respectively.

To understand how this dynamic may play out at the country level, I consider a comparative example of how the development of media in a country can impact its political risk. Burkina Faso and Nigeria had a “High Political Risk” condition in

1996. These countries had political risk scores of 54.58 and 53.08 respectively in that year. However, the two countries had different levels of press freedom and access to information from each other in the prior year. For Burkina Faso, the Press Freedom Score is 63 and the amount of Telecom Investment (as % of Revenue) is 32.04 in 1995. For Nigeria in 1995, the Press Freedom Score is 31 and the amount of Telecom Investment (as % of Revenue) is zero. In this situation, I calculate how the different media development situations in these two countries hypothetically impact their political risk condition differently. From Table (1b), using the coefficients, I get that a one standard deviation increase in Press Freedom in Burkina Faso would improve the political risk condition in Burkina Faso by $\left(\left\{\frac{\delta Pol.Risk_{it}}{\delta Press Freedom_{it-1}} = 0.246 + 0.01 * (32.04)\right\} * Std.Dev of Press Freedom(= 18.89)\right]=10.69$ percentage points. For Nigeria, a one standard deviation increase in Press Freedom would improve political risk condition by $\left(\left\{\frac{\delta Pol.Risk_{it}}{\delta Press Freedom_{it-1}} = 0.246 + 0.01 * (0)\right\} * Std.Dev of Press Freedom(= 18.89)\right]=4.64$ percentage points. In fact, the data shows that in 2009, Burkina Faso had a score in the moderate political risk range with a score of 60.29, while Nigeria slid back to being a very high political risk country with a score of 47.16. This contrast implies that for two countries with similar political risk conditions, an improvement in the same is contingent on the health of the media sector. Countries that have greater media freedom together with better access to information see greater improvement their political risk condition than countries with the same risk condition and an unhealthy media sector.

To ascertain the results further, I undertake a **Quantile Regression** analysis to separate out the effects based on the level of political stability within the sample of countries. This allows us to sort the data based on the distribution of the response or the

dependent variable. Precisely, as Koenker and Hallock, (2001) explain, quantile regression aims to estimate conditional quantile functions which are models in "which quantiles of the conditional distribution of the response variable are expressed as functions of observed covariates." This approach has been extensively used by Koenker and Hallock (2001) in their investigation of the impact of various covariates on the birth weight of infants. Following their example, quantile regression is important to use in this analysis because while a simple ordinary least square model can explain the impact of media development on political risk factors, it fails to answer the question of whether media development affects countries with low levels of political risk differently than the ones with average level of political risk. They also state in their paper that while quantile regression focuses on the conditional distribution of the dependent variable, it can also avoid the selection bias associated with truncated regressions.

In a linear regression, the regression coefficient of an explanatory variable implies how much the dependent variable changes for a unit change in the particular explanator. In quantile regression, the parameter estimates the change in a specified quantile of the regressand due to a one unit change in the predictor variable. Thus for this paper, this technique will help capture the different ways that press freedom and access to information can affect various levels of political risk. Thus, the coefficients of a linear regression model compared to a quantile regression model can be severely underestimated. Both asymptotic and bootstrapping methods generate standard errors and confidence intervals of coefficient estimates of quantile regressions. Hao and Naiman (2007) establish that the bootstrapping method is preferred; hence, I use the bootstrapping method. The results for the quantile regression analysis

are reported in tables (2a) and (2b). Like before, table (2a) represents the specification outlined in equation (1) while table (2b) represents the specification of equation (2).

The results of the quantile regression confirm that the interactive effect of press freedom and access to information in improving political risk condition is greater than the individual impact of these factors. The results also show that the magnitude of the impact on improvement in media development on political risk conditions is greater for the countries that have high political risk (as depicted by the lowest quantile). This result is of prime importance because it implies that improvement in media development in politically unstable countries would help them to stabilize. The impact of improved media development in politically instable countries is expected to be stronger than the impact on politically stable countries; the empirics demonstrate this nuance.

As a next step, I address the problem of endogeneity. While the benchmark specification did consider a one year lag of the main independent variables (press freedom and access to information), it does not solve the issue of reverse causality. To account for that, I have considered the **Generalized Method of Moments** (GMM) technique in a dynamic panel setting. I undertake both the difference-GMM as proposed by Arellano and Bond (1991) and the system-GMM as proposed by Blundell and Bond (1998). The difference-GMM estimator uses lagged values of the first difference of the endogenous variables as instruments. However, as Arellano and Bover (1995) point out, lagged levels are often poor instruments for first differences. This problem is mitigated by using the “system-GMM” estimator, proposed by Blundell and Bond (1998), which uses additional moment conditions. However, the system-GMM utilizes more instruments and therefore raises the concern that the estimates may be heavily biased (Hahn and

Hausman, 2002). For robustness, I report the regressions for both the estimators. The estimates from this procedure are inconsistent in the presence of autocorrelation. Hence for each regression I test for autocorrelation and also check the validity of the instruments. For all the regressions, the results confirm the absence of autocorrelation and the validity of the instruments. Tables (3a) and (3b) report the results for the interactive impact of media freedom and access to information on political risk condition for the difference-GMM and system-GMM approaches respectively. This procedure helps us address the problem of endogeneity effectively, and helps confirm that the relation between media development and political risk condition goes beyond mere association. The desired signs of the coefficients of the relevant independent variables and their statistical significance allow us to say that greater press freedom and greater reach leads to political stability. The estimation coefficient of lagged political risk is significant, an indication that political risk condition is persistent.

6. Robustness

The empirical findings suggest that the condition of media freedom and access to information in a country have a significant impact on its political risk condition. Several robustness tests are further performed to ensure that these results are not altered by reasonable changes in specification.

I re-ran the benchmark specifications for each individual component of the composite Political Risk Index. The results reiterate the previous findings and render them robust. While for all the twelve components, the desired signs of the coefficients are

retained, consistent statistical significance of the coefficients is noted for only for corruption, government stability, democratic accountability, bureaucratic quality, socio-economic conditions, investment profile, and law and order.

An alternate measure of political stability, namely, “political stability and absence of violence” from the Worldwide Governance Indicators database is considered for all specifications. This variable captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. Across specifications, the results remain unchanged, thus strengthening the analysis.

I also check the results for the inclusion of colonial dummies, a control for the political regime type (namely the Polity 2 variable from Polity IV Project database) and a proxy for resource curse as suggested by Sachs and Warner (1995) namely the share of primary exports to GNP. The results remain robust to the inclusion of these variables. The results also remain unchanged with the inclusion of the share of foreign aid inflow as a determinant of political stability. I further consider alternative proxies of access to information namely International Internet bandwidth (bits per second per person) and International voice traffic (minutes per person). The results remain robust.

7. Conclusion

This paper addresses the impact of a healthy media sector on political risk condition of countries in Sub-Saharan Africa. By proxying a healthy media sector by its independence and reach among the populace, this paper takes a more holistic look at the

sector than previous studies. I hypothesized that the interplay of a free media and greater access to information would have a significant positive impact on the political risk condition of countries. The use of various robust econometric techniques, namely, ordinary least square method, two way fixed effect model, quantile regression analysis and dynamic panel estimation substantiates the hypothesis. The results confirm that the interactive impact of media freedom and access to information on political risk condition is both economically and statistically significant. This is validated further by the dynamic panel estimation, which implies that a healthy media sector leads to political stability. The dynamic panel estimation also reveals that the political risk situation is persistent. The quantile regression analysis further suggests that a free media and greater access to information has a bigger impact on improving political risk status for countries with high political risk situations.

While this paper has its contribution in the literature, it has several spaces for improvement and extension. Due to lack of adequate or available data, the study could not include proxies for the reach of newspapers and television in countries. Considering these two are of prime importance when we talk about the media, it would be very important to see if the results hold for those. Also, the analysis should be further streamlined and replicated for other regions of the world so see if the results can be generalized globally.

Despite these limits, this paper has several important policy implications. Firstly, by establishing that independence and penetration together have a greater impact on political risk condition of a country, it establishes the importance of a holistic approach towards media sector development – both in terms of research and practice. Secondly, the quantile regression analysis

shows that countries that have more political risk are likely to gain more in terms of increasing stability by making their media sector more effective. This result has important implication in terms of the fact that strengthening the media sector for politically unstable countries holds promise. Thirdly, the dynamic panel estimation helps us address the problem of endogeneity, or reverse causality. This implies that in terms of policy, establishing a healthy media sector can be seen as a starting point for achieving political stability in a country.

References

- Acemoglu, Daron and James A. Robinson (2001), "A Theory of Political Transitions," *American Economic Review*, 91(4), 938-963.
- Alesina, Alberto, Sule Ozler, Nouriel Roubini and Phillip Swagel (1996), "Political Instability and Economic Growth," *Journal of Economic Growth*, 1(2), 189-211.
- Annett, Anthony (2001), "Social Fractionalization, Political Instability, and the Size of Government," IMF Staff papers, 48 (3), 561-592.
- Arellano, M., and S. Bond (1991), "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application of Employment Equations," *Review of Economic Studies*, 58(2), 277-297.
- Arellano, M., and O. Bover (1995), "Another Look at the Instrumental Variable Estimation of Error Component Models," *Journal of Econometrics*, 68(1), 29-51.
- Armah, E. Stephen and Lloyd G. Adu Amoah (2010), "Media Freedom and Political Stability in Sub-Saharan Africa: A Panel Data Study," *Journal of Economic Development, Management, IT, Finance and Marketing*, 2(2), 41-67.
- Asiedu, E. (2006), "Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political Instability," *The World Economy*, 29 (1), 63-77
- Bagdikian, B (1990), "The Media Monopoly," Boston: Beacon.

Bandyopadhyay, Sanghamitra (2009), "Knowledge-based economic development: mass media and the weightless economy," DARP,74. Suntory and Toyota International Centres for Economics and Related Disciplines, London School of Economics and Political Science, London, UK.

Besley, Timothy and Robin Burgess (2002), "The Political Economy of Government Responsiveness: Theory and Evidence from India," *The Quarterly Journal of Economics*, 117(4), pages 1415-1451

Besley, Timothy, Robin Burgess and Andrea Prat (2002) "Mass Media and Political Accountability" in R. Islam ed. *The Right to Tell: Institutions and the Media*, World Bank, 2002.

Besley, Timothy and Robin Burgess (2001), "Political Agency, Government Responsiveness and the Role of the Media," *European Economic Review*, 45(4-6), 2001.

Blundell, R., and S. Bond (1998), "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models," *Journal of Econometrics*, 87(1), 115–143.

Bosch, Tanja (2010), "Talk Radio, Democracy and Citizenship in (South) Africa," Chp. 5 of Herman Wasserman Ed. *Popular Media, Democracy and Development in Africa*, 75 – 87.

Brians, Craig Leonard and Martin P. Wattenberg (1996), "Campaign Issue Knowledge and Salience: Comparing Reception from TV Commercials, TV News and Newspapers," *American Journal of Political Science*, 40 (1), 172-193.

Busse, Matthias and Carsten Hefeker (2007), "Political Risk, Institutions and Foreign Direct Investment," *European Journal of Political Economy*, 23 (2), 397-415.

Coase, Ronald H. (1950), "British Broadcasting: A Study in Monopoly," Harvard University Press, Cambridge, Massachusetts.

Coyne, C. J. and Leeson, P. T. (2004), "Read All About It! Understanding the Role of Media in Economic Development," *Kyklos*, 57, 21–44.

Dasgupta, Biplab (1973), "Naxalite armed struggles and the annihilation campaign in rural areas," *Economic and Political Weekly*, 8(4/6), 173-188.

Djankov, Simeon, Caralee McLiesh, Tatiana Nenova, and Andrei Shleifer (2003), "Who Owns the Media?," *Journal of Law and Economics*, 46, 341-382.

- Donovan, Nick, Smart, Malcolm, Moreno-Torres, Magui, Ole Kiso, Jan, and Zachariah, George, (2005), "Countries at Risk of Instability: Risk Factors and Dynamics of Instability," working paper, Prime Minister's Strategy Unit.
- Dutta, Nabamita, Sueshna Pal and Sanjukta Roy (2011), "Media Freedom, Socio-Political Stability and Economic Growth," Working Paper.
- Dutta, Nabamita and Sanjukta Roy (2009), "The Impact of Foreign Direct Investment on Press Freedom," *Kyklos*, 62(2), 239-257
- Dutta, Nabamita and Sanjukta Roy (2009), "What Attracts Foreign Direct Investment? A Closer Look," *Economic Affairs*, 29 (3), 81-86.
- Fielding D. (1997), "Determinants of Investment in Kenya and Cote d'Ivoire," *Journal of African Economies*, 2(3), 299-328.
- Freille, S. and Haque, E. and Kneller, R.(2007), "A Contribution to the Empirics of Press Freedom and Corruption," *European Journal of Political Economy*, 23, 838-862.
- Frere, Marie-Soleil (2010), "Popular TV Programs and Audiences in Kinhasa," Chp. 12 of Herman Wasserman Ed. *Popular Media, Democracy and Development in Africa*, 188 – 206.
- Gramsci, A., "Selections from the Prison Notebooks," Q. Hoare and G.N. Smith eds. New York: International Publishers.
- Guseva, M., M. Nakaa, A. Novel, K. Pekkala, B. Souberou and S. Stouli (2008), "Press Freedom and Development," UNESCO.
- Hao Lingxin and Daniel Q. Naiman (2007), *Quantile Regression*. Sage Publications, Inc.
- Herman, E. and Noam Chomsky (1988), "Manufacturing Consent," New York: Pantheon.
- Huttington, P.S. (1991). *The Third Wave: Democratization in the Late Twentieth Century*. Norman: University of Oklahoma Press.
- Jensen, Robert and Emily Oster (2009), "The Power of TV: Cable Television and Women's Status in India," *The Quarterly Journal of Economics*, 124(3), 1057-1094.
- Kaufmann, Daniel (2006), "Media, Governance and Development," Keynote Presentation, UNESCO World Press Freedom Day Meeting.
- Keane, J (1991), "The Media and Democracy," Cambridge: Polity Press.

- Koenker R, Hallock K (2001), "Quantile regression: An introduction," *Journal of Economic Perspectives* (forthcoming).
- Leeson, Peter T. (2008), "Media Freedom, Political Knowledge, and Participation," *Journal of Economic Perspective*, 22(2), 155 - 169
- Lehmijoki, Ulla and Tapio Palokangas (2009), "Population Growth Overshooting and Trade in Developing Countries," *Journal of Population Economics*, 22(1), 43-56.
- Lenin, Vladimir I. (1925), "On Freedom of the Press," *Labor Mobility*, 7(2), 35–37 (first published in 1917)
- Lewis, Arthur W. (1955), "The Theory of Economic Growth," Harper Torchbook, New York, New York
- Mondak, Jeffrey J. (1995), "Newspapers and Political Awareness," *American Journal of Political Science*, 39(2), 513-527
- Myrdal, Gunnar (1953), "The Political Element in the Development of Economic Theory," Routledge and Kegan, London
- Ndikumana, Leonce (2000), "Financial Determinants of Domestic Investment in Sub-Saharan Africa: Evidence from Panel Data," *World Development*, 28(2), 381-400.
- Norris, Pippa (2010), "Public Sentinel: News Media & Governance Reform," World Bank.
- Norris, Pippa (2006), "The Role of the Free Press in Promoting Democratization, Good Governance and Human Development," paper prepared for UNESCO World Press Freedom Day Meeting 2006.
- Norris, Pippa and Dieter Zinnbauer (2002), "Giving Voice to the Voiceless – Good Governance, Human Development and Mass Communications," Background Paper for Human Development Report 2002, UNDP.
- Roe, Mark J., and Jordan I. Siegel (2011), "Political Instability: Effects on Financial Development, Roots in the Severity of Economic Inequality," *Journal of Comparative Economics* (forthcoming).
- Roeder, G. Philip (2001), "Ethnolinguistic Fractionalization (ELF) Indices, 1961 and 1985." <<http://weber.ucsd.edu/~proeder/elf.htm>>
- Sachs, J.D., Warner, A.M., (1995 revised 1997, 1999), "Natural resource abundance and economic Growth," National Bureau of Economic Research Working paper No. 5398, Cambridge, MA.
- Sekkat, Khalid and Marie-Ange Veganzones-Varoudakis (2007), "Openness, Investment Climate, and FDI in Developing Countries," *Review of Development Economics*, 11(4), 607-620.

- Sen, Amartya (1999), "Development as Freedom," Alfred A. Knopf Inc, New York.
- Sen, Amartya (1984), "Poverty and Famines," Oxford University Press, Oxford.
- Simons, Henry (1948), "Economic Policy of a Free Society," University of Chicago Press, Chicago.
- Stiglitz Joseph (2002), "Transparency in Government," in R. Islam ed. *The Right to Tell: The Role of Mass Media in Economic Development*. Washington D.C.: The World Bank: 27 - 44.
- Strömberg, D. (2004), "Radio's impact on public spending," *Quarterly Journal of Economics*, 119(1), 189-221.
- Svensson, Reinikka and Jakob Svensson (2005), "Fighting Corruption to Improve Schooling: Evidence from a Newspaper Campaign in Uganda," *Journal of the European Economic Association*, 3(2-3), 259-67.
- Wai T. U. and C. H. Wong (1982), "Determinants of private investment in developing countries," *Journal of Development Studies*, 19(1), 19-36.
- Yi, Feng (1997), "Democracy, Political Stability and Economic Growth," *British Journal of Political Science*, 27, 391-418.
- Zablotsky, Edgardo E. (1996), "Political Stability and Economic Growth," CEMA Working Papers 109, Universidad del CEMA.

Table 1a: Impact of Press Freedom and Access to information on Political Risk Index (OLS Regression)

| VARIABLES | (1) | (2) Household with a Radio (%) | (3) Fixed Internet Subscr per 100 people | (4) Telecom Inv as % of Rev. | (5) Mobile cellular subsc. Per 100 people |
|------------------------------|--------------------------|--------------------------------------|--|------------------------------------|---|
| Lagged Press Freedom | 0.221*** (0.0463) | | | | |
| Lagged Access to Information | | -0.106 (0.183) | -0.344 (0.369) | 0.0172 (0.0284) | -0.00884 (0.0632) |
| GDP per capita | 0.00517*** (0.00112) | 0.00644* (0.00333) | 0.00615*** (0.00158) | 0.00601*** (0.00151) | 0.00615*** (0.00159) |
| Population Density | 0.0223 (0.0289) | -0.0870 (0.0627) | 0.00646 (0.0595) | 0.00195 (0.0577) | 0.00474 (0.0580) |
| Adult Literacy rate | 0.234* (0.122) | 0.285 (0.270) | 0.214 (0.174) | 0.200 (0.148) | 0.217 (0.172) |
| Ethno-Linguistic Frac. | 104.9*** (18.64) | 123.3*** (40.57) | 112.6*** (27.79) | 108.4*** (23.00) | 112.1*** (27.73) |
| Road Density | -0.755*** (0.177) | -0.883*** (0.236) | -0.865*** (0.285) | -0.802** (0.288) | -0.854*** (0.279) |
| Trade Openness | 0.0822** (0.0289) | 0.0800 (0.0512) | 0.0970* (0.0472) | 0.102* (0.0488) | 0.0982** (0.0464) |
| Landlocked Dummy | 5.648 (3.366) | 1.584 (4.167) | 4.253 (4.636) | 4.906 (4.628) | 4.435 (4.529) |
| % Catholic (1980) | -0.558*** (0.0798) | -0.796*** (0.238) | -0.645*** (0.151) | -0.628*** (0.142) | -0.647*** (0.148) |
| % Muslim (1980) | -0.421*** (0.0682) | -0.497*** (0.134) | -0.447*** (0.125) | -0.423*** (0.119) | -0.442*** (0.123) |
| % Protestant (1980) | -0.194 (0.131) | -0.215 (0.211) | -0.161 (0.193) | -0.127 (0.174) | -0.156 (0.192) |
| Latitude | 1.231*** (0.248) | 1.597** (0.631) | 1.517*** (0.445) | 1.415*** (0.416) | 1.493*** (0.439) |
| Ln (Land Area) | -6.379*** (1.113) | -11.97*** (3.244) | -7.681*** (1.587) | -7.554*** (1.491) | -7.693*** (1.561) |
| Electricity Cons. (Kw p.c) | -0.00791*** (0.00258) | -0.00887 (0.00592) | -0.00790* (0.00392) | -0.00751* (0.00358) | -0.00788* (0.00391) |
| Year Dummy | Yes | Yes | Yes | Yes | Yes |
| Constant | 45.19* (25.47) | 127.3*** (37.55) | 68.65* (32.78) | 69.26** (30.92) | 68.96** (32.72) |
| Observations | 290 | 290 | 290 | 290 | 290 |
| R-squared | 0.813 | 0.784 | 0.764 | 0.766 | 0.763 |

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 1b: Impact of Press Freedom and Access to information on Political Risk – Interactive Effect (OLS Regression)

| VARIABLES | Household with a Radio (%) | Fixed Internet Subscr per 100 people | Telecom Inv as % of Rev. | Mobile cellular subsc. Per 100 people |
|--|-------------------------------|---|-----------------------------|--|
| Lagged Press Freedom | 0.510*** (0.150) | 0.254*** (0.0547) | 0.246*** (0.0647) | 0.316*** (0.0700) |
| Lagged Access to Information | 0.0743 (0.142) | 14.35*** (2.917) | -0.0415 (0.0559) | 0.330*** (0.0785) |
| Interaction | 0.00219 (0.00305) | 0.207*** (0.0369) | 0.00744* (0.00107) | 0.00748*** (0.00180) |
| GDP per capita | 0.00390** (0.00148) | 0.00505*** (0.00108) | 0.00505*** (0.00113) | 0.00492*** (0.00111) |
| Population Density | -0.129** (0.0574) | 0.0324 (0.0274) | 0.0219 (0.0299) | 0.0288 (0.0256) |
| Adult Literacy rate | 0.322** (0.115) | 0.206* (0.106) | 0.215* (0.113) | 0.231** (0.0938) |
| Ethno-Linguistic Frac. | 109.2*** (16.37) | 102.1*** (15.52) | 102.7*** (16.10) | 95.62*** (13.23) |
| Road Density | -0.773*** (0.162) | -0.765*** (0.179) | -0.717*** (0.192) | -0.712*** (0.184) |
| Trade Openness | 0.0653** (0.0243) | 0.0734** (0.0296) | 0.0810** (0.0333) | 0.0651** (0.0229) |
| Landlocked Dummy | 0.403 (1.942) | 5.012 (3.104) | 5.709 (3.586) | 5.037* (2.560) |
| % Catholic (1980) | -0.720*** (0.103) | -0.533*** (0.0699) | -0.532*** (0.0828) | -0.505*** (0.0707) |
| % Muslim (1980) | -0.465*** (0.0617) | -0.431*** (0.0654) | -0.415*** (0.0660) | -0.405*** (0.0515) |
| % Protestant (1980) | -0.292** (0.112) | -0.194 (0.115) | -0.177 (0.118) | -0.218** (0.101) |
| Latitude | -0.720*** (0.103) | -0.533*** (0.0699) | -0.532*** (0.0828) | -0.505*** (0.0707) |
| Ln (Land Area) | -10.48*** (1.641) | -6.052*** (1.139) | -6.208*** (1.175) | -5.359*** (0.724) |
| Electricity Cons. (Kw p.c) | -0.00762** (0.00291) | -0.00786*** (0.00237) | -0.00781*** (0.00246) | -0.00776*** (0.00204) |
| Year Dummy | Yes | Yes | Yes | Yes |
| Constant | 107.8*** (24.09) | 42.86* (23.97) | 43.23 (25.54) | 36.66* (19.37) |
| Observations | 290 | 290 | 290 | 290 |
| R-squared | 0.901 | 0.833 | 0.814 | 0.850 |
| $\frac{\delta Pol.Risk_{it}}{\delta PF_{it-1}} = \beta_1 + \beta_2 Info.Penetr_{it-1} > 0$ | Always | Always | Always | Always |
| $\frac{\delta Pol.Risk_{it}}{\delta Info.Penetr_{it-1}} = \beta_1 + \beta_2 PF_{it-1} > 0$ | Always | Always | PF > 4 | PF > 33 |

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 2a: Impact of Press Freedom and Access to information on Political Risk Index – Quantile Regression

| VARIABLES | | | Household with a Radio (%) | Household with a Radio (%) | Fixed Internet Subscr per 100 people | Fixed Internet Subscr per 100 people | Telecom Inv as % of Rev. | Telecom Inv as % of Rev. | Mobile cellular subsc. Per 100 people | Mobile cellular subsc. Per 100 people |
|--|-------------------------|--------------------------|----------------------------------|----------------------------------|---|---|-----------------------------|-----------------------------|--|--|
| Lagged Press Freedom | 0.256*** (0.0505) | 0.197*** (0.0227) | | | | | | | | |
| Lagged Access to Information | | | 0.127 (0.162) | 0.0507 (0.0726) | 0.468* (0.264) | 0.909*** (0.153) | -0.0187 (0.0141) | 0.0236*** (0.00772) | -0.0644 (0.0852) | 0.0438 (0.0309) |
| GDP per capita | 0.00340*** (0.00120) | 0.00543*** (0.000526) | 0.00207 (0.00244) | 0.00696*** (0.00129) | 0.00721*** (0.00145) | 0.00696*** (0.000746) | 0.00681*** (0.00142) | 0.00654*** (0.000551) | 0.00624*** (0.00188) | 0.00684*** (0.000662) |
| Population Density | -0.00743 (0.0493) | -0.0106 (0.0211) | -0.121 (0.0948) | -0.120*** (0.0262) | 0.0159 (0.0669) | -0.0607** (0.0272) | 0.0172 (0.0641) | -0.0816*** (0.0203) | 0.00347 (0.0816) | -0.0342 (0.0233) |
| Adult Literacy rate | 0.114 (0.0707) | 0.345*** (0.0381) | -0.0337 (0.130) | 0.424*** (0.0860) | 0.0440 (0.0948) | 0.383*** (0.0589) | 0.0389 (0.0922) | 0.335*** (0.0437) | 0.0612 (0.112) | 0.394*** (0.0548) |
| Ethno-Linguistic Frac. | 81.78*** (18.94) | 119.4*** (6.691) | 73.27*** (24.15) | 139.2*** (13.27) | 92.85*** (24.64) | 125.3*** (9.968) | 87.58*** (23.41) | 117.5*** (7.277) | 86.38*** (29.02) | 121.5*** (9.562) |
| Road Density | -0.884** (0.361) | -0.800*** (0.0933) | -0.862** (0.372) | -1.093*** (0.159) | -0.649 (0.484) | -0.836*** (0.146) | -0.706 (0.467) | -0.723*** (0.111) | -0.708 (0.583) | -0.889*** (0.129) |
| Trade Openness | 0.0454 (0.0442) | 0.0935*** (0.0168) | 0.146** (0.0578) | 0.124*** (0.0259) | 0.0494 (0.0578) | 0.121*** (0.0248) | 0.0493 (0.0557) | 0.143*** (0.0179) | 0.0818 (0.0695) | 0.127*** (0.0225) |
| Landlocked Dummy | 3.920 (2.932) | 3.579*** (1.189) | 4.267 (5.685) | -3.788** (1.825) | 1.663 (4.029) | 0.0690 (1.805) | 2.102 (3.666) | -0.700 (1.309) | 2.718 (4.540) | -1.216 (1.641) |
| % Catholic, Muslims or Protestants (1980) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Latitude | 0.911*** (0.292) | 1.491*** (0.139) | 0.404 (0.487) | 1.751*** (0.267) | 1.623*** (0.371) | 1.674*** (0.214) | 1.544*** (0.362) | 1.473*** (0.151) | 1.368*** (0.437) | 1.657*** (0.195) |
| Ln (Land Area) | 3.920 (2.932) | -5.629*** (0.466) | -9.971*** (3.098) | -8.757*** (0.949) | -6.540*** (1.452) | -5.691*** (0.613) | -6.868*** (1.376) | -5.050*** (0.467) | -7.002*** (1.724) | -4.893*** (0.535) |
| Electricity Cons. (Kw p.c) | -0.00398* (0.00214) | -0.00947*** (0.00110) | 0.000407 (0.00376) | -0.0101*** (0.00224) | -0.00957*** (0.00287) | -0.0106*** (0.00166) | -0.00819*** (0.00280) | -0.00970*** (0.00118) | -0.00696* (0.00353) | -0.0103*** (0.00149) |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 89.55*** (16.76) | 30.55*** (8.089) | 140.9*** (44.58) | 78.55*** (11.19) | 74.50*** (22.57) | 38.28*** (10.95) | 81.72*** (21.57) | 38.98*** (8.007) | 82.22*** (26.96) | 29.50*** (9.439) |
| Observations | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 |

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1
Columns 1, 3, 5, 7, 9 represent results for q = 0.25. Columns 2, 4, 6, 8, 10 report results for q = 0.75.

Table 2b: Impact of Press Freedom and Access to Information on Political Risk– Quantile Regression Analysis

| VARIABLES | Household with a Radio (%) | Household with a Radio (%) | Fixed Internet Subscr per 100 people | Fixed Internet Subscr per 100 people | Telecom Inv as % of Rev. | Telecom Inv as % of Rev. | Mobile cellular subsc. Per 100 people | Mobile cellular subsc. Per 100 people |
|--|----------------------------|----------------------------|--------------------------------------|--------------------------------------|---------------------------|--------------------------|---------------------------------------|---------------------------------------|
| Lagged Press Freedom | 0.529*** (0.0419) | 0.602 (0.745) | 0.271* (0.141) | 0.237** (0.0962) | 0.217*** (0.0171) | 0.171** (0.0853) | 0.297*** (0.0488) | 0.199*** (0.0332) |
| Lagged Access to Information | -0.183*** (0.0316) | 0.106 (0.604) | 19.10*** (6.543) | 6.208 (5.148) | -0.0363*** (0.0137) | -0.0770 (0.0688) | 0.366*** (0.0617) | 0.262*** (0.0670) |
| Interaction | 0.00239*** (0.000766) | 0.00481 (0.0133) | 0.272*** (0.0859) | 0.101 (0.0686) | 0.00107** (0.000220) | 0.00163 (0.00108) | 0.00806*** (0.00105) | 0.00567*** (0.00105) |
| GDP per capita | 0.00553*** (0.000285) | 0.00273 (0.00560) | 0.00328 (0.00300) | 0.00524** (0.00204) | 0.00377*** (0.000297) | 0.00546*** (0.00177) | 0.00303*** (0.00106) | 0.00581*** (0.000704) |
| Population Density | -0.170*** (0.00924) | -0.176* (0.103) | 0.00381 (0.110) | 0.00415 (0.0834) | -0.00189 (0.0110) | 0.0192 (0.0650) | -0.0234 (0.0368) | -0.0286 (0.0263) |
| Adult Literacy rate | 0.356*** (0.0154) | 0.255 (0.381) | 0.0849 (0.170) | 0.317** (0.160) | 0.0929*** (0.0208) | 0.366*** (0.132) | 0.111* (0.0561) | 0.357*** (0.0480) |
| Ethno-Linguistic Frac. | 119.6*** (3.101) | 84.26 (62.83) | 89.96** (38.47) | 113.2*** (25.27) | 85.97*** (4.220) | 122.3*** (20.77) | 87.09*** (13.13) | 113.3*** (8.344) |
| Road Density | -0.714*** (0.0297) | -0.247 (0.638) | -0.894 (0.604) | -0.777** (0.383) | -0.832*** (0.0641) | -0.955*** (0.320) | -0.761*** (0.211) | -0.718*** (0.126) |
| Trade Openness | 0.0338*** (0.00681) | 0.0907 (0.0986) | 0.0668 (0.103) | 0.0984 (0.0704) | 0.0603*** (0.00971) | 0.103** (0.0517) | 0.0676* (0.0345) | 0.0984*** (0.0220) |
| Landlocked Dummy | -0.783 (0.541) | 2.100 (6.478) | 2.305 (6.471) | 3.398 (4.819) | 4.237*** (0.755) | 2.619 (4.020) | 2.287 (2.136) | 2.192 (1.589) |
| % Catholic, Muslims or Protestants (1980) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Latitude | 1.314*** (0.0706) | 0.628 (1.159) | 1.140 (0.720) | 1.391*** (0.515) | 1.038*** (0.0772) | 1.512*** (0.421) | 1.119*** (0.244) | 1.467*** (0.170) |
| Ln (Land Area) | -12.31*** (0.356) | -8.104* (4.596) | -6.611** (2.753) | -5.104*** (1.834) | -7.877*** (0.291) | -5.666*** (1.504) | -6.456*** (0.886) | -5.014*** (0.646) |
| Electricity Cons. (Kw p.c) | -0.00977*** (0.000562) | -0.00599 (0.0112) | -0.00493 (0.00549) | -0.00892** (0.00434) | -0.00454*** (0.000577) | -0.00875** (0.00341) | -0.00517*** (0.00185) | -0.0101*** (0.00143) |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 126.5*** (4.868) | 91.53* (47.49) | 67.25 (42.30) | 26.89 (32.42) | 87.60*** (4.436) | 29.75 (26.62) | 64.61*** (13.26) | 26.79** (10.52) |
| Observations | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 |
| $\frac{\delta Pol.Risk_{it}}{\delta PF_{it-1}} = \beta_1 + \beta_2 Info.Penetr_{it-1} > 0$ | Always | Always | Always | Always | Always | Always | Always | Always |
| $\frac{\delta Pol.Risk_{it}}{\delta Info.Penetr_{it-1}} = \beta_1 + \beta_2 PF_{it-1} > 0$ | PF > 90 | Always | Always | Always | PF > 40 | PF > 40 | Always | Always |

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1
 Columns 1, 3, 5, 7, 9 represent results for q = 0.25. Columns 2, 4, 6, 8, 10 report results for q = 0.75.

Table 3a: Impact of Press Freedom and Access to information on Political Risk – Interactive Effect (Difference GMM)

| VARIABLES | Household with a Radio (%) | Fixed Internet Subscr per 100 people | Telecom Inv as % of Rev. | Mobile cellular subsc. Per 100 people |
|--|----------------------------|--------------------------------------|--------------------------|---------------------------------------|
| Lagged Political Risk | 0.740*** (0.129) | 0.704*** (0.109) | 0.455*** (0.127) | 0.617*** (0.112) |
| Lagged Press Freedom | 0.379* (0.217) | 0.140* (0.0781) | 0.0890* (0.109) | 0.0915*** (0.342) |
| Lagged Access to Information | -0.274* (0.349) | 0.929 (6.942) | 0.129** (0.130) | 1.156 (0.821) |
| Interaction | 0.0881*** (0.055) | 0.0943* (0.0658) | 0.00267** (0.248) | 0.0158* (0.116) |
| GDP per capita | 0.00747** (0.00645) | 0.00171* (0.00673) | 0.0112* (0.00916) | 0.0170* (0.0181) |
| Population Density | 7.884** (3.627) | 1.698 (1.818) | -0.0623 (1.357) | 0.951*** (1.786) |
| Adult Literacy rate | 0.663** (0.407) | 2.126** (0.883) | 2.209*** (1.977) | 5.390*** (4.424) |
| Road Density | -0.807 (10.36) | 6.409 (3.935) | -1.286 (5.246) | 0.944 (7.974) |
| Trade Openness | 0.435** (0.196) | 0.0303 (0.0476) | 0.0479 (0.0721) | 0.0244 (0.0886) |
| Electricity Cons. (Kw p.c) | 0.0480*** (0.0169) | 0.00372 (0.00556) | 0.0111 (0.00933) | 0.0127 (0.0186) |
| Year Dummy | Yes | Yes | Yes | Yes |
| Constant | 32.03 (21.75) | 17.32*** (5.306) | 31.77*** (6.631) | 35.26*** (11.74) |
| Observations | 290 | 290 | 290 | 290 |
| Number of Instruments | 18 | 19 | 19 | 19 |
| Autocorrelation Test (<i>Null = instruments are not correlated with the residuals</i>) | p = 0.76 | p = 0.32 | p = 0.49 | p = 0.94 |
| Sargan Test (<i>Null = error term exhibits no second order serial correlation</i>) | p = 0.79 | p = 0.80 | p = 0.91 | p = 0.77 |

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The p values for the Autocorrelation and Sargan Test ensure that we cannot reject the Null and renders the specification and the estimations valid.

Table 3b: Impact of Press Freedom and Access to information on Political Risk – Interactive Effect (System GMM)

| VARIABLES | Household with a Radio (%) | Fixed Internet Subscr per 100 people | Telecom Inv as % of Rev. | Mobile cellular subsc. Per 100 people |
|---|----------------------------|--------------------------------------|--------------------------|---------------------------------------|
| Lagged Political Risk | 0.782*** (0.117) | 0.637*** (0.0990) | 0.635*** (0.100) | 0.527*** (0.167) |
| Lagged Press Freedom | 0.357*** (0.0887) | 0.0110*** (0.0236) | 0.00127*** (0.0248) | 0.0308*** (0.0349) |
| Lagged Access to Information | -0.186*** (0.0221) | 3.505* (0.1327) | 0.0114 (0.0116) | 0.809* (0.0625) |
| Interaction | 0.0501*** (0.00148) | 0.0524** (0.177) | 0.0110*** (0.0223) | 0.0114*** (0.0088) |
| GDP per capita | 0.0209 (0.0140) | 0.000933 (0.00334) | 0.0133*** (0.00364) | 9.88e-06 (0.00463) |
| Population Density | 3.202** (1.408) | 0.382** (0.181) | 0.308** (0.141) | 0.438 (0.505) |
| Adult Literacy rate | 5.000* (2.957) | 0.330 (0.287) | 0.160 (0.151) | 0.281 (0.227) |
| Road Density | 0.940 (1.763) | 0.143 (1.345) | 1.013*** (0.0231) | -0.281 (1.919) |
| Trade Openness | 0.106 (0.109) | 0.0433 (0.0360) | 0.0254** (0.0310) | 0.0478*** (0.0432) |
| Electricity Cons. (Kw p.c) | 0.0321** (0.0130) | 0.00223 (0.00332) | 0.0243 (0.00317) | 0.00362 (0.00351) |
| Year Dummy | Yes | Yes | Yes | Yes |
| Constant | 25.68*** (5.747) | 19.76*** (5.611) | 20.26*** (5.297) | 34.96*** (12.48) |
| Observations | 290 | 290 | 290 | 290 |
| Number of Instruments | 19 | 19 | 19 | 19 |
| Autocorrelation Test (Null = instruments are not correlated with the residuals) | p = 0.51 | p = 0.34 | p = 0.38 | p = 0.46 |
| Sargan Test (Null = error term exhibits no second order serial correlation) | p = 0.78 | p = 0.91 | p = 0.79 | p = 0.90 |

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The p values for the Autocorrelation and Sargan Test ensure that we cannot reject the Null and renders the specification and the estimations valid.

Appendix I: Summary Statistics

| | Mean | Min. | Max. | Data Source |
|---|--------|-------|---------|--|
| Political Risk Index | 55.67 | 21 | 81.16 | International Country Risk Guide database |
| Freedom of Press | 43.49 | 6 | 83 | Freedom House |
| Household with Radio (%) | 53.37 | 0 | 96.76 | WDI, 2010 |
| Fixed Internet Subscr. (per 100 people) | 0.62 | 0 | 15.72 | WDI, 2010 |
| Telecom Inv. (as % of Revenue) | 42.09 | 0.35 | 332.59 | WDI, 2010 |
| Mobile Subscribers (per 100 people) | 9.15 | 0 | 107.49 | WDI, 2010 |
| GDP per capita (US \$ constant) | 889.31 | 62.24 | 8208.32 | WDI, 2010 |
| Population Density | 78.89 | 1.92 | 625.05 | WDI, 2010 |
| Trade Openness | 75.14 | 14.61 | 283.44 | WDI, 2010 |
| Adult Literacy Rate | 57.49 | 9.39 | 91.84 | WDI, 2010 |
| Road Density (Km of road per 100 sq. Km of land) | 16.09 | .48 | 99.56 | WDI, 2010 |
| Electric Power Consumption (Kwh) per capita | 528.99 | 23.00 | 4886.15 | WDI, 2010 |
| Polity 2 | 0.93 | - 9 | 10 | Polity IV Database |
| Share of Primary Exports to GNP (1980 value) | 0.19 | 0.03 | 0.58 | Sachs and Warner database |