

The institutional determinants of private equity involvement in business groups – the case of Africa

Article (Accepted Version)

Hearn, Bruce, Randøy, Trond and Oxelheim, Lars (2018) The institutional determinants of private equity involvement in business groups – the case of Africa. *Journal of World Business*, 53 (2). pp. 118-133. ISSN 1090-9516

This version is available from Sussex Research Online: <http://sro.sussex.ac.uk/id/eprint/65073/>

This document is made available in accordance with publisher policies and may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher's version. Please see the URL above for details on accessing the published version.

Copyright and reuse:

Sussex Research Online is a digital repository of the research output of the University.

Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable, the material made available in SRO has been checked for eligibility before being made available.

Copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

THE INSTITUTIONAL DETERMINANTS OF PRIVATE EQUITY INVOLVEMENT IN BUSINESS GROUPS – THE CASE OF AFRICA

Abstract

This study examines the governance attributes of post-IPO (initial public offering) retained ownership of private equity in business group constituent firms in contrast to their unaffiliated counterparts, in 202 newly listed firms in 22 emerging African economies. We adopt an actor centred institutional-theoretic perspective in rationalizing institutional voids and the advantages of maintained governance by both business angels (BA) and venture capital (VC) private equity. Our findings reveal private equity retain higher post-IPO ownership in business group constituents compared to unaffiliated firms and that this is inversely moderated in the context of improving institutional quality – where this is particularly strong in case of foreign VC as opposed to domestic VC or BA. Our result adds to the literature on multifocal corporate governance mechanisms and the institutional determinants of private equity investment.

Keywords: Business Group, Business Angel, Venture Capital; Africa; IPO; Ownership Structure; Institutional Voids, Property Rights Protection.

Acknowledgements

Lars Oxelheim acknowledges financial support from NasdaqOMX Nordic Foundation. We are very grateful for valuable comments from Ron Smith and David Storey. We are also grateful for constructive comments from the participants of the European International Business Academy annual conference, Uppsala, Sweden in December 2014 and of the Academy of International Business annual conference, Bangalore, India in June 2015.

1. Introduction

Business groups are hybrid organizational forms comprised of a number of nominally independent firms. These firms are intrinsically bound together through a range of “hard” ownership-based control mechanisms (e.g. concentrated voting rights) and “soft” socialization measures (e.g. clan and familial affiliation of top management), where business group constituent firms collectively adhere to common group-wide strategies (Khanna & Rivkin, 2001). Despite the importance of business groups in emerging markets there is a lack of literature on business group expansion; specifically on how the constraints of a limited internal capital market necessitate external capital infusions by predominantly private equity (Khanna and Rivkin, 2001).

In this paper we analyse the interplay between the institutional context and the corporate governance role of private equity retained ownership in post-IPO (initial public offering) business group structures. By developing a new institutional-theoretic approach we address the role of formal institutions on the conduct of firms based in Africa. We argue that Africa is a particular rich research context given the exceptionally high variation in institutionally quality across the continent, with this ranging from the weakest formal institutions worldwide (Transparency International, 2014) to some national governance frameworks being on a par with Western Europe (see Hearn & Piesse, 2013; Hearn, 2014).

Prior research has emphasised that one of the main advantages of business groups in emerging economies is their ability to mitigate institutional voids (Khanna & Yafeh, 2007). The vulnerability of firms to such institutional voids can be reduced by forming business groups with internally coordinated group-wide managerial labour, product and capital markets, paralleled by accentuated control across the group. The functioning of such internalized markets is underscored by extensive socialized control amongst group constituents (Khanna & Rivkin, 2001). Socialized control commonly reflects powerful underlying sociological traits within indigenous society, such as familial or clan affiliation, and provide a different rationale for group formation rivalling conventional arguments based on institutional voids. This is further exemplified by the often intractable nature of powerful family groups within state institutional architecture, prevalent to

many emerging economies (Claessens *et al.*, 2000; Khanna & Yafeh, 2007; Khanna & Palepu, 2000). Thus private equity investors into business group constituent firms must contend with the socialized control over the business group by the controlling owner. The complexity of such control is aggravated by the opaqueness of formal institutions offering protection of property rights.

We contribute to the nascent comparative corporate governance literature (see Aguilera & Jackson, 2003, 2010) in developing an actor-centred institutional-theoretic perspective. Specifically, we apply this perspective by focusing on the interaction between outside private equity and controlling business group entities within focal IPO firms¹. Our perspective is particularly useful in rationalizing the co-existence of multiple governance frameworks within a single national context. This implies that we use theoretical concepts such as institutional path dependence (see North, 1990, 1994) and mutually reinforcing complementarities (see Milgrom and Roberts, 1994; Aoki, 2001). The perspective is also particularly applicable in Africa where European-colonial transplanted formal institutions are often incongruous with informal institutions rooted on feudal clan-based political economies – eschewing collectivism and communitarian notions as well as religious norms based on egalitarianism and uniformity. The perspective provides our theoretical basis for evaluating the corporate governance options available to private equity post-IPO. Such corporate governance options are a transactions cost trade-off between retained ownership – leading to more intrusive social participation within the business group constituent firm – or alternatively with lower level of ownership a greater reliance on state-level institutional architecture and consequently higher reliance on legally mandated performance covenants. The trade-off between these two alternatives centres on transactions costs – themselves a function of the differences in bounded rationality between outside private equity and dominant business group controlling entity where these are shaped by institutions.

¹ Such an actor-centred perspective encompasses the institutional formal versus informal dichotomy of North (1990, 1994), elements of Williamson's (1998, 2000) transaction cost economics – itself an offshoot of the institutional literature, and notions of isomorphic conformity in organizational structure of DiMaggio and Powell (1983). These provide the basis of nascent comparative corporate governance literature of Aguilera and Jackson (2003).

Using a unique hand-collected and comprehensive sample of 202 IPOs undertaken across Africa from January 2000 to January 2014 we find empirical support for our hypotheses that private equity post-IPO ownership is higher in business group constituent firms than in their unaffiliated counterparts. This association is inversely moderated by institutional quality. The moderating effect is found to be much stronger for foreign VC than for domestic VCs.

The rest of this paper is organized in six sections. In the next section below, we outline the theoretical justification behind our study and hypotheses. In the section thereafter we provide an overview of African stock markets, private equity and institutional frameworks, followed by a section in which we outline the data. Next we define the variables used in study and the modelling techniques. In a further section, we discuss the empirical findings. In the closing section, we summarise the key findings and discuss the implications and the limitations of the study.

2. Theory and hypotheses

While business groups are constellations of firms under the control of a dominant entity – usually a family but also state, banks (e.g. Japanese keiretsu), corporate, informal or individual interests – all subordinate firms commonly adhere to a joint group-wide strategy (Khanna & Rivkin, 2001). The extended group is a hybrid organizational structure – where its coordinated strategy between constituents infers it falls outside the classical boundary of the firm yet within the scope of frictionless markets (Williamson, 2000). In past literature the main arguments rationalizing the formation of business groups are based on deficiencies in state-level financial and legal architecture and/or a weak institutional environment leading to prohibitive transactions costs (Williamson, 1998, 2000). Such weaknesses commonly arise from a lack of efficient intermediaries in external markets for products, labour and capital (Khanna & Yafeh, 2007). Such inefficiencies lead to a necessity in internalising the intermediation function of these markets through a better-performing group-wide resource coordination system.²

² Emerging economy business groups are typically diversified across industries and attract a market valuation premium for this – where the opposite would be true for such diversification in developed economies (Khanna & Yafeh, 2007).

Past research (Khanna & Palepu, 2000; Khanna & Rivkin, 2001) indicates that religious and familial altruism can provide the social “glue” binding the business group members together, as these institutions³ employ socialized control mechanisms across the wider group. This “glue” is also shown by the fact that within the business group there is commonly a complex managerial coordination system – with resource allocation being made in accordance to social status and within-group institutionalized rules of action (Ocasio, 1999). The institutionalized nature of this social cohesion promotes trust between group members, enhancing group-based social capital. The institutional-theoretic argument above rationalizes business group formation in terms of networks-based trust that helps to circumvent institutional voids. This argument based on institutional complementarities (Aguilera & Jackson, 2003) alludes to broader mutually reinforcing institutional elements (Millgrom & Roberts, 1994; Aoki, 2001) that originate from the deeper societal matrix. Overall the institutional perspective places considerable emphasis on the inherent social nature of business groups.

In order to enhance the efficiencies associated with resource provision in internal capital markets, business groups often take over and internalize a specialized financial services firm, such as a commercial bank or VC entity (Khanna & Palepu, 2000). Business group expansion – either through additional diversification of activities or calving i.e. the formation of subordinate founder-led groups from within the parent group structure – stretches financial resources and necessitates the raising of outside private equity capital. Group-constituent firms are in a particularly strategically advantageous position in being able to leverage on the wider group reputation or brand in facilitating trust and to attract external investment (Khanna & Rivkin, 2001). Trust is instrumental in their attainment of credibility in contracting (Khanna & Palepu, 2000; Khanna & Rivkin, 2001).

The emerging market premium assists business groups in attaining geographical and industry risk diversification – where sector concentration otherwise renders firms vulnerable to the significant macroeconomic and policy instability ubiquitous to many emerging economies. Such group-based diversification of cash flow also contributes to a group-wide income smoothing and to a more efficient allocation of the group-based internal capital markets.

³ In this context we refer to North (1991)’s dichotomous definition of institutions being formal and informal. The former refers to formal governmental, political, legal mechanisms while the latter refers to norms, social values, religious ideals and other deeper sociological notions and behavioural norms.

African IPO firms' access to private equity investors is at a low absolute level but still essential for capital infusions to augment provision by internal markets.

A critical dimension in capital market intermediation is the intertemporal dimension of investment, which draws on the relative longevity of investment time horizons of actors. Large extended family entities – particularly in emerging economies with minimal, if any, state social welfare provision (Levy, 2008) – are largely motivated by intergenerational transfer of capital. Thus in diversified groups investment horizons associated with internal capital markets may be significantly longer in focussing on long-term value and the social significance of a constituent firm's operations than those of outside private equity investors. The longer horizons are especially prominent in the operations of group-wide internal markets, where a combination of investment over multiple periods and shareholder tunnelling appear together with mechanisms such as transfer pricing and expropriation used to redistribute capital around group members (La Porta *et al.*, 1997, 1998; Shleifer & Vishny, 1997, Claessens *et al.*, 1999, 2000). Hence, conflicts of interest may occur with the shorter-time horizons associated with profit-motivated external investors – such as private equity. Furthermore these horizons are also associated with expropriation. Differences of time horizon preferences between investor groups underscore the considerable moral hazard costs associated with external principals infusing capital into group-constituent firms. These costs being encompassed within broader transactions costs associated with differences in bounded rationality between group members and outsiders may lead to “conflicting voices” within the organization (Hoskisson *et al.*, 2002).

The inherent differences in the institutional environments - within which business group constituent firms and their respective external private equity investors are socially embedded - are reflected in different degrees of bounded rationality of these actors (Hoskisson *et al.*, 2002). While the different degrees encompass moral hazard risks they also encapsulate levels of opportunism and the intendedly rational nature of actors – where this rationality is distinctively shaped by the respective indigenous institutional frameworks (Williamson, 1998). Such differences in bounded rationality between actors generate transactions costs – where the mitigation of these places a

central emphasis on ex-post governance structure (Williamson, 1998, 2000). Thus at an IPO there is an important choice between private equity's retained ownership and intrusive social participation (see Bruton *et al.*, 2010) within business groups, on the one hand, and a reduction in ownership and greater reliance on performance-based contracts and covenants, on the other (Sahlman, 1990; Gompers & Lerner, 1996). This view forms the basis of our theoretical model of the interaction between private equity and business group constituent firms.

2.1 Business groups and institutions in emerging economies

We argue that while there is a strong rationale for the institutional void arguments in relation to the functioning of business groups, there are equally strong socio-cognitive arguments relating to the formation of such groups. Last-mentioned arguments are particularly pertinent in underscoring the extended social system and inter-relationships amongst group-members that underpins the efficiency of the internal resource coordination system. They also shape the distinctive bounded rationality of business group constituent actors – thereby defining transactions costs and related moral hazard with respect to outside investor principals such as private equity.

A distinctive characteristic of many emerging economies is the incongruity – or lack of fit – between formal institutional frameworks and their informal counterparts. We acknowledge the common complementary nature of various corporate governance mechanisms. For example, a sophisticated system of institutional complementarities together with associated institutionalized “pressures” eschewing isomorphic conformity⁴ inherent in the group structure (DiMaggio & Powell, 1983), and this further perpetuates incongruities between formal and informal governance frameworks within societies. Complementarities between institutional elements infer that the value of any given institutional element is optimised only in the presence of mutually supportive institutional elements (Millgrom & Roberts, 1994; Aoki, 2001). Firstly, this underscores the importance of their mutually interdependent reinforcing nature, which in turn facilitates the

⁴ These pressures are coercive, defined in terms of formal government regulations and laws, normative, defined as cultural and societal expectations, and mimetic, defined as the need to copy other organizations within an industry or economic sector in order to alleviate environmental uncertainties (DiMaggio and Powell, 1983).

formation of a wider governance framework. Secondly, it emphasizes the importance of the social context within which the endogenous evolution of an institutional framework takes place. It also explains the co-existence of more than one governance framework within a national context (Aguilera & Jackson, 2003), where this institutionalized explanation fits with evidence of a similar co-existence of multiple economic equilibria within African societies in the economics literature (Nunn & Wantchekon, 2011).

Finally, we propose that developing an actor-centred institutional perspective, with its emphasis on the co-existence of multiple governance frameworks, helps to explain the pervasive presence of business groups in *both* low and high institutional quality environments. This perspective questions the traditional institutional “void” view in which business group formation is based solely on deficiencies in state architecture or institutions. Furthermore it addresses shortfalls in agency where the under-socialized perspective is based solely on deficiencies in bilateral contracts between principals and their agents, and over-socialized traditional institutionalist perspectives where these are constrained to an aggregate uniform national level (Aguilera and Jackson, 2003). Our view is also in line with the view of Granovetter (2005) “...that business groups are networks that facilitate the creation of “trust”, which makes up for incomplete contracts and imperfect rule of law” (Khanna & Yafeh, 2007: 348). However, this is at odds with anecdotal evidence from across North Africa, and Tunisia and Morocco in particular (Hearn, 2014). While family-centred business groups are prolific and permeate traditional secular distinctions between public and private economic realms, state institutions have been consistently ranked as the highest quality institutions across Africa and on a par with Western Europe (Transparency International, 2014). Thus, the case of Africa highlights that the interplay between institutions and the presence of business groups is much more complex and at odds with the view put forth by the existing literature.

2.2 Private equity ownership retention in business groups

Private equity (PE) can be viewed in terms of two very different constituent types of investor: formal and informal. The former is characterised by venture capital (VC) while the latter is typified

by business angels (BA). We argue that retained PE ownership in IPO firm's constituent to business groups distinguishes it from retained ownership of unaffiliated counterparts. Our view is based on the premise that private equity entities face - as previously stated - two *ex-post* governance options at IPO: that of intrusive social participation within focal firm's organizational structure associated with retained ownership or a reliance on legally protected and mandated performance-based contracts and covenants. The choice between these two forms of governance is largely determined on the degree of moral hazard – encompassed within transactions costs – associated with the business group entity. This arises from the inherent incompleteness of contracts – in terms of being unable to capture every possible eventuality and human behaviour of actors to contract – justifying the focus on appropriate *ex-post* governance arrangements (Williamson, 1998, 2000).

Institutional theory posits considerable differences between PE entities where these differences are a reflection of the social environment within which the entities are inextricably embedded (Granovetter, 1985). Informal BA investors as well as indigenous “domestic” VC are embedded within same social context as their investee firms. In this context they too are subject to the same notions of cognitive and religious-moral legitimacy regarding extended clan and familial networks. Business groups adopt a relationship-focus to their contracting – where this is typically based on trust and notions of social reciprocity – although these norms are offset by professional private equity industry norms that are shaped on globally dominant US PE market (Bruton et al, 2005). By comparison “foreign” VC are subject only to US VC industry norms inferring a greater reliance on impartial formal state institutional quality to enforce contracting. However we argue that all three types of PE are aware of the necessity to attain a degree of cognitive legitimacy – necessitating adaptation of investment models to “fit” indigenous social environment within which their transactions are embedded. This infers a much greater emphasis on socialized relationships in order to mitigate contracting costs.

Business group constituents are able to draw upon extensive internal capital, labour and product markets – that fall under the common management of the entity (usually a family) controlling the group structure. This places a central emphasis on the socialized inter-relationships

within the controlling entity, including levels of familial and religious altruism (Schulze *et al.*, 2003; Randøy & Goel, 2003), and the social capital within such a fundamentally closed network. Furthermore the social relationships – including those of social status – determine the efficiency of internal resource coordination system, the longevity of the investment horizon, and the degree of protection of property rights afforded to outside investors (principals). The social cohesion – often based on altruistic bonds rooted on deeper societal structures such as clan or extended familial allegiances – shapes the bounded rationality of group constituents. Furthermore the presence of these extended supportive internal markets acts to nurture firms thereby circumventing voids in the external contracting environment inhibiting access to resources and efficient intermediaries. Thus business group constituents are a more attractive investment proposition for private equity entities compared to non-group independent firms – where these lack the access to resources of their within-group counterparts. On this basis we argue that group-affiliated firms are more likely to attract higher levels of private equity investment with this being maintained due to their attractiveness as investment opportunities for private equity investors.

Furthermore, we argue that all private equity investors are aware of the risks arising from moral hazard – where these are encapsulated in the way these investors try to minimize the broader transactions costs. These risks are accentuated given private equity entities are subject to the professionalized industry norms from dominant US private equity industry (Bruton *et al.*, 2005) – where these are partially offset by indigenous norms arising from cognitive and religious-moral sociological structures. Given the central importance of trust and social relationships in network economies – these tend to be fundamentally closed and internal in terms of markets and resource coordination (Hoskisson *et al.*, 2004). This is very different from the open external markets systems upon which US-based industry norms and governance frameworks are based. Thus there is a marked emphasis on socialized relationships to alleviate otherwise prohibitive transactions costs in contracting between all private equity entities and business group constituent firms. While this is on the one hand a reflection of the need to alleviate moral hazard risks (see Claessens *et al.*, 1999, 2000)

through continued socialized interaction with the wider business group – on the other hand it mirrors the need for private equity entities to attain indigenous cognitive and moral legitimacy.

The institution-theoretic perspective above motivates us to put forth the following hypothesis:

Hypothesis 1: There is a positive association between being a business group constituent IPO firm and post-IPO private equity ownership retention

2.3 The moderating impact of institutional quality

We argue that the association between retained ownership by outsider private equity investors and business group constituent firms is moderated by formal institutional quality. The effect of institutional quality is twofold. Firstly, the elevated quality of impartial state-level architecture provides an alternate mechanism for otherwise disadvantaged minority outside investors in terms of protection of property rights. Outside investors – such as private equity – can adopt legally mandated governance mechanisms through the employment of performance related contracts and covenants. These are optimal, given the presence of high institutional quality yielding protection and enforcement of property rights.

Secondly, institutional theory helps us to understand why PE prefers business group constituent firms. Higher institutional quality infers not only the transplantation of the institutional elements of foreign “best practice”, but critically also their successful adaptation and assimilation within the indigenous societal matrix. While Bruton *et al* (2010) elaborate on the differences between BA and VC variants of PE, we argue that both are profoundly impacted by elevated institutional quality in emerging economies. This has two further implications. It infers greater acceptance and understanding of market-orientated governance systems – that are central to development policy (Hoskisson *et al.*, 2004) – amongst indigenous population, which in turn infers that BA investors are more susceptible to notions of divestment and exit from their early-stage investments. It also means greater resonance – or institutional compatibility – between higher

quality impartial state architecture and the market-orientated norms of VC investors, where these are based on those of the globally dominant US private equity industry (Bruton *et al.*, 2005). From this the IPO is seen as divestment or exit event (Bruton *et al.*, 2005). It also follows that notions of impartial state architecture and formal institutional quality are central to foreign VC norms and investment preferences in particular (Bruton *et al.*, 2005). In contrast BA and domestic VC are less likely influenced by norms shaped on the importance of impartial formal institutional quality with these being subject to greater influence of indigenous societal values.

In the light of the theory-based arguments outlined above we formulate the following hypothesis:

Hypothesis 2: The association between private equity ownership post-IPO retention and business groups constituent IPO-firms is negatively moderated by institutional quality

3. African stock markets, private equity and business groups

In the period 2000 – 2014 the numbers of firms undertaking an IPO across Africa are, as shown in Table 1 - relatively concentrated in the North African exchanges of Egypt, Morocco and Tunisia while in Sub Saharan Africa there is an equal concentration between Kenya, Nigeria and Ghana. The majority of other markets across the region have few IPOs and with these typically involving state privatizations. South Africa (the largest market) are notable in being a large and well developed market with an absence of IPOs due to liquidity concerns underscoring a propensity of private placements.

Many of the new listings across the North African region – in Tunisia, Morocco and Cape Verde - are influenced by far-reaching programmes of corporate tax breaks stimulating precipitation of IPOs from fragile private sectors (see Hearn & Piesse, 2013; Hearn, 2014). A large fraction of these privatizations emanate from smaller fledgling frontier markets, largely established as an outcome of structural adjustment programmes, while a high concentration in Egypt is the result of its transition from socialism (see Hearn, 2014). Finally, it is notable that - with the exceptions of

Mauritius and Nigeria - family-centred business groups proliferate across the North African region. The number of non-family business group IPOs are minimal compared to their familial counterparts. These are centred on state – such as Tunisian state absorbing the assets of former premier Ben-Ali and Trabelsi – on quasi-state entities – such as Press Trust group in Malawi which is based on presidency – or individuals with informal groups such as in Botswana.

Insert Table 1

A comparison of the investment profiles of BA, domestic and foreign VC is provided in Table 2. Several observations can be made. The first is that syndicate sizes are larger for both foreign and domestic VC than for BA investors. The process of syndication is itself a mechanism for the provision of on-going monitoring and surveillance of investments (reduction of ex-post moral hazard) where multiple private equity entities within a syndicate are able to assess each other's appraisals of the target investee firm (Barry *et al.*, 1990; Sahlman, 1990). Syndicated VC investments are particularly common in high risk environments (Barry *et al.*, 1990; Lerner, 1994).

There are noticeably very few exits – with one each for domestic and foreign VC respectively and none for BA. The lack of divestment of holdings at IPO is apparent from the number of IPOs in which the overall level of private equity ownership is unchanged with this being 3 IPOs in case of foreign VC and then 6 IPOs for domestic VC and 7 IPOs for BAs.

In terms of the type of VC activity, foreign VC activities are overwhelmingly dominated by those administered by state and development agencies (72%) with a much lower (8%) proportion administered through commercial banks. Contrastingly, domestic VC activities are largely administered through individual private equity partnerships or agencies operating funds (52.27%) while just below 30% are administered by indigenous state and development agencies. It is notable that the majority of private equity investments are in North as opposed to Sub Saharan Africa. This reflects the relative economic prosperity and levels of institutional development in Northern Africa.

This is also reflected in the significant target industry concentrations of private equity investment which justifies our later employment of industry controls.

Insert Table 2

When analysing all three classes of private equity activity across Africa, we find the majority of foreign VC activity arising from international development agencies like IFC and their major OECD national counterparts; such as France's Proparco, UK's CDC, and Netherlands FMO.⁵ Domestic VC activity is overwhelmingly dominated by the indigenous North African private equity community where much of this is linked either to the state or to large extended family business groups. Finally, we find BA and domestic VC activity being largely reflective of the prosperity of national economies across the region; with North Africa (Egypt, Tunisia and Morocco) alongside Nigeria, Botswana and South Africa all featuring prominently.

4. Data – African IPOs

The dataset was constructed in two stages. First, a list of Initial Public Offerings (IPOs) on African markets between January 2000 and January 2014 was identified. In North Africa these include Algeria, Egypt, Morocco and Tunisia, and in SSA Cape Verde Islands (Bolsa de Valores de Cabo Verde), Cameroon (Bourse de Douala), BRVM (Cote d'Ivoire), Sierra Leone, Malawi, Kenya, Uganda, Rwanda, Tanzania, Seychelles, Zambia, Namibia, Botswana, Mozambique, Mauritius and Ghana. Nigeria was also included but only data between January 2002 and January 2014 was available. Our primary source was here the national stock exchanges and their associated websites and these were cross checked with lists sourced from major brokerage houses to ensure accuracy in the case of Nigeria and Zambia. This resulted in an "estimated" population of 280 stock listings.

In order to make sure our population actually covered IPOs and not private placements, the IPO prospectuses were obtained. Our IPO data include only offerings that produce genuine

⁵ These are omitted for brevity but available from authors upon request

diversification of ownership amongst a base of minority shareholders (as opposed to private placements involving the preferential allocation of stock with institutional or corporate block holders in pre-arranged quantities and prices). Equally care was taken to avoid misclassifications with registrations, introductions and seasoned (secondary) offerings as these are often also officially referred to as IPOs. Furthermore IPO's are defined as offerings of ordinary shares with single class voting rights, that is, excluding preferred stock, convertibles, unit and investment trusts as well as readmissions, reorganizations and demergers and transfers of shares between main and development boards. In lieu of these efforts to focus solely on IPOs our final population is reduced to 202 genuine IPO firms.

Data on IPOs were collected from the financial market regulator websites for Algeria and Morocco while a combination of Thomson Corporation Perfect Information and Al Zawya databases were used for Egyptian prospectuses. The Al Zawya database, the national stock exchange and direct contact with individual firms, were used to source prospectuses for Tunisia. Similarly, in SSA, prospectuses were from the Ghanaian, Tanzanian, Cape Verdean, and Sierra Leone national stock exchanges and the exchange websites in the case of Seychelles and Cameroon. Thomson Corporation Perfect Information database was used in the first instance to source prospectuses from Nigeria, Malawi and Kenya. Pangea Stockbrokers (Zambia) as well as individual floated firms provided prospectuses for the Zambian stock market. Finally, in SSA, the African Financials website (African Financials website, 2014) provided information relevant to listing from annual reports.

Considerable care was taken in the interpretation of information from IPO listings prospectuses given the considerable variation in size and quality of these filings across the continent. Examples range from inaccuracies in values and units of measurement in Egypt (such as units stipulated in prospectuses as billions where additional verification confirmed value denominated in millions) to omissions and inaccuracies in the balance sheets in the prospectuses of many smaller Nigerian firms. Attempts to verify data from prospectuses with additional sources such as firm websites, annual reports and mandatory filings of annual accounts were taken wherever possible.

Finally it is notable that of our population of 202 genuine IPOs, 6 had missing values in terms of published age of IPO firm –resulting in the final sample⁶ of 196 IPOs. The 6 missing observations are evenly distributed throughout the sample.

5. Methodology – variables and models

5.1 Dependent variables

We employ a binary dependent variable that takes the value 1 if the IPO firm, post-IPO, is constituent to a business group and 0 otherwise. Characterisation of IPO firms in being constituent to business groups was made through detailed analysis of individual listings prospectuses as well as the body of locally accumulated background information and sources outlined in Appendix Table 1.⁷ Our use of such binary dummy variables follows research by Andersen *et al* (2003) where similar variables were employed to capture familial involvement in firms. A serious shortcoming in relying on formal ownership thresholds to define family involvement in firms “...is that some families are able to exert control with minimal fractional ownership, while others require larger stakes for the same level of control due to differences in firm size, industry, business practices, and product placement” (Andersen *et al.*, 2003: 269). Furthermore there is evidence supporting the extended nature of traditional notions of African family – which are very different from their Western counterparts in being based on a much wider and more inclusive rubric (see Khavul *et al.*, 2009 for discussion). This even holds true for North African societies where these are feudal and clan-based in nature with extended familial groups at their core. The deeper cultural institutions are incongruous to the more equitable nature of primarily Islamic religious institutions although they are reinforced by ethical notions of morality. These constraints underscore our approach in placing emphasis on analysis of soft managerial control mechanisms as well as hard, formal ownership rights.

⁶ A sample as a result of randomly distributed missing observations is justified. However, with only six observations missing our test will rather be one of seeing our “sample” as drawn from a “super population” of IPOs.

⁷ See Hearn & Piesse (2013) and Hearn (2014) for examples of elaborate extended African business group structures

Furthermore business groups' use of unlisted firms and holding entities that are not subject to internationally recognized reporting standards (such as IFRS) – commonly enforced through formal stock exchange listing – infers considerable opacity. The lack of transparency severely hinders more accurate analysis of cross-shareholdings and pyramidal structures and underscores our focus on softer group-wide socialization measures prevalent such as director interlock and identification of individual family (and non-family) group members populating boards across the group.

The employment of both formal (through “vertical” pyramidal and “horizontal” cross shareholdings) and informal (socialization) group affiliation circumvents thorny issues regarding the formal definition of family firms⁸. It also facilitates the tracing of more informal business groups too. The complexity of analysing business group structure is exemplified in Figure 1. The Bank of Africa group was initially a group centred on Malian corporate interests prior to its 2008 takeover by Morocco's Benjelloun family. Here there is little, if any, direct ownership participation in group-constituent firms by the controlling family. However it is notable that there is a particularly high concentration of Benjelloun family members across boards of subordinate firms – engendering strong control through informal or “soft” means.

Insert Figure 1

It is also evident that the VC component of private equity investment across group-constituent firms emanates from two sources. As earlier mentioned, these are foreign sources – primarily sovereign governments and development agencies – and within-group sources, where two VC entities, ATTICA and AGORA⁹ have already been absorbed into the business group.

⁸ In particular where this is commonly based on a minimum ownership threshold.

⁹ ATTICA was established within the Bank of Africa group in October 2004 as a private equity investment vehicle. AGORA was established in 2002 as a specialised investment management entity that also engage in private equity investment across the wider group (Bank of Africa website, 2015)

5.2 Explanatory variables

We designate private equity retained ownership, the focus of our hypotheses, within the context of its three disaggregated components: namely the percentage level of retained post-IPO ownership by BA, domestic VC and foreign VC private equity investors, respectively. All were sourced from in-depth studies of IPO listings prospectuses providing data on pre- and post-IPO ownership structure including equity stakes of all investors. One way to measure the extent of retention is to use the ratio of the shares retained to the shares held before IPO. However, this may distort the hypothesized governance impact of retained equity in mitigating transactions costs since it does not differentiate between investors' absolute shareholdings pre- and post an IPO. Therefore, we followed previous studies and used the percentage ratio of the total number of ordinary shares a particular early stage investor owned after the IPO to the total number of the firm's shares after the IPO as a driver of incentives and/or entrenchment effects associated with share ownership (Bruton *et al.*, 2010; Brennan & Franks, 1997; Filatotchev & Bishop, 2002; Wright *et al.*, 1997).

In order to enhance the robustness of our study, we employed a variety of resources to identify and confirm the VC and BA investors within focal IPO firms in our sample. Hence, we looked for further support in internet-based local media, stock exchange descriptions and regulatory filings. These were also supplemented by analysis of web-based resources of *Egyptian Private Equity Association (EPEA)*, the *African Private Equity and Venture Capital Association*, and the *South African Venture Capital and Private Equity Association (SAVCA)*.

The identification of BA investors is altogether more complex owing to the inherent lack of transparency in these often extremely informal markets. As such we build our identification in line with that undertaken by Bruton *et al.* (2010) in their study of UK and France. Consequently we identify BAs through the prospectus as those that had invested in the venture as private individuals apart from those associated with founders, other board members, senior management, or VC. We also supplemented our identification through the extensive use of internet-based access to local indigenous media to provide further verification (see Appendix Table 1). The use of local media

and business journal is essential in a region with BA markets notoriously informal in nature and with few, if any, organised associations of angel investors.

5.3 Moderation variables

We employ one institutionally-based measure, in conjunction with the three categories of private equity retained ownership, to form our moderating variables. This is an aggregate institutional quality measure, formed from equally weighted average of six World Bank governance metrics (Kaufman *et al.*, 2009) that themselves have been rebased to a 0 – 10 scale (see Liu *et al.*, 2014 for details of institutional moderation using an index). The interactive institutional quality relates to Hypothesis 2.

5.4 Control variables

We incorporated six distinct sets of control variables. The first consists of *institutional control variables* and include a legal origin binary dummy (1/0) accounting for civil code law regime alongside an aggregate institutional quality index, comprised from equally weighted average of six underlying World Governance metrics (also used in the formation of the moderating variable). The inclusion of this aggregated quality index is necessitated through our interactive analysis using the methodology of Kim *et al.* (2004) and Liu *et al.*, (2014).

The second group consists of *corporate governance control variables* which are necessitated both through executive decision monitoring and control (Fama & Jensen, 1983) as well as through a resource dependence need for securing access to information and resources to ensure the survival of firm (Boyd, 1994; Pfeffer & Salancik, 1978). The latter perspective infers more non-executives in relation to their boundary-spanning abilities in providing access to valuable resources for the firm. Thus, we include controls for board size, in terms of total number of executive and nonexecutive directors, and an outsider non-executive ratio, defined as number of outside, independent and unaffiliated nonexecutives to board size.

The third group consists of four *firm-specific controls variables*. In line with Sanders & Carpenter (1998) and Finkelstein & Boyd (1998) we use the natural logarithm of firm's pre-tax revenues (or sales) as proxy for size assumed to control for the complexity of a given firm's operations and thus mirroring complexity of the task environment which in turn is reflective of information processing requirements of the board. We adopt the accounting return on assets (ROA)¹⁰ as a measure of firm performance in line with Finkelstein & Boyd (1998) and Khanna & Palepu (2000). We also control for firm age where older firms are anticipated to have larger, more complex operations mirroring more complex task environments. The variable also controls for the "liability of newness" and the considerable information asymmetries generated by a lack of operational and performance history (Arthurs *et al.*, 2008). Finally, following Andersen *et al* (2003) we introduce the ratio of debt to equity as a control for financial leverage or gearing¹¹. The variable captures the differential use of debt as opposed to equity as a governance mechanism as well as the degree and type of financing corresponding to where the firm is positioned in its lifecycle of development. This control variable also captures the degree of institutionalized religious prohibition of interest-based debt instruments, which is prevalent in Islamic shari'ya informal institutions (Kuran, 2004). These are typically infused into firm's organizational structure through family values that permeate the wider entity and thereby impact on financial structure and gearing (leverage).

The fourth group encompasses *ownership control variables*. We account for concentrated shareholdings of aggregate board, corporate block entities, family and state. These are mechanisms

¹⁰ ROA is conventionally defined as $ROA = ((Net\ Income + Interest * (1 - Tax\ Rate)) / Total\ Assets)$ (see Khanna & Palepu, 2000). However due to significant variation in the data arising from varying reporting standards across Africa with frequent omission of reported interest income and corporate taxation rates from listings prospectuses we use a modified version of this, namely $ROA = (Net\ Income / Total\ Assets)$. However while both measures suffer from business cycle affects and are not forward looking they provide a representative indication of firm performance subject to the data limitations prevalent to emerging economies.

¹¹ In contrast to Bruton *et al.* (2010) where the ratio of debt to assets was used, we use the debt-to-equity ratio. Whilst this is vulnerable to variations between the static accounting valuation of equity as opposed to market-valuation and is vulnerable to business cycles it captures both the preferences for the use of debt, and importantly captures the degree debt is used in conjunction with it being a "rules-based" governance instrument limiting managerial discretion and mitigating potential agency conflicts.

by which these entities can exert significant coercive institutional pressures into the firm's organizational structure (DiMaggio & Powell, 1983).

The fifth group contains two *IPO specific control variables*. The first accounts for the demand for equity finance in terms of the demographic marketing of shares offered at IPO to types of investors. The ratio of shares offered at IPO to foreign investors to total shares issued and outstanding post-IPO provides an indication of the willingness of the groups controlling business group to facilitate the coercive institutional pressures arising from active management processes of foreign investors into the organizational structure. The second accounts for the proportion of divestment by private equity entities over the IPO event. This is designated as the difference in aggregate private equity ownership between pre- and post-IPO periods divided by pre-IPO holdings.

Finally, we include one *Economic control* variable – the ratio of stock market capitalization to GDP. We follow Judge *et al* (2015) who also undertake a cross-country comparative study and provides a measure of the relative importance of stock market financing in relation to overall size of economy.

5.5 Empirical Model

A primary consideration in our choice of empirical model is that of causality arising from endogeneity issues. Endogeneity is a significant concern in relation to the linear unidirectional association and the expected causality between the dependent variables (likelihood of IPO firm being constituent to business group) and the retained ownership by private equity entities (BA, domestic and foreign VC). This renders the simple assumption of linear causality unreliable with Probit or logistic model potentially overestimating the importance of these ownership variables (Hamilton & Nickerson, 2003) in explaining the likelihood of the outcome. Consequently we follow Bruton *et al.* (2010) in adjusting for potential endogeneity between dependent and explanatory independent variables by applying an initial estimation step, using OLS, with exogenous instruments included on top of all controls used in main parts of analysis. Given the incompatibility of errors between preliminary OLS and second stage Probit models, we adopt the IV-Probit model

with two-stage Newey (1987) estimation format. The exogenous variables selected are the numbers of each category of private equity involved in each respective IPO, i.e. the numbers of BA in regression with dependent variable of BA retained ownership, then the numbers of domestic VC entities with dependent variable as domestic VC retained ownership, then finally the numbers of foreign VC entities with dependent variable as foreign VC retained ownership.

Our empirical Instrumental Variable Probit (IV-Probit) model is estimated through two distinct steps as outlined by Newey (1987). Given that one or more regressors are correlated with error term, we use the IV Probit model instead of a conventional single step Probit model. The Newey (1987) two-stage estimation process involves OLS as our first step before proceeding with the second step Probit modelling. Formally the model is:

$$\begin{aligned}
 y_{1i}^* &= y_{2i}\beta + x_{1i}\gamma + u_i \\
 y_{2i} &= x_{1i}\Pi_1 + x_{2i}\Pi_2 + v_i
 \end{aligned}
 \tag{1}$$

where $i = 1, \dots, N$, y_{2i} is a $1 \times p$ vector of endogenous variables, x_{1i} is a $1 \times k_1$ vector of exogenous variables, x_{2i} is a $1 \times k_2$ vector of additional instruments, and the equation for y_{2i} is written in reduced form. By assumption, $(u_i, v_i) \sim N(0, \Sigma)$, where σ_{11} is normalized to one to identify the model. β and γ are vectors of structural parameters, and Π_1 and Π_2 are matrices of reduced-form parameters. This is a recursive model: y_{2i} appears in the equation for y_{1i}^* , but y_{1i}^* does not appear in the equation for y_{2i} . We do not observe y_{1i}^* - instead, we observe:

$$y_{1i} = \begin{cases} 0 & y_{1i}^* < 0 \\ 1 & y_{1i}^* \geq 0 \end{cases}
 \tag{2}$$

The order condition for identification of structural parameters requires that $k_2 > p$. Furthermore the model is derived under the assumption that (u_i, v_i) is independent and identically distributed multivariate normal for all i . It is worth noting that the parameter estimates derived from Newey (1987) two-step procedure are not directly comparable to those obtained from maximum likelihood methods that underscore probit modelling. However, the two-step method is generally more robust in achieving convergence in the context of multiple endogenous variables – as is the case here with three types of private equity retained ownership (see Wooldridge, 2010 for discussion of two-step estimators).

In practice OLS regressions starts with a run between endogenous variables and instruments – where these include all exogenous variables too. There are only as many first step OLS regressions as there are distinct endogenous variables – for which appropriate orthogonal instruments should be identified and included alongside exogenous variables. The errors from this first step are then included in the second IV-Probit model – including representations of endogenous variables alongside exogenous variables.

Two Wald test statistics are reported. The first related to the null hypothesis that all parameter coefficients of model(s) are jointly equal to zero, with the test statistic distributed as a χ^2 (chi-square) distribution. The second focuses on the null hypothesis that v_i in first step OLS model are equal to zero and is again distributed as a χ^2 distribution. If these null hypotheses are rejected then covariates are indeed exogenous while the overall model is of significance in its prediction capacity i.e. the Wald statistic can be viewed as a means of discriminating between rival IV-Probit models.

We test two sets of IV-Probit models – relating to each of our two hypotheses in turn. The first simply tests the likelihood of the three private equity categories (BA, domestic and foreign VC) retained ownership as endogenous variables in influencing the likelihood of IPO firm being constituent to a business group. We use the numbers of BA, domestic VC and foreign VC respectively as three orthogonal instrumental variables. Our various categories of controls form the

exogenous variables in addition to industry and time fixed effects. Three preliminary OLS regressions are run with dependent variable in each case being the private equity ownership. In each regression all three instrumental variables are included alongside each other – namely the numbers of BA, domestic VC and foreign VC respectively in addition to exogenous controls.

The second stage involves the final conditional probit modelling with the dependent variable being the binary (1/0) likelihood of IPO firm being constituent to business group. Independent variables are then estimates of the three private equity ownership categories on top of exogenous controls. Differences between countries (institutional environments) are accounted for with the institutional quality controls. Additional country fixed effects are not used so as to avoid the dummy variable trap (Wooldridge, 2009)¹². However, industry and time (year) fixed effects are applied across all models. Industry controls capture diversification differences – a key feature in business groups (Khanna & Palepu, 2000) while year effects relate to variation in institutional development and improvements in regulations, capital market culture, and surveillance environment. The industry definitions vary across each country (see Khanna & Rivkin, 2001 for details of similar issues in a comparable study of 14 emerging economies) leading us to adopt Bloomberg basic industry definitions¹³.

The test of our second hypothesis considers the moderating impact of institutional quality on the association between retained ownership and the dependent variable of business group affiliation. The test involves six preliminary OLS regressions with dependent in each case being each of the three private equity retained ownership and then a further three interactive variables formed from each of the three private equity ownership categories moderated by institutional quality. Instruments are again the three respective numbers of BA, domestic VC and foreign VC but in this second set of

¹² If dummy variables for all country (and time) categories were included, their sum would equal 1 for all observations, which is identical to and hence perfectly correlated with the vector-of-ones variable whose coefficient is the constant term; if the vector-of-ones variable were also present, this would result in perfect multicollinearity, so that the matrix inversion in the estimation algorithm would be impossible. This is referred to as the dummy variable trap (Wooldridge, 2009)

¹³ Industry classifications are: Basic Materials; Consumer Goods Non-Cyclical; Consumer Goods Cyclical; Energy; Financials; Health; Industrials; Technology; Telecommunications; Utilities. The identification of firms according to their industry using broad Bloomberg definitions is in keeping with data limitations across our sample, which is a prevalent characteristic of emerging economies.

models these are additionally moderated by institutional quality – giving rise to six instruments (the three underlying private equity counts on top of three more variables formed from the moderation of these with institutional quality). As with our first set, these first regressions form the conditional parameters in second stage IV-Probit model. Here again the dependent variable is the binary (1/0) likelihood of whether IPO firm is constituent to business group. Coefficient statistical significance is assessed with one-tailed cumulative normal distribution.

6. Empirical results

6.1 Descriptive statistics and correlation analysis

The correlation patterns outlined in Table 3 indicate no multi-collinearity problems. This observation is also confirmed by the unproblematic variance inflation factors (not reported). Furthermore, the correlations between the instruments (numbers of BA, domestic VC and foreign VC) and the dependent variables are both small in absolute value and either lacking or at best with minimal statistical significance, whereas the correlations between the instruments and the potentially endogenous explanatory variables (i.e. ownership of BA, domestic VC and foreign VC) are strongly significant (Hamilton & Nickerson, 2003). Following Bruton *et al* (2010) our choice of instruments to account for endogeneity is supported by their high correlation with each of the respective private equity categories of retained ownership while they have minimal correlation with all other variables.

Insert Table 3

6.2 Multivariate analysis

Table 4 provides the results of the hypothesis tests as the result from the second stage of the IV-Probit models¹⁴. The empirical evidence broadly supports both our proposed hypotheses. We observe a positive association with all categories of private equity retained ownership and the likelihood of an IPO firm being constituent to a business group, as proposed in *Hypothesis 1* (see

¹⁴ The results from the first preliminary OLS steps are available from authors upon request

Table 4, models 1 and 2). Furthermore this association is negatively moderated by institutional quality, as proposed in *Hypothesis 2* (see Table 4, models 3 and 4), although this is weaker in the case of aggregate private equity ($p \leq 0.10$), while moderation attains considerable significance for foreign VC ($p \leq 0.05$) and to a lesser extent with BA ($p \leq 0.10$) in line with our theoretical expectations.

In terms of controls and the likelihood of an IPO firm being constituent to a business group, we find an association with weaker institutional environments ($p \leq 0.05$), larger firms with more complex operations (in terms of natural log of revenues) ($p \leq 0.05$), and younger firms ($p \leq 0.05$). The dependent variable is also associated with much higher ownership by family members ($p \leq 0.005$). Finally we find a weak association between dependent variable and the ratio of stock market capitalization to GDP ($p \leq 0.01$).

Finally, the Wald tests for exogeneity across all models are large suggesting our models are robust. The underlying model (models 1 and 2) only testing the association between retained ownership of private equity and dependent variable have Wald statistics of 46.73 ($p \leq 0.05$) and 52.14 ($p \leq 0.10$) with respect to a χ^2 distribution while that for the moderating models (models 3 and 4) have Wald statistics of 46.82 ($p \leq 0.05$) and 44.72 ($p \leq 0.10$). This provides further statistical support for our choice of instruments – with these being the respective numbers of each category of private equity, namely BA, domestic and foreign VC. The Wald statistic for overall model too is large and statistically significant ($p \leq 0.05$) inferring the null hypothesis of all coefficient parameters being jointly equal to zero is clearly rejected.

Insert Table 4

Finally, using the model parameters we input a range of values for private equity retained ownership post-IPO and institutional quality to produce a 3-dimensional probability surface with respect to likelihood of IPO firm being constituent to a business group. This is outlined in Figure 2. Here there is a particularly pronounced increase in statistical likelihood of IPO firm being

constituent to a business group in the context of lower institutional quality and increasing private equity retained ownership.

Insert Figure 2

7. Discussion and conclusions

7.1 Implications and Contributions

Using a comprehensive sample of 202 IPO's undertaken across Africa between January 2000 and January 2014, we find evidence that a combination of institutional quality and the post-IPO private equity retained ownership explain whether or not IPO firms are constituent to business groups. The retained ownership of private equity constitutes a corporate governance mechanism centered on intrusive and/or close relationship with the investee firm post-IPO. This investor-investee relationship typically includes board participation, voting control and frequent meetings with executives. The alternative is a divestment or an exit from focal firm at IPO and the use of legally mandated performance covenants and contractual terms.

We argue that private equity retain a higher ownership share post-IPO in business group constituent firms than in independent firms owing to substantial transactions costs arising from differences in the bounded rationality of the two entities. These transaction costs arise from the institutional environment shaping private equity managers and separately the institutional fabric underlying group formation and cohesion. The transactions costs are conceptually closely related to moral hazard costs associated with traditional agency theory (e.g. Williamson, 1998, 2000). Furthermore, we find that post-IPO involvement by private equity investee firms is negatively moderated by institutional quality in general. These findings contradict the common agency theory driven arguments (e.g. Bruton *et al.*, 2010), and highlight how the conduct of African business is more in line with the socially contextualized actor-centered institutional perspective developed in Section 2.

Following Bruton *et al* (2010) we empirically differentiate between BA and VC investors. The former being “informal” and investing their own capital – often with a background as successful entrepreneurs themselves – while the latter are “formal” and either investing funds raised from their own external investors or on behalf of commercial bank or sovereign development agencies. We also follow Bruton *et al* (2005) in further differentiating between “foreign” and “domestic” VC with this distinction centring on the degree to which entities are inextricably socially embedded within the indigenous political economy. In particular we argue that - despite these differences between BA and VC and separately between foreign and domestic VC as highlighted in Bruton *et al* (2010)’s comparative study of UK and French IPO firms - all private equity investors are faced with the same risks in engaging with business group constituents. This communality between all three categories of private equity in terms of risk – are reflected in differences in bounded rationality of all three private equity on the one hand and business groups on the other. In particular private equity generally lack the deeper sociologically-rooted cohesive institutional framework – often based on a combination of familial and clan altruism – that is so ubiquitous to business groups. This is a particularly important issue given the highly socialized nature of the extended managerial resource coordination system that forms the basis for internal capital, product and labour markets within business groups – where these are viewed as a central strategic advantage under “institutional voids” arguments rationalizing their formation (see Khanna & Rivkin, 2001). We argue that this socialized coordination mechanism is a reflection of deeper sociological structures within the indigenous societal matrix necessitating an intrusive social presence inferred by higher retained ownership by private equity in order to mitigate informational asymmetries and transactions costs associated with moral hazard.

The developed actor-centered institutional perspective builds on the premise that enhanced formal institutions arise from a combination of coercive and mimetic pressures that seeks to instigate public sector (state) reform. In the African context such pressures have led to the establishment of new stock markets, more corporate transparency and other economic reforms (Ashworth *et al.*, 2007). However, this wholesale transplantation of economic policies infers a lack

of cognitive legitimacy with deeper societal and culturally-based organizational forms – such as indigenous business groups. In line with past research, we argue that African business groups evolve in relation to deeper sociological issues within society, specifically benefitting from the property rights protection and enforcement bestowed on constituent members from the group structure. Thus, business groups in Africa in effect create a form of “sub-state” hybrid governance organization that often exists in tandem with well-designed and functioning external state apparatus.

African business groups that are able to draw on their reputational leverage to attract private equity can thereby augment otherwise limited internal capital markets with additional infusions of capital. Our findings reveal that higher institutional quality inversely moderates the association between private equity ownership – and in particular that of foreign VC and to lesser extent BA – and the likelihood that the focal firm is constituent to a business group. We argue that this is a reflection of foreign VC in particular being more influenced by professional industry norms shaped on dominant US private equity industry. Here there is a greater reliance on institutional quality in order to alleviate monitoring costs and to enable effective sanctions on expropriating insiders of investee firms. Furthermore these norms are rooted on market-based forms of governance – including notions of divestment and exit at IPO – which are very different from the relationship-orientation inherent in indigenous clan-based and tribal societies from within which business groups are embedded. Thus in the context of higher institutional quality foreign VC in particular are more likely to adhere to US based industry norms and either divest at IPO or to seek other investment alternatives with less expropriation risk as those associated with business groups. The opposite is true in low institutional quality environments where norms are shaped by relationship-orientated governance emphasizing continuity, trust and reputation as a means of alleviating risks.

To sum up, our empirical findings question the conventional view of organizations as mere “players” within the confines of the “rules of the game” inferred by institutions (Williamson, 1998, 2000). What we observe in the interplay between private equity and African business groups, is that group-constituent IPO firms adopt a “sub-state” role in defining property rights. We argue that consideration of the socialized managerial resource coordination mechanism within business groups

has been largely overlooked in the emerging market literature to date. This is despite its central importance to the well documented strategic benefits of business groups arising from their internal capital, labor and product markets that is at the core of “institutional voids” arguments regarding their formation.

7.2 Limitations and Future Research

While our study is using a multi-country institutional framework and we use an aggregate institutional quality measure based on the six well-known World Bank governance metrics – a more revealing approach would be if disaggregation were possible. Such disaggregation is fraught with issues regarding the independence of the six World Bank governance metrics (see Langbein & Knack, 2010). One possibility is the employment of a broader range of institutional metrics that could potentially facilitate deeper insights into the exact nature of institutional deficiencies and the rationale for business group formation.

A further limitation arises from our sample formed by IPOs only. While IPO events provide a number of methodological advantages and is a central part of our natural experiment, in the sense that such firms are opening their organizational and ownership structures, a broader sample comprised of every listed firm would have been advantageous. Finally, we highlight the need for broader cross-country comparative studies in order to further “tease out” the institutional contexts and differences leading to the prevalence of business groups in emerging markets in general, and in Africa in particular.

References

- African Financials website. 2014. *African Financial Statements and Annual Reports*. <http://www.africanfinancials.com/> Accessed 15 September 2014
- Aguilera, R. V., & Jackson, G. (2003). The cross-national diversity of corporate governance: Dimensions and determinants. *Academy of Management Review*, 28(3), 447-465
- Aguilera, R. V., & Jackson, G. (2010). Comparative and international corporate governance. *The Academy of Management Annals*, 4(1), 485-556
- Aoki, M. (2001). *Toward a comparative institutional analysis*. Cambridge, MA: MIT Press.
- Ashworth, R., Boyne, G., & Delbridge, R. (2007). Escape from the iron cage? Organizational change and isomorphic pressures in the public sector. *Journal of Public Administration Research*, 19, 165-187
- Arthurs, J., Hoskisson, R., Busenitz, L., & Johnson, R. (2008). Managerial agents watching other agents: multiple agency conflicts regarding underpricing in IPO firms. *Academy of Management Journal*, 51: 277–294
- Bank of Africa website (2015). Bank of Africa: Groupe BMCE Banque. <http://www.bank-of-africa.net/en> Accessed 15 August 2015
- Barry, C. B., Muscarella, C. J., Peavy III, J. W., & Vetsuypens, M. R. 1990. The role of venture capital in the creation of public companies. *Journal of Financial Economics*, 27: 447-471
- Boyd, B. K. 1994. Board control and CEO compensation. *Strategic Management Journal*, 15(5): 335-344
- Bruton, G. D., Fried, V. H. & Manigart, S. (2005). Institutional influences on the worldwide expansion of Venture Capital. *Entrepreneurship, Theory and Practice*, 29(6): 737 – 760
- Bruton, G. D., Filatotchev, I., Chahine, S., & Wright, M. (2010). Governance, ownership structure, and performance of IPO firms: The impact of different types of private equity investors and institutional environments. *Strategic Management Journal*, 31: 491-509

- Claessens, S., Djankov, S., Fan, J. H. & Lang, L. H. P. (1999). Expropriation of Minority Shareholders. World Bank Policy Research *Working Paper*, WPS 2088. World Bank: Washington.
- Claessens, S., Djankov, S. & Lang, L. H. P. (2000). The separation of ownership and control in East Asian corporations. *Journal of Financial Economics*, 58: 81-112
- DiMaggio, P., & Powell, W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48, 147-160
- Finkelstein, S., & Boyd, B. K. (1998). How much does the CEO matter? The role of managerial discretion in the setting of CEO compensation. *Academy of Management Journal*, 41, 179-199
- Gompers, P., & Lerner, J. (1996). The use of covenants: An empirical analysis of venture partnership agreements. *Journal of Law and Economics*, 39(2), 463-498
- Granovetter, M. (2005). *Business groups and social organization*. In The Handbook of Economic Sociology, Second Edition, ed. N. Smelser and R. Swedberg. Princeton University Press, 429-50
- Hamilton, B., & Nickerson, J. (2003). Correcting for endogeneity in strategic management research. *Strategic Organization*, 1: 53-80
- Hearn, B., & Piesse, J. (2013). Firm level governance and institutional determinants of liquidity: Evidence from Sub Saharan Africa. *International Review of Financial Analysis*, 28: 93-111
- Hearn, B. (2014). The political institutional and firm governance determinants of liquidity: Evidence from North Africa and the Arab Spring. *Journal of International Financial Markets, Institutions & Money*, 31: 127-158
- Hoskisson, R. E., Hitt, M. A., Johnson, R. A. & Grossman, W. (2002). Conflicting voices: the effects of institutional ownership heterogeneity and internal governance on corporate innovation strategies. *The Academy of Management Journal*, 45(4), 697-716

- Hoskisson, R. E., Yiu, D., & Kim, H. (2004). Corporate governance systems: Effects of capital and labour market congruency on corporate innovation and global competitiveness. *Journal of High Technology*, 15, 293-315
- Judge, W. Q., Witt, M. A., Zattoni, A., Talaulicar, T., Chen, J. J., Lewellyn, K., Hu H. W., Shukla, D., Bell, R. G., Gabrielsson, J., Lopez, F., Yamak, S., Fassin, Y., McCarthy, D., Rivas, J. L., Fainshmidt, S., & Van Ees, H. (2015). Corporate governance and IPO underpricing in a cross-national sample: A multilevel knowledge-based view. *Strategic Management Journal*, 36, 1174–1185
- Kaufman, D., Kraay, A., & Mastruzzi, M. (2009). *Governance Matters VIII: Governance Indicators for 1996-2008*. World Bank Policy Research Unit, June 2009
- Kim, H., Hoskisson, R., & Wan, W. (2004). Power dependence, diversification strategy, and performance in keiretsu member firms. *Strategic Management Journal*, 25(7): 613-636
- Khanna, T., & Palepu, K. (2000). Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups. *Journal of Finance*, 55(2): 867-891
- Khanna, T., & Rivkin, J. W. (2001). Estimating the performance effects of business groups in emerging markets. *Strategic Management Journal*, 22: 45-74
- Khanna, T., & Yafeh, Y. (2007). Business groups in emerging markets: Paragons or Parasites? *Journal of Economic Literature*, 45(2): 331-372
- Khavul, S., Bruton, G. D., & Wood, E. (2009). Informal family business in Africa. *Entrepreneurship Theory and Practice*, 33(6): 1219-1238
- Kuran, T. (2004). Why the Middle East is economically underdeveloped: historical mechanisms of institutional stagnation. *Journal of Economic Perspectives*, 18(3): 71-90.
- Langbein, L., & Knack, S. (2010). The Worldwide governance indicators: Six, One, or None? *Journal of Development Studies*, 46(2), 350-370
- La Porta, R., Lopez-de-Silanes, F., Schliefer, A., & Vishny, R. (1997). Legal Determinants of External Finance. *Journal of Finance*, 52: 1131-1150

- La Porta, R., Lopez-de-Silanes, F., Schliefer, A., & Vishny, R. (1998). Law and Finance. *Journal of Political Economy*, 106(6): 1113-1155
- La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. 1999. Corporate ownership around the World, *Journal of Finance*, 54: 471-518
- Lerner, J. (1994). Venture capitalists and the decision to go public. *Journal of Financial Economics*, 35: 293-316
- Levy, J. D. (2008). From the dirigiste state to the social anaesthesia state: French economic policy in the longue duree. *Modern & Contemporary France*, 16(4), 417-435
- Liu, X., Lu, J., & Chizema, A. (2014). Top executive compensation, regional institutions and Chinese OFDI. *Journal of World Business*, 49: 143-155
- Newey, W. K. (1987). Efficient estimation of limited dependent variable models with endogenous explanatory variables. *Journal of Econometrics* 36: 231–250
- North, D. C. (1990). A transaction cost theory of politics. *Journal of Theoretical Politics* 2, 355-367.
- North, D. C. (1994). The historical evolution of polities. *International Review of Law and Economics* 14, 381-391.
- Nunn, N., Wantchekon, L. (2011). The slave trade and the origins of mistrust in Africa. *American Economic Review* 101(7), 3221-3252.
- Milgrom, P. R., & Roberts, J. (1994). Complementarities and systems: Understanding Japanese economic organization. *Estudios Economicos*, 9(1), 3-42
- Ocasio, W. (1999). Institutionalized Action and Corporate Governance: The Reliance on Rules of CEO Succession. *Administrative Science Quarterly*, 44 (2), 384–416
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource-dependence perspective*. New York: Harper & Row
- Randøy, T. & Goel, S. (2003). Ownership Structure, Founding Family Leadership, and Performance in Norwegian SMEs. *Journal of Business Venturing*, 18(5): 619-637

- Sahlman, W. A. (1990). The structure and governance of venture-capital organizations. *Journal of Financial Economics*, 27, 473-521
- Sanders, W. M. G., & Carpenter, M. A. (1998). Internationalization and firm governance: The roles of CEO compensation, top team composition and board structure. *Academy of Management Journal*, 41(2): 158-178
- Schulze, W. S., Lubatkin, M. H., & Dino, R. N. (2003). Toward a theory of agency and altruism in family firms. *Journal of Business Venturing*, 18: 473-490
- Shleifer, A. & Vishny, R. W. 1997. A survey of corporate governance. *Journal of Finance*, 52(2): 737-783
- Kuran, T. (2009). Explaining the Economic Trajectories of Civilizations: The Systemic Approach. *Journal of Economic Behavior and Organization*, 71, 593-605
- Transparency International. (2014). *Corruption perceptions index*. <http://www.transparency.org/>
Accessed 15 September 2014
- Williamson, O. E. (1998). The institutions of governance. *American Economic Review*, 88(2): 75-79
- Williamson, O. E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature*, 38(3): 595-613
- Wooldridge, J. M. (2009). *Introductory econometrics: a modern approach*. Cengage Learning. p. 865. ISBN 0-324-58162-9
- Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data*. 2nd ed. Cambridge, MA: MIT Press
- World Bank Governance indicators. (2014). *World Bank Governance Indicators*. <http://info.worldbank.org/governance/wgi/index.asp> Accessed 15 September 2014

Table 1. African IPO equity market characteristics for sample period January 2000 to January 2014

This table outlines the total number (N) of IPOs undertaken in each country across Africa between January 2000 and January 2014 alongside a breakdown of how many of these are state privatizations, i.e. involve the state, and then involve business groups – where these are sub-categorized into family and non-family business groups. For these two sub-categories, namely family and non-family, a further breakdown is provided indicating how many of each that additionally involve foreign VC and domestic VC and BA. Finally we also present the percentage aggregate institutional quality per country. This is based on the equally weighted average of the six individual institutional quality indices developed by Kaufman et al (2009) across all markets with these having been rescaled on a 0-1 scale. Compiled by authors from IPO listings prospectuses

Market	N	Aggregate Institution quality	Number (#) of IPOs with the below categories of ownership and control per market											
			State	Business Groups										
				Overall	Non-Family			Family						
					Overall	VC Foreign	VC Domestic	BA	Overall	VC Foreign	VC Domestic	BA		
%	#	#	#	#	#	#	#	#	#	#				
North Africa														
Algeria	4	28.9	3	1	....	....	....	....	1	....	....	....
Egypt	10	42.4	3	3	....	....	....	....	3	2	3	....	
Morocco	39	46.9	2	22	5	2	3	....	17	3	6	1	
Tunisia	33	50.8	2	17	3	2	....	2	14	2	4	1	
East Africa														
Kenya	10	40.0	4	1	1	1	....	....	....	....	....	....
Mauritius	3	71.5	0	1	....	....	....	....	1	1	1	....	
Seychelles	1	57.0	1	0	....	....	....	....	....	....	....	....
Tanzania	9	45.3	7	0	....	....	....	....	....	....	....	....
Rwanda	2	47.9	2	0	....	....	....	....	....	....	....	....
Uganda	6	38.5	4	0	....	....	....	....	....	....	....	....
West Africa														
Nigeria	26	29.5	0	10	2	2	....	....	8	3	1	1
BVRM	7	41.6	3	4	2	1	....	2	2	....	....	2
Ghana	16	53.5	4	2	1	1	1	1	1	....	....	....
Cameroon	2	35.9	2	0	....	....	....	....	....	....	....	....
Cape Verde	4	60.8	2	0	....	....	....	....	....	....	....	....
Sierra Leone	2	38.5	1	0	....	....	....	....	....	....	....	....
Southern Africa														
Botswana	7	69.2	1	2	2	....	....	....	....	....	....	....
Malawi	4	45.8	2	2	2	....	....	1	....	....	....	....
Zambia	6	45.0	4	0	....	....	....	....	....	....	....	....
Namibia	2	61.8	0	0	....	....	....	....	....	....	....	....
Mozambique	2	47.1	2	0	....	....	....	....	....	....	....	....
South Africa	7	61.3	1	0	....	....	....	....	....	....	....	....
Overall	202	46.5	51	65	20	9	4	8	45	11	15	3		

Table 2. Private equity active management and ownership in business groups

Table providing characteristics of the three main types of private equity investment (foreign versus domestic venture capital and business angels) in IPO firms that are constituent to business groups; Compiled by authors from IPO listings prospectuses.

	Business Group		
	Foreign VC	Domestic VC	Business Angel
Panel 1: Monitoring characteristics			
Number of IPO firms with PE	11	19	21
Number of PE-backed IPOs that are syndicates	7	10	8
Average number of PE in syndicate	3.16	3.60	2.38
Average PE shareholding post-IPO (%)	6.22	5.01	5.17
Number full exits	1	1	0
Number unchanged (no divestment)	3	6	7
Panel 2: Private equity characteristics			
State/ Development Agency (%)	72.00	29.55	....
Firm/ Stand-Alone Agency (%)	4.00	52.27	....
Fund (%)	16.00	6.82	....
Bank (%)	8.00	11.36	....
Individual (%)	....	....	100.00
	100.00	100.00	100.00
Panel 3: Target firm characteristics			
Proportion target firms in North Africa (%)	28.00	88.64	56.67
Proportion target firms in Sub Saharan Africa (%)	72.00*	11.36	43.33
Target Industry: Telecommunications (%)	8.00	6.67	10.00
Target Industry: Financials (%)	80.00	22.22	40.00
Target Industry: Energy (%)	....	....	....
Target Industry: Technology (%)	....	8.89	3.33
Target Industry: Non-Cyclical Consumer Goods (%)	....	....	....
Target Industry: Cyclical Consumer Goods (%)	12.00	40.00	23.33
Target Industry: Healthcare (%)	....	2.22	6.67
Target Industry: Industrials (%)	....	20.00	16.67
	100.00	100.00	100.00

Note: *The overwhelming majority of firms in Sub Saharan African region targeted by foreign VC are constituent to the Bank of Africa group which ultimately forms the business group of Morocco's Benjelloun family

Table 3. Correlations

This table reports the Pearson correlations between all variables included in our study. These are defined in section 5.

	1	2	3	4	5	6	7	8	9	10	11
1 Business Group	1.000										
2 BA ownership	0.248***	1.000									
3 Dom VC ownership	0.029	0.055	1.000								
4 Foreign VC ownership	0.007	0.049	-0.074	1.000							
5 Legal Origin	0.288***	0.039	0.124†	-0.061	1.000						
6 Institutional Quality	-0.047	-0.072	0.094	0.038	0.156*	1.000					
7 Board Size	0.098	0.035	0.117†	0.054	0.258***	-0.086	1.000				
8 Independent Nonexecutive Ratio	-0.162*	0.002	0.039	0.013	-0.230***	0.190**	-0.305***	1.000			
9 Log (Revenues)	0.052	-0.102	-0.076	-0.037	0.027	0.007	0.231***	0.122†	1.000		
10 ROA	-0.073	-0.063	-0.062	-0.034	-0.057	0.099	-0.125†	0.106	0.038	1.000	
11 Log (Firm Age)	0.013	-0.008	-0.091	0.120†	0.071	-0.097	0.133†	-0.050	0.233***	-0.038	1.000
12 Debt-Equity Ratio	-0.049	-0.034	0.290***	-0.013	-0.069	-0.074	-0.065	0.059	-0.018	-0.013	-0.043
13 Executive ownership post-IPO	-0.159*	0.058	-0.052	-0.060	-0.094	0.087	-0.232***	0.069	-0.152*	0.020	-0.208***
14 Corporate Block ownership post-IPO	-0.030	-0.054	-0.053	0.011	-0.067	0.209***	-0.036	0.216***	0.022	-0.039	-0.046
15 Family ownership post-IPO	0.500	0.085	0.008	-0.112	0.412***	0.022	0.009	-0.201***	0.010	-0.002	0.049
16 State ownership post-IPO	-0.208***	-0.167*	-0.082	-0.078	0.083	-0.037	0.215***	-0.167*	0.149*	-0.069	0.117
17 Shares Offered to Foreign Investor to Total shares	-0.156*	-0.011	0.023	-0.054	-0.314***	0.013	-0.024	0.129†	-0.160*	0.025	-0.156*
18 Change in PE ownership over IPO	0.079	0.125†	0.107	0.097	0.162*	-0.074	-0.013	-0.073	-0.061	-0.015	0.010
19 Ratio stock market capitalization to GDP	0.081	0.049	0.195†	-0.092	0.118†	0.160*	0.253***	0.070	0.297***	-0.044	0.117
20 # BA	0.184**	0.786***	0.036	0.044	0.123†	-0.033	-0.043	0.042	-0.081	-0.063	-0.029
21 # Domestic VC	0.135†	0.033	0.736***	-0.065	0.208***	0.104	0.165*	-0.034	-0.011	-0.081	-0.117
22 # Foreign VC	0.110	0.137†	-0.064	0.831***	0.004	0.041	0.120†	-0.033	-0.016	-0.034	0.058

† p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.005

Table 3. Correlations – continued

	12	13	14	15	16	17	18	19	20	21	22
1 Business Group											
2 BA ownership											
3 Dom VC ownership											
4 Foreign VC ownership											
5 Legal Origin											
6 Institutional Quality											
7 Board Size											
8 Independent Nonexecutive Ratio											
9 Log (Revenues)											
10 ROA											
11 Log (Firm Age)											
12 Debt-Equity Ratio	1.000										
13 Executive ownership post-IPO	-0.001	1.000									
14 Corporate Block ownership post-IPO	-0.009	-0.121†	1.000								
15 Family ownership post-IPO	-0.063	-0.070	-0.245***	1.000							
16 State ownership post-IPO	-0.046	-0.233***	-0.138†	-0.331***	1.000						
17 Shares Offered to Foreign Investor to Total shares	-0.001	0.088	-0.024	-0.190**	-0.067	1.000					
18 Change in PE ownership over IPO	-0.030	0.077	-0.130†	0.107	-0.119†	0.033	1.000				
19 Ratio stock market capitalization to GDP	-0.018	0.051	0.115	0.213***	-0.131†	-0.058	0.075	1.000			
20 # BA	-0.035	0.074	-0.079	0.111	-0.151**	0.001	0.249***	0.051	1.000		
21 # Domestic VC	0.163*	-0.090	-0.040	0.125†	-0.037	-0.093	0.095	0.240***	0.06	1.000	
22 # Foreign VC	-0.007	-0.049	0.012	-0.074	-0.091	-0.116†	0.108	-0.114	0.153*	-0.079	1.000

† p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.005

Table 4. Private equity board monitoring and ownership determinants of likelihood of business group affiliation^{a, b}

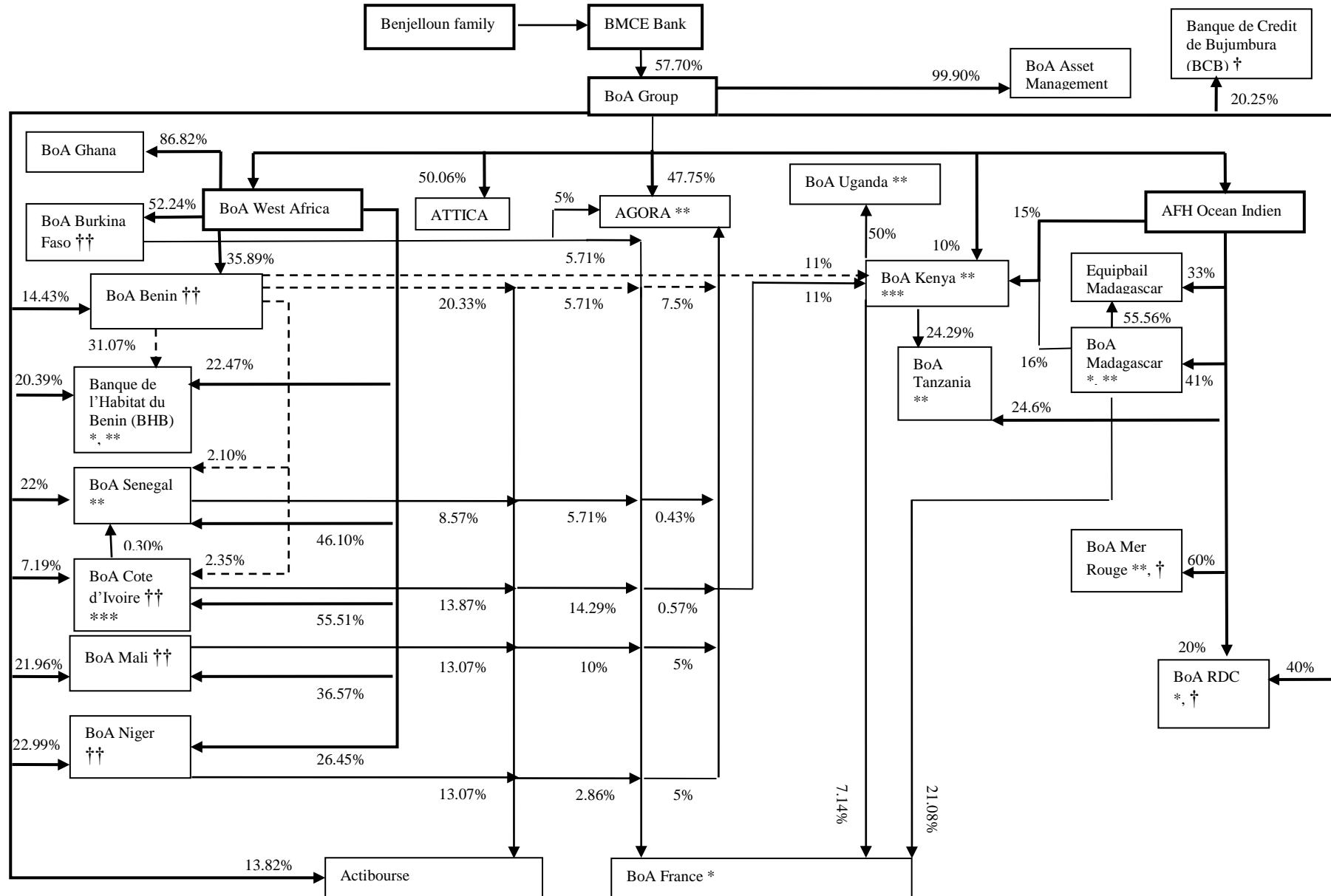
This table reports results from the second stage results from two-stage probit regressions for the binary (1/0) likelihood of IPO firm being constituent to a business group onto our explanatory variables with these being defined in section 5.

	Likelihood of IPO firm constituent of Business Group			
	Underlying	Underlying	Institutions	Institutions
	IV Probit	IV Probit	IV Probit	IV Probit
	Model 1	Model 2	Model 3	Model 4
Intercept	-5.125 [-0.01]	-5.057 [-0.01]	-5.614 [-0.02]	-18.960 [-0.05]
Moderating variables:				
PE ownership	---	---	-0.243 [-1.45]†	---
x Institutional Quality	---	---	---	---
BA ownership	---	---	---	-2.432 [-1.53]†
x Institutional Quality	---	---	---	---
Domestic VC ownership	---	---	---	-0.252 [-0.29]
x Institutional Quality	---	---	---	---
Foreign VC ownership	---	---	---	-1.574 [-2.00]*
x Institutional Quality	---	---	---	---
Explanatory variables				
PE ownership	0.062 [2.87]**	---	0.182 [2.11]*	---
BA ownership	---	0.088 [1.69]*	---	1.254 [1.69]*
Domestic VC ownership	---	0.086 [2.07]*	---	0.222 [0.50]
Foreign VC ownership	---	0.079 [2.43] †	---	0.978 [2.26]*
Institutional Controls				
Civil Code Law (Legal Origin)	0.498 [1.21]	0.636 [1.23]	0.369 [0.85]	-0.341 [-0.33]
Institutional Quality	-3.743 [-2.27]*	-4.503 [-2.23]*	-1.945 [-0.94]	-2.843 [-0.61]
Corporate governance controls				
Board Size	-0.641 [-0.59]	-0.619 [-0.45]	-0.561 [-0.50]	1.891 [0.71]
Outsider Nonexecutive Ratio	-1.504 [-1.84]*	-1.395 [-1.36]*	-1.748 [-2.04]*	-1.585 [-0.84]
Firm-specific controls				
Log (Revenues)	0.621 [2.59]**	0.756 [2.51]**	0.668 [2.74]**	0.719 [1.31]†
ROA	-0.062 [-0.07]	-0.058 [-0.05]	-0.199 [-0.18]	-1.221 [-0.44]
Log (Firm Age)	-0.740 [-1.81]*	-0.807 [-1.59]†	-0.591 [-1.40]†	-0.766 [-0.75]
Debt-Equity Ratio	-0.045 [-0.81]	-0.065 [-1.00]	-0.05 [-0.88]	-0.121 [-1.43]*
Ownership controls				
Executive ownership post-IPO	-0.011 [-1.15]	-0.014 [-1.15]	-0.011 [-1.15]	-0.009 [-0.42]
Corporate Block ownership post-IPO	0.013 [1.04]	0.012 [0.80]	0.013 [1.04]	0.021 [0.70]
Family ownership post-IPO	0.036 [4.50]***	0.045 [4.56]***	0.035 [4.36]***	0.058 [3.12]†
State ownership post-IPO	-0.003 [-0.31]	-0.007 [-0.58]	-0.005 [-0.45]	-0.006 [-0.30]
IPO control				
Shares Offered to Foreign Investors to Total Shares	-0.007 [-0.01]	0.120 [0.15]	-0.072 [-0.10]	-0.744 [-0.43]
Change in PE ownership over IPO	0.343 [0.41]	-0.320 [-0.30]	-0.010 [-0.01]	-2.302 [-1.06]
Economic control				
Ratio stock market capitalization to GDP	-0.007 [-1.37]†	-0.009 [-1.31]†	-0.007 [-1.33]†	-0.012 [-1.33]†
No Obs. = 0	131	131	131	131
No Obs. = 1	65	65	65	65
No. Obs.	196	196	196	196
Wald test for exogeneity statistic (No. variables)	2.86(1)	10.65(3)*	3.19(2)	12.67(6)*
Wald statistic (No. variables)	46.73(38) †	52.14(41)	46.82(40) †	44.72(44)

^a Industry and time (year) fixed effects included in all models; ^b Z-statistics are in parentheses;

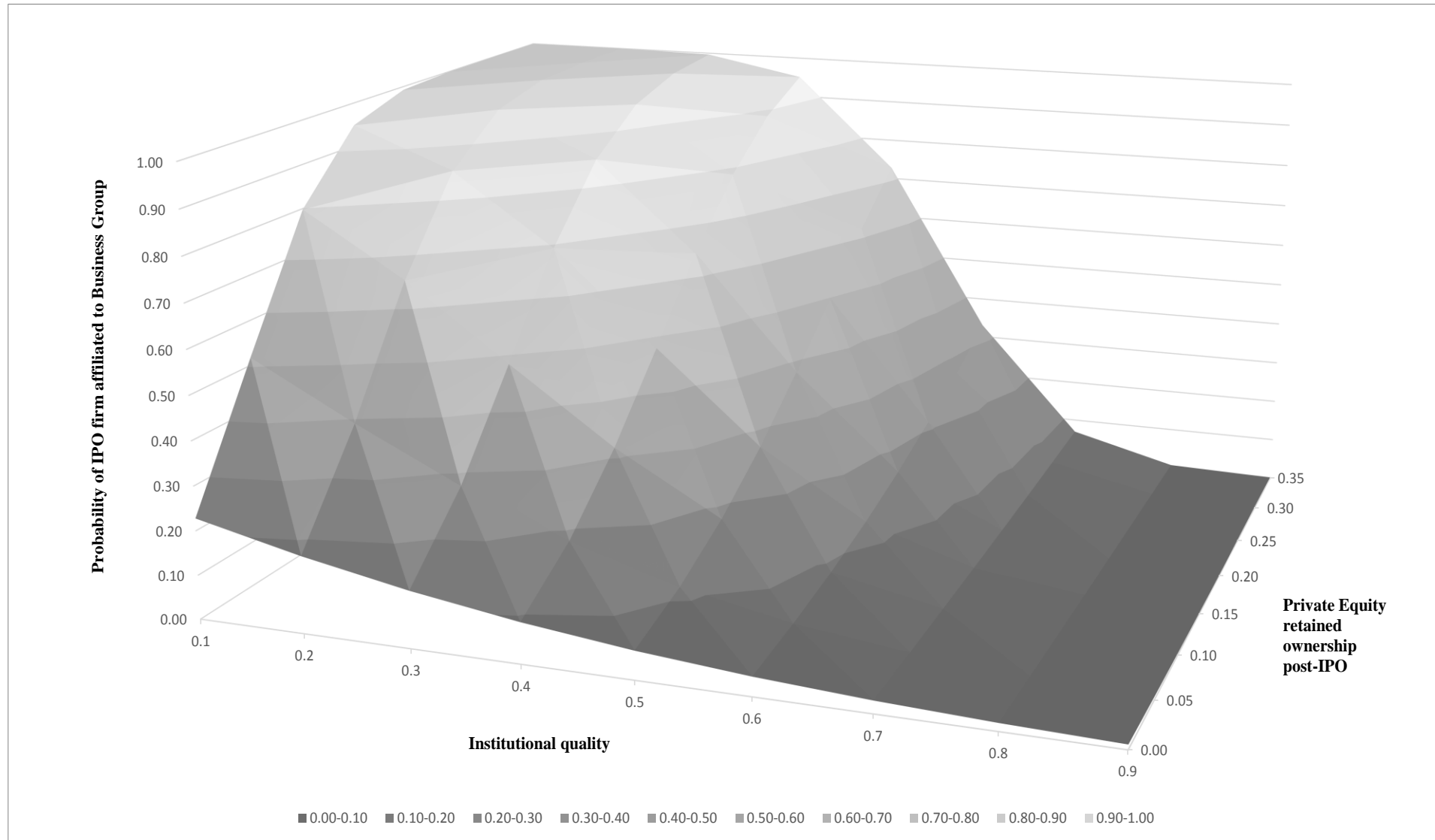
† p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.005

Figure 1. Extent of control of Bank of Africa business group, 2011



Notes: (1) * PROPARGO; ** Netherlands FMO; *** AGORA; † Belgian BIO; †† ATTICA

Figure 2. Probability chart relating likelihood IPO firm is business group with private equity retained ownership and institutional quality



Appendix Table 1. Data sources

Table documenting a non-exhaustive representation of data and information sources from across Africa

Market	Information source
North Africa	Databases: Al Zawya (see website at: http://www.zawya.com/); Mubasher investment reporting (http://www.mubasher.net/en/Index.aspx); Bloomberg LLP; Business Week
Algeria	Websites: Bourse d'Algérie [SGBV] (http://www.sgbv.dz); Commission d'Organisation et des Surveillances des Opérations de Bourse [COSOB] (http://www.cosob.org/) Telephone interviews and direct correspondence: M. Hamdi and Mme. Haffar (Bourse d'Alger)
Egypt	Websites: Egyptian Stock Exchange [EGX] (http://www.egx.com.eg/english/homepage.aspx); The Egyptian Financial Supervisory Authority (http://www.efsa.gov.eg/content/IFIE/about_efsa.html); Central Bank of Egypt (http://www.cbe.org.eg/English/) Telephone interviews (unstructured) to obtain data: Mohammed Omran (Chairman, EGX) Cairo-based interviews: Ayman Raafat (Market Control, EGX); Hebatallah El Serafi (Research & Market Development, EGX); Yasmin El-Khatib (PR & Communications, EGX)
Morocco	Websites: Bourse de Casablanca (http://www.casablanca-bourse.com/); Le Conseil Déontologique des Valeurs Mobilières [CDVM] (http://www.cdvm.gov.ma/) Casablanca-based interviews to obtain data: Mme. Meryem Tazi (Chef de Produits, Service Marketing, Bourse de Casablanca); Mme. Amina Zouaoui (Analyste, Service Négociation, Bourse de Casablanca)
Tunisia	Websites: Bourse de Tunis (http://www.bvmt.com.tn/); Conseil du Marché Financier [CMF] (http://www.cmf.org.tn/); Central Bank of Tunisia (http://www.bct.gov.tn/) Tunis-based interviews: M. Hatem Zribi (Direction de la Promotion du Marché, Bourse de Tunis); Mme. Maher Chtourou (Banque Centrale de Tunisie library) Tunis-based procurement of data from library of African Development Bank
Sub Saharan Africa	Databases: African financials annual reports (http://www.africanfinancials.com/); Invest Africa annual reports (http://investinginafrica.net/african-stock-markets/); Thomson Perfect Information portal; Bloomberg LLP; Business Week
East Africa	
Kenya	Websites: Nairobi securities exchange (https://www.nse.co.ke/); Capital Markets Authority Kenya (http://www.cma.or.ke/); Daily Nation business journal (http://www.nation.co.ke/) Local Nairobi-based interviews: Public relations officer, Nairobi Stock Exchange; Investment Manager, Suntra Investment Bank, Kenya
Mauritius	Websites: Stock Exchange of Mauritius [SEM] (http://www.stockexchangeofmauritius.com/)
Seychelles	Websites: Trop-X Seychelles stock exchange (http://www.trop-x.com/)
Tanzania	Websites: Dar Es Salaam stock exchange (http://www.dse.co.tz/) Telephone procurement of listing prospectus from M. Stimali, Tanzania Tea Packers Ltd
Rwanda	Websites: Rwanda stock exchange (http://rse.rw/); Capital Market Authority (http://cma.rw/)
Uganda	Websites: Uganda securities exchange [USE] (http://www.use.or.ug/); Capital Markets Authority (http://www.cmauganda.co.ug/) Procurement of annual reports: Kampala-based USE library Kampala-based interviews: Investment Management team, Crane Bank, Kampala; Head of trading, USE trading floor, Kampala; Investment Manager, African Alliance Securities, Kampala; Head of equities trading, Standard Chartered Bank, Kampala
West Africa	
Nigeria	Websites: Nigerian stock exchange [NSE] (http://www.nse.com.ng/Pages/default.aspx); Securities and Exchange Commission Nigeria (http://www.sec.gov.ng/) Lagos-based procurement of annual reports and listings prospectuses from NSE library, Lagos Lagos-based interviews: M. Obaseki (President of Operations, NSE); Mme. Hauwa M. Audu (Founder CEO, Amyn Investments and stockbroking, Lagos)
BVRM	Websites: BRVM main site (http://www.brvm.org) Cote d'Ivoire:

	<p>Procurement of annual reports: Abidjan (Cote d'Ivoire)-based library for BRVM</p> <p>Abidjan-based interviews:</p> <p>BRVM exchange: Emmanuel Zamble (Market operations manager, BRVM); Khassim Diop (Chargée de développement du Marché, BRVM); Abdoulaye Sogoba (Assistant chargée de la formation, BRVM)</p> <p>Abidjan brokers: M. Auguste Kouakou (Gniman-Finance SA, Abidjan); M. Hermann Boua (Hudson et Cie, Abidjan)</p>
	<p>Mali: Bamako-based interviews: M. Amadou Djeri Bocoum (Directeur de l'Antenne Nationale de Bourse du Mali, Bamako); M. Alassane Sissoko (Responsable des études et de la négociation, Société de Gestion et d'Intermédiation (SGI) du Mali SA, Bamako)</p>
Ghana	<p>Websites: Ghana stock exchange (http://www.gse.com.gh/)</p> <p>Accra-based interviews:</p> <p>Ghana stock exchange: Worlanyo Amoa (Senior Manager, Research and Product Development, GSE)</p> <p>Ghana Brokers: Armah I. J. Akotey (Vice President, Databank Brokerage and Investment Banking, Accra, Ghana); Edem Akpenyo (HFC Brokerage Services, Accra, Ghana); Kafui Asare (Head of Client Relations, SAS Investment Management, Accra, Ghana); Haruna Gariba (Head of Client Relations, Merchant Bank of Ghana Ltd, Accra, Ghana)</p>
Cameroon	<p>Websites: Doula stock exchange (http://www.douala-stock-exchange.com/)</p>
Cape Verde	<p>Website: Cape Verde stock exchange [BVC] (http://www.bvc.cv/)</p> <p>Telephone based interviews and procurement of data: Edmilson Mendonça (Operations Manager, BVC); Ronnie Machado (Compliance Manager, BVC)</p>
Sierra Leone	<p>Telephone-based interviews and procurement of data: M. Gibrilla Sesay (Operations Manager, Sierra Leone stock exchange); M. Michael Collier (Deputy President, Rokel Commercial Bank, Freetown, Sierra Leone); Jacob Kanu and Daniel Thomas (CEO's of independent local licensed stockbrokers, Freetown)</p>
Southern Africa	
Botswana	<p>Website: Botswana stock exchange [BSE] (http://www.bse.co.bw/)</p> <p>Telephone interviews and data procurement: Kopane Bolokwe (Operations officer, BSE)</p> <p>Gabarone-based interviews with Head of Operations, BSE; President of Stock Brokers Botswana</p>
Malawi	<p>Websites: Malawi stock exchange [MSE] (http://www.mse.co.mw/); The Nation business journal (http://mwnation.com/)</p>
Zambia	<p>Websites: Lusaka stock exchange [LuSE] (http://www.luse.co.zm/); The Post business journal (Zambia) (http://www.postzambia.com/)</p> <p>Telephone-based procurement: Mme. Sitali Mugala (Operations Manager, Lusaka stock exchange)</p> <p>Lusaka-based interviews: LuSE operations personnel</p>
Namibia	<p>Websites: Namibia stock exchange [NSX] (http://nsx.com.na/)</p> <p>Windhoek-based data procurement from NSX building and library</p> <p>Telephone based procurement: John Mandy (CEO, NSX); Loide Nakanduungile (Research Manager, NSX); Manda Steynberg (Operations Manager, NSX)</p>
Mozambique	<p>Websites: Bolsa de Valores de Maputo [BVM] (http://www.bvm.co.mz/)</p> <p>Maputo-based interviews: Señor Bruno Tembe (Técnico Superior, BVM); Señor Felisberto Navalha (Operations Manager, Central Bank of Mozambique)</p> <p>Maputo-based procurement from Central Bank of Mozambique annex library, Baixa, Maputo</p>
South Africa	<p>Websites: Johannesburg stock exchange [JSE] (https://www.jse.co.za/)</p>
