

## **Influences on the Strength of Property Rights**

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### **SUMMARY**

Pioneering work by de Soto has demonstrated the importance of secure property rights for economic development. This has led to a number of projects supported by the World Bank and donor agencies in emerging, transitional and developing economies designed to create secure property rights through titling and land registration. There is, however, still considerable uncertainty about the conditions needed for improvement in security of tenure. In particular there is a question as to whether tenure security interventions can be effective if pursued in isolation from other policy initiatives, for example, aimed at changing the business environment or the ethos of public service. This paper takes four measures of the security of property rights produced by the Heritage Foundation, the World Economic Forum, Bertelsmann Stiftung, and USAID and examines the factors which are associated with greater security. It focuses on the countries included in the USAID study and those in the Bertelsmann Transformation Index in order to exclude the richer countries which generally have a relatively high level of security of property rights as it is considered that their presence in a sample could have a distorting effect. The paper includes a critique of the sources of property rights data. It examines the extent to which secure property rights are associated with factors such as the strength of the legal system, corruption and the efficiency of government, the quality of the governance of a country, the quality of corporate governance, the degree of development of the business environment, the quality of education, healthcare and infrastructure, the strength of the financial system, gender equality, and environmental stress.

# **Influences on the Strength of Property Rights**

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## **1. INTRODUCTION**

### **Influences on the strengths of Property Rights**

In the 1970s a school of institutional economists and historians emerged that argued that property rights were significant determinants of economic development. De Soto (2000) argued that the difference between the successful capitalist economies of the West and poorer economies in the rest of the world was the security of property rights and therefore the ability to release capital for productive investment by raising loans secured against property. Since De Soto's work many authors have examined the importance of security of property rights to economic development, social cohesion and environmental management. The rule of law, political stability and the protection of property rights enhance economic growth. Secure land and property rights are seen as a pre-condition for investment. In the absence of these, businesses are discouraged from re-investing and entrepreneurship is curtailed as effort is needed to defend these rights, and land is underutilised. Availability of credit is subject to collateral. For farmers, the ability to borrow is adversely related to the probability of land loss from insecurity of title (Feder and Feeny, 1991). Such insecurity exists alongside income inequality, weak governance and corruption (Gradstein, 2007). Bell (2006) gives a measure of the extent of insecure property rights – 50% of the peri-urban population in Africa and 40% in Asia. There is not universal acceptance of the direction of causation between the strengthening of property rights and economic development (Besley, 1995; Besley and Ghatak, 2009).

Research into the correlation between key indicators of governance demonstrates that such relationships are complex. Although a higher level of corruption reflects government instability, Montinola and Jackman (2002) postulate that the relationship between democracy and corruption is not linear:

Corruption is typically lower in dictatorships than in countries that are partially democratised. But once past a threshold, democratic practices inhibit corruption.

Whilst causality is recognised, the direction is not always apparent. Dong and Torgler (2011) conclude “Democracy will work better as a control of corruption if the property rights system works and there is a low level of income inequality.” However from the other perspective “If property rights are not secured and there is a strong income inequality, democracy may even lead to an increase in corruption.” They further suggest that the effect of democracy on corruption is governed by the extent of property rights protection and income equality. Hence high levels of insecure property rights, corruption and income inequality are self sustaining.

The concept of strength of property rights is capable of different meanings. Strong property

rights could mean that the rights of owners of property are secure. However, it is possible to conceive of a situation in which the rights of owners are strongly protected but the rights of occupiers are not. In other words, strong ownership rights could exist alongside weak security of tenure for land occupiers. Similarly, it is possible to conceive of a situation in which formal property rights are strongly protected whilst informal and customary rights are not. A further issue concerns the perspective from which to examine property rights. Should these be examined from the perspective of the household or individual rights to land? Women often have fewer rights to land than men within a household and their interests may be subordinated to those of their menfolk (USAID, 2007, vol 1, p10). There may also be variation in the security of property rights between social and ethnic groups, including indigenous peoples. It is important to be clear as to what the data on property rights refers to.

Ostrom (2009) defines five types of property rights. These could be regarded as hierarchical. At the lower level, a person may have a right to access a property, often described as an 'authorised viewer'. An example would be the right to access public land. Withdrawal rights allow the 'authorised user' to harvest crops, fell timber, and extract water. Management rights allow the 'claimant' to enclose and improve the land and thus improve productivity and sustainability. Proprietors have substantial rights including the ability to exclude others from their land. At the top of the hierarchy is right of alienation whereby the owner can sell or lease the land without impediment. However such a classification ignores the more complex tenures which transverse the customary-formal spectrum. Musembi (2007), based on research in Kenya, makes the point that the progression from communal to individual rights is not linear but there are "multi-tenure systems with different land uses calling for different tenures". A country's property rights reflect economic and political forces and in many cases are a product of colonial history. An adaptive approach has been undertaken in many African countries to give legal legitimacy to such local rights (Musembi, 2007). An alternative taxonomy lists open access where there are no assigned rights and where land is neglected, communal property managed by a group of individuals (e.g. tribe), private property and state land. These are not mutually exclusive, for example when there is a long lease (Feder and Feeny, 1991).

## **2. PROPERTY RIGHTS DATA**

A number of organisations have either collected or regularly collect data on the strength of property rights. This can be done in various ways. One approach is to combine a number of different indicators into an index that can be used to study changes over time. This is the approach adopted by the International Property Rights Index (IPRI) (Jackson, 2011), which uses data on the legal and political environment and physical property and intellectual property rights to produce an annual index of property rights. As the focus of this paper is to identify the factors that influence or are associated with strength of property rights, sources that use approaches such as that adopted by the IPRI have been rejected as there is a danger that the process of combining indicators could smooth out variability in the underlying data and result in spurious correlations. Instead the sources used have been ones where data on property rights has been collected directly rather than the strength of property rights being derived from other indicators. The sources used are ones which have data for large samples of

countries. This has meant that some sources with well-constructed methodologies, such as the World Bank's Land Governance Assessment Framework (World Bank, 2010), have had to be rejected because the number of countries for which data is available is too low to permit statistical analysis. Four sources of data about property rights have been investigated, namely, those produced by the Heritage Foundation, the World Economic Forum, the Bertelsman Transformation Index, and USAID.

## 2.1 Heritage Foundation

The strength of property rights is one of ten components of the Index of Economic Freedom, produced annually by the Heritage Foundation and *The Wall Street Journal* (Miller & Holmes, 2011). It is an assessment of "the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state (Miller & Holmes, 2011, p455)." The approach is one of expert assessment that draws principally on sources such as the Economist Intelligence Unit's *Country Profiles, Reports and Commerce*, the U.S. Department of Commerce *Country Commercial Guides*, and the U.S. Department of State, *Country Reports on Human Rights Practices*, supplemented by news and magazine articles. The Index has been compiled since 1995. The 2011 Index uses data for the period 2005-09 and covers 179 countries. It uses a 100 point scale divided into 10-point steps, through intermediate scores are possible. A score of 100 means that private property is guaranteed by the government; the court system enforces contracts efficiently and quickly; the justice system punishes those who unlawfully confiscate private property; and there is no corruption or expropriation. A score of 0, by contrast, means that private property is outlawed and all property belongs to the state; people do not have the right to sue others and so do not have access to the courts; and corruption is endemic. A score of 40 means that the court system is highly inefficient and delays are so long that they deter the use of the court system; corruption is present and the judiciary is influenced by other branches of government; and that expropriation is possible.

The Heritage Foundation seems to define freedom as being the ability to operate without government interference. This would imply that securing property rights is not a public good to be financed by the government. The measurement of property rights includes the degree to which the courts are effective agents of protection but not whether there are systems of property registration in place and are effective and free from corruption. It states that its mission "is to formulate and promote conservative public policies based on the principles of free enterprise, limited government, individual freedom, traditional American values, and a strong national defense." The other 'freedoms' used by the Heritage Foundation are described as business freedom, trade freedom, fiscal freedom, government spending, monetary freedom, investment freedom, financial freedom, freedom from corruption, and labour freedom. There is a clear ideological stance behind the measurement of property rights. The question is whether this invalidates the data.

The data can be tested in terms of its internal consistency and the extent to which the patterns in it can be confirmed from other sources. The advantage of the Heritage Foundation data is the period over which data has been collected, which allows the consistency of the patterns in

it to be tested over time. The trends for individual countries generally look to be as expected from external events. For example, the property rights index for Zimbabwe (shown in Figure 1) shows a decline from 50 in the late 1990s to 5 in 2009 after the development of the "Fast Track" approach to land reform and the expropriation of white-owned farms, adopted by the Zimbabwean government in 2000 following the inconclusive donor conference of 1998. However, there are also exceptions. For example, in the case of Bulgaria (also shown in Figure 1), the data would appear to suggest that property rights are less secure since Bulgaria joined the European Union in 2007 than they were in the 1990s, and at a comparable level to those in Zimbabwe after the 1998 donor's conference and the break-down of the Lancaster Gate agreement, though before the Fast Track policy was announced. Mortgage debt in Bulgaria as a percentage of GDP increased from 0.4% in 1999 to 12.6% in 2009 (European Mortgage Federation, 2010, p 70), which would suggest that the finance markets take a different view of the security of property rights in Bulgaria.

**Figure 1 Trends in property rights in Bulgaria and Zimbabwe**



Source: Heritage Foundation

## 2.2 World Economic Forum (WEF)

The World Economic Forum data on property rights is part of an annual study of competitiveness that has been undertaken for 30 years. The 2010 survey covered 139 countries (Schwab 2010). It examines what are termed 12 pillars of competitiveness – institutions, infrastructure, the macroeconomic climate, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation. Property rights form one part of the institutions pillar. The quality of the institutions of government and the legal system, crime, and the ethical behaviour of companies also form part of this pillar. Data is collected by means of a survey of executives. For the 2010 report

15,000 executives were polled between January and May 2010 resulting in 13,607 usable responses, a median response of 87 respondents per country. The survey was translated into 20 languages. Respondents were selected randomly with care taken to ensure a balance of industries. The survey method should reduce the potential for bias that could be present in a small panel of editors. The typical question in the survey requires respondents to rate their country on a Likert scale according to how strongly they agree or disagree with a statement. This does mean that the quality of the responses depends crucially on the experience of the respondents and their ability to calibrate responses about their countries compared with others. This could result in responses that may put a more favourable gloss on the state of a country than may be justified objectively or an undue degree of pessimism.

### **2.3 Bertelsmann Transformation Index (BTI)**

The Bertelsmann Transformation Index (Bertelsmann Stiftung, 2010) examines the progress towards democracy and a market economy in a number of developing and transitional economies. The 2010 BTI covered 127 countries (<http://www.bertelsmann-transformation-index.de/en/bti/ranking>). The Index falls into two parts: the Status Index examines a number of aspects of democratic government progress towards a market economy, including the rule of law, political participation, the stability of democratic institutions, economic performance, market organisation, and currency and price stability; the Management Index examines aspects of governance, including the ability to steer policy, resource efficiency, consensus building, and international co-operation. There are 17 criteria made up of 48 questions. The questions on Democracy and Market Economy in the 2010 Index reflect the situation at the end of January 2009 and the Management part the situation between January 2007 and January 2009.

The BTI is created by country experts who prepare a report on their country and assign rankings to it under the various questions. The responses are subject to a calibration and reviewing procedure which includes a blind review by a second country expert and regional and international co-ordination. The outcomes are transparent with the country reports being available on-line. The answers to the questions are scored from 10 (best) to 1 (worst). Property rights are addressed by one of the 14 questions that contribute the Market Status element of the Status Index. The question that respondents were asked to address was, to what extent do government authorities ensure well-defined rights of private property and regulate the acquisition of property? A score of 9 or 10 was to be awarded where property rights and the regulation of property are well defined in terms of acquisition, benefits, use, and sale and they are limited solely by “basic liberal rights”. Scores of 6, 7 or 8 were to be awarded where property rights and the regulation of the acquisition of property are well defined in principle but there are problems with implementation under the rule of law. A score of 3, 4 or 5 was to be awarded where property rights and the regulation of the acquisition of property are formally defined in law but are not implemented consistently nor safeguarded adequately by law, especially against state intervention. A score of 1 or 2 means that property rights and the regulation of the acquisition of property are not defined in law and are extremely vulnerable to the whims of the state.

## 2.4 USAID

In 2007 USAID published a method for assessing land tenure and property rights issues in order to review how significant land tenure and property rights constraints were in a country and the impacts of USAID-financed land tenure and property rights reforms (USAID, 2007). This was based upon a pilot study of 80 countries published in 2005 (USAID, 2005). The selection of countries reflects where USAID has been active and all the countries can be regarded as developing, emerging, or transitional economies. Countries were scored on five land tenure and property rights issues: violent conflict/ post-conflict instability, unsustainable natural resources management/biodiversity loss, insecure tenure and property rights, inequitable access to land and natural resources, and poor land market performance. The latter three of these can be regarded as measurements of the strength and security of property rights. The scores varied from 7 meaning that the issue is extremely serious and warrants urgent attention, down to 1 meaning that the issue is not a problem and there is no need for intervention. A score of 3 means that the issue is moderately severe and merits close monitoring but not intervention. The assessment was undertaken by an expert committee using material from USAID and other bilateral and multi-lateral donor agencies with a reconciliation process to achieve consensus ranking. It was recognised that the quality of the material was variable and that the depth of information available for the different countries was not consistent. Inevitably the process had to pare down complex information into a series of six attributes per issue which raises a number of problems (USAID, 2005, pp 6-8). It is important to respect the ranking team's caveats, in particular not to "infer an impossible level of precision and specificity" from the final ranking scores.

The USAID approach does have a number of advantages that, notwithstanding the crudeness of the scores and the caveats, mean that the data is worth exploring. It is a ranking system that takes a view of property rights that differs from those of the other systems with an emphasis on the strength of property rights and security of tenure from the perspective of the disadvantaged. It has a distinctly pro-poor stance. For example, there are six criteria by which the issue *Insecure Tenure and Property Rights* is to be scored, each of which on a scale of 1 to 7. They are:

- Individual private ownership rights in land are poorly defined, have limited utility, are of insufficient duration, and lack assurance in enforcement due to inadequate legislation and implementation or to state interference (Weighted at 25%);
- The land tenure and property rights legal and policy framework fails to protect the rights of women and other disadvantaged racial, ethnic, and religious groups (Weighted at 20%);
- Conflict over land ownership disputes, overlapping rights, and inheritances is a frequent and serious occurrence (Weighted at 15%);
- Legal or de facto recognition of common property in land and natural resources is lacking (Weighted at 15%);
- Broad-based land rights definition and enforcement is lacking due to a land administration system that is dysfunctional, not decentralized, or lacking adequate stakeholder participation (Weighted at 15%); and

- Incompatibility between formal legal and customary land tenure systems (legal pluralism) is contributing to tenure insecurity (Weighted at 10%).

A second version of the criteria (not used in the scoring) included illegal or unprincipled expropriations depriving land holders of their rights.

The criteria against which the *Poorly Performing Markets* issue was assessed include the ability of small holders to purchase, contract, or rent land due to biases in favour of larger farms or plot sizes; legislation on land transactions is unclear, too restrictive or undeveloped; contracts between landowners and tenants and sharecroppers are non-existent or unenforceable; the land administration system does not enable land transfers at affordable cost; commercial financial institutions are reluctant to provide smallholders with mortgage-based credit using land as collateral; and women and ethnic and religious minorities encounter legal, cultural, or administrative obstacles to participating in the land market. The criteria for *Inequitable Access to Land and Natural Resources* includes high levels of landlessness in rural areas, land distribution being highly skewed, female-headed households being marginalised, informal or illegal settlements on public or private lands, and the policy framework for land reform being lacking.

The three Land Tenure and Property Rights issues are not well correlated with each other and therefore would appear to identify different aspects of property rights strength and security of tenure. Although the correlation, using Kendall's tau, between *Poorly Performing Land Markets* and *Inequitable Access to Land and Natural Resources* is statistically significant little of the variability has been explained. The only significant correlation of any magnitude is that between *Insecure Tenure and Property Rights* and *Inequitable Access to Land and Natural Resources*.

**Table 1 Correlations between the USAID indicators of strength of property rights**

	Inequitable Access to Land and Natural Resources	Poorly Performing Land Markets
Insecure Tenure and Property Rights	0.390 p = 0.000 n = 80	0.139 p = 0.152 n = 80
Inequitable Access to Land and Natural Resources		0.197 p = 0.040 n = 80

Source: Calculated from USAID (2005)

## 2.5 Comparisons between the property rights indices

The consistency between the different property rights indices can be assessed by examining the extent to which their results are correlated. It was decided to use Kendall's tau as much of the data is ordinal. The various sources study different countries resulting in the sample sizes for which comparisons can be made varying between pairs of sources.

**Table 2 Correlations between USAID scores and property rights data from the Bertelsmann Transformation Index, Heritage Foundation, and World Economic Forum**

USAID LTPR Issue	World Economic Forum	Heritage Foundation	Bertelsmann Transformation Index
Insecure tenure & property rights	-0.002 p = 0.985 n = 64	-0.147 p = 0.144 n = 71	-0.138 p = 0.148 n = 73
Inequitable access to land & natural resources	-0.006 p = 0.952 n = 64	-0.060 p = 0.546 n = 71	-0.126 p = 0.180 n = 73
Poor land market performance	-0.054 p = 0.585 n = 64	-0.047 p = 0.648 n = 71	-0.059 p = 0.547 n = 73

Source: Calculated from USAID (2005), <http://www.bertelsmann-transformation-index.de/en/bti/ranking>, Schwab (2010), and Miller & Holmes (2011)

Table 2 sets out the degree of correlation between USAID's three Land Tenure and Property Rights issues scores that examine the strength of property rights and the scores on property rights from the BTI, Heritage Foundation, and WEF. The data from BTI was from the 2008 Index and the Heritage Foundation data was an average for the years 2004-07. There were no significant correlations between the USAID data and the other three property rights indices. Each of the sources is subject to potential errors and the caveats on the USAID data in particular should be noted. However, a plausible explanation is that USAID examined different aspects of property rights than the other three sources. Specifically, USAID took a pro-poor stance in the measurement of property rights whereas the other three sources tended to take a more business-orientated approach. It is therefore quite possible for there to be relatively secure property rights for businesses existing alongside poor security of tenure for the disadvantaged, including women and minority ethnic or religious groups. Secure property rights for businesses in urban areas could exist alongside poor security of tenure for the rural poor. Poor correlation might mean that different rights were considered by the various sources.

**Table 3 Correlations between the property rights scores in the Bertelsmann Transformation Index, Heritage Foundation, and World Economic Forum**

	Heritage Foundation	World Economic Forum
Bertelsmann Transformation Index	0.687 p = 0.000 n = 123	0.399 p = 0.000 n = 103
World Economic Forum	0.646 p = 0.000 n = 137	

Source: Calculated from <http://www.bertelsmann-transformation-index.de/en/bti/ranking>, Schwab (2010), and Miller & Holmes (2011)

There were statistically significant correlations between the property rights scores for BTI and the Heritage Foundation and the WEF, although that with the latter is significantly weaker. The scores for the Heritage Foundation and the WEF are also significantly correlated. These two surveys cover a wider range of countries than the BTI and include the richer developed economies which are characterised by the strength of their property rights. This may account for the higher correlations between the Heritage Foundation and WEF data when compared with that between BTI and WEF.

Comparison between the property rights data from the Heritage Foundation and the WEF for the countries they both cover shows that the Heritage Foundation data has a greater skew towards lower values with less symmetry than that from the WEF. The WEF data also has a lower coefficient of variation than that for the Heritage Foundation indicating that it is more tightly clustered around the mean with fewer outlying assessments of countries' security of property rights (Grover R & C, 2011). A possible interpretation could be that the WEF respondents were more reluctant to award their own country a low score compared with the Heritage Foundation's expert panel.

The two property rights scores that make use of expert judgement, BTI and the Heritage Foundation, show a high level of correlation. The WEF data suggests that there may be issues about how the respondents calibrated their answers. The USAID measure of strength of property rights and security of tenure suggest that they are measuring something different to those of the other three measures.

### **3. INFLUENCES ON PROPERTY RIGHTS**

#### **3.1 Methodology**

The influences on and extent to which factors are associated with strength of property rights was explored through correlation, using Kendall's tau. Much of the data used is ordinal in the form of scores given by experts or responses to Likert scale questions by survey panels. The comparisons were made between two groups of countries: those that formed part of the USAID study and the developing and transitional countries in the BTI. This resulted in the exclusion of the richer developed countries. The reason for this was concern that these countries might act as outliers and thereby boost the level of correlation between the strength of property rights and a number of variables concerned with governance and economic development. The countries in the BTI contain a wide variety of countries including some with a high level of economic and institutional development such as Malaysia and Singapore, European Union members such as the Czech Republic, Latvia and Lithuania, and members of the EU's Euro zone, such as Estonia, Slovenia and Slovakia. As comprehensive data did not exist for all the countries in the USAID and BTI studies, some had to be excluded. Wherever possible, the data from around 2005 was used in the analysis of the USAID countries as the study was published in 2005, whereas that used with the BTI countries was generally from 2009-11.

The principal sources of data used were as follows.

- **World Economic Forum.** Data from the WEF was used to examine the relationship between property rights and the institutions of government, the legal system, corporate governance, infrastructure, the quality of education and healthcare, market competitiveness, the level of business sophistication, the development of the labour market, the development of the financial system, the degree of sophistication of business management, innovation, and the macroeconomic environment.
- **Bertelsmann Transformation Index.** Data from the BTI was used to examine the level of democratic government including political participation, the rule of law, and the stability of democratic institutions, the extent to which a market economy had developed, such as competitiveness and liberalisation, currency and price stability, environmental sustainability, and economic performance, and the development of management, including resource efficiency, consensus building, and international co-operation.
- **The World Bank Institute’s Governance Indicators.** These are derived from a variety of sources (Kaufmann, Kraay & Mastrizzi, 2010). There are six indicators of governance: voice and accountability, that is the ability of a country’s citizens to participate in selecting the government, freedom of expression and association and a free media; political stability with low risk of the government being destabilized or overthrown by unconstitutional or violent means; government effectiveness, which is concerned with the quality of public services and the civil service, the degree of civil service independence from political pressure, and the quality of policy formation and implementation; regulatory quality, which is concerned with the ability of the government to formulate and implement policies that permit and promote private sector development; the rule of law; and the control of corruption, including both petty and grand corruption and the “capture” of the state by elites and private interests.
- **The World Bank Doing Business property registration data.** This is one of ten indicators of the ease of doing business in a country. A standard scenario of the transfer of a 929 square metre warehouse in a peri-urban area between two limited liability companies is used to examine the number of procedures, time taken, and cost of registration (IBRD & World Bank, 2011). The data exclude any other costs the buyer may incur because of the poor quality of registration.
- **OECD Social Institutions and Gender Index.** The Index examines various aspects of discrimination against women, including women’s access to land and bank loans and inequalities in inheritance (Branisa et al, 2009). A three-point point scale is used which means that a country is given a grading according to whether there are equal rights for men and women (score of 0), women have no rights (score of 1), or that women have some rights but less than men (score of 0.5).
- **Yale Environmental Performance Index.** The EPI seeks to rank countries on 25 performance indicators (Emerson, 2010). Of these the environmental burden of disease, access to sanitation and water supply, changes in forests and stock, and greenhouse gas emissions have been used to examine if there is a relationship between environmental factors and the security of property rights.

A number of the variables used from different sources potentially overlap. As the method

employed was bivariate correlation rather than, say, multiple regression, this does not distort the results but provided an opportunity to examine the differences between measures from alternative sources, including ones that use expert responses and those which use panel surveys.

### **3.2 The Bertelsmann Transformation Index countries**

Data was available for approximately 100 of the countries that feature in the BTI, though the precise number of countries used in each analysis varies according to data availability. Appendix 1 shows the statistically significant correlations between strength of property rights, principally measured using the BTI data, and a number of other variables. The variables have been grouped together so that those that are related can be compared. In a few instances of data taken from the WEF there was no statistically significant correlation with the BTI measure of property rights but there was a statistically significant correlation with the WEF measure. This could be due to the way the panel of respondents answered the questions, with the dispersion being different from that of the BTI's expert respondents.

The strength of property rights is correlated with the strength of democratic government, including free and fair elections, freedom of expression and association, and the strength of civil society. Owners of property in a democratic society have greater potential protection, particularly against dispossession, than those in more despotic regimes. Moreover, the efficient functioning of a property market requires freedom of information so that all participants can be fully informed about market circumstances, as well as freedom of assembly so that trading can take place. There were also significant correlations with a number of measures of governance, particularly the quality of administration, the effectiveness of government, the efficiency with which government uses resources, and the extent to which there is consensus between the major political actors on the market economy and democracy as long term goals. There were also significant correlations with indicators of the strength of the rule of law. Unsurprisingly, property rights are better protected by independent courts charged with deciding upon clearly drafted rules and regulations than where the holders of property rights are subject to the decisions of an arbitrary authority. The protection of property rights was correlated with the absence of significant corruption, both petty and grand corruption, including the "capture" of the state by an elite or private interests, and abuse of office. Where grand corruption flourishes, there is likely to be the favouring of monopoly interests. The data collected by Transparency International on corruption in land matters is available only for a relatively small number of countries (Transparency International, 2009) but corruption in land matters is highly correlated with corruption elsewhere in society (Grover R & C, 2011, pp 10 -11) so the use of these broader measures are likely to indicate the level of corruption in land services. Although the correlations are weaker, the strength of property rights is associated with the quality of corporate governance.

Governments can help to strengthen property rights through effective land administration such as land registration. Therefore, the correlations between the strength of property rights and governance indicators are not surprising. There was though very limited correlation between the strength of property rights and the measures of the efficiency of property registration

taken from the World Bank's Doing Business data, though that with the cost of registering property showed the expected inverse correlation. We have previously found correlations between the number of procedures, time taken in registration, and cost of registration and corruption in land services, and significant rank order correlations between the Heritage Foundation's measure of property rights and the ease of property registration (Grover R & C, 2011, pp 15-17). The poor correlation found between the BTI indicator of property rights and the Doing Business measures of ease of property registration could be due to the World Bank's choice of scenario and that different ones might produce higher correlations. Alternatively, the data could be measuring the quality of property registration in a relatively crude fashion by focussing on numbers of procedures, time taken and cost. Whilst simplifying procedures is likely to make registration easier and less prone to corruption, and thereby strengthen property rights, there may come a point at which the quality of the process becomes more important to securing confidence in the system than further reductions in procedures, time and cost. For example, high cost may be because the system is very effective, enabling the government to levy transfer taxes, whereas low cost may disguise the true cost of transfer by excluding privately contracted title insurance.

Correlation measures association and not causation. There is some evidence to indicate that the strength of property rights is associated with the level of economic development. A number measures of the stability of an economy were examined, including anti-inflation policy, the liberalisation of foreign trade, the absence of structural constraints on an economy, as well as indicators of business maturity, such as production process sophistication, marketing, supplier quality, and value chain breadth. These indicate that stronger property rights are found in economies that are more developed. There were similar correlations with the development of the financial system, the quality of infrastructure, and the quality of the education system. It is difficult to be sure of the direction of causation but secure property rights could assist in the development of the financial system by permitting lending secured against property. Higher standards of education could be argued to help property owners protect their rights and could result from rising land values from better protected rights enabling families to pay school fees and to forgo the income that children could otherwise generate.

There is some evidence to suggest that stronger property rights were associated with greater equality of opportunity for women and those from ethnic, racial, and religious minorities. Where women's and minority rights are protected, they are likely to be able to gain access to land, including through inheritance, and retain property, for example, on marriage or widowhood, whereas exclusion from fundamental areas of society implies weaker property rights. Stronger property rights were associated with stronger environmental policy and inversely related to the environmental burden of disease.

### **3.3 The USAID countries**

A similar analysis was carried out for the countries that were the subject of the USAID study (USAID, 2005). The set of countries is a narrower one than the BTI because it is limited to countries that were either in receipt of aid or were being considered as potential recipients.

For example, the only European Union countries in the study were the two most recent entrants, Bulgaria and Romania, which were not EU member states at the time of the USAID study. The analysis focused on approximately 59 countries for which a consistent set of data could be assembled and used data, where possible, for approximately 2005. As was discussed above, the USAID study graded countries on three criteria that indicate the strength of property rights, *Insecure Tenure and Property Rights*, *Inequitable Access to Land and Natural Resources*, and *Poor Land Market Performance*. A high score indicates poor strength of property rights and security of tenure. Therefore correlations with the factors associated with strength of property rights can be expected to be inverse. As with the BTI study, correlation was measured using Kendall's tau. The correlations are shown in Appendix 2.

The most striking difference between the study of the USAID countries and the BTI ones is the limited number of correlations with the USAID indicators of property rights. The ones which were found had lower correlation coefficients and the confidence level had to be lowered from 99.99% ( $p = 0.000$ ) to 95% ( $p = 0.05$ ). None of the correlations met the test of statistical significance used in the analysis of the BTI countries.

Three correlations were found with *Insecure Tenure and Property Rights*: the liberalization of foreign trade, the willingness of management to delegate authority, and the effectiveness of government in implementing reform policy. There were 11 correlations with *Inequitable Access to Land and Natural Resources* including the rule of law, political stability and the absence of violence, and crime. In other words greater equity in access is associated with low crime, political stability, and the rule of law. This environment is associated with civil rights being ensured, reliability in public services, and quality in education. The positive correlation with the availability of financial services suggests that property rights for the poor may be weakened in situations in which finance is available for others, perhaps to fund their resource acquisition. The negative correlations with *Poor Land Market Performance* also suggest that property rights are enhanced when there is an efficient legal system, the government has a monopoly on the use of force, and there is acceptance of the legitimacy of the state, public trust of politicians, and a low level of terrorism and violence. These conditions are also associated with women having rights of inheritance and having access to banks. There was also a correlation with the low cost of registering property. The positive correlations suggest an intriguing possibility. These correlations were between *Poor Land Market Performance* and the enrolment rate in tertiary education, mobile phone subscriptions per 100 of the population, access to adequate sanitation, and low restrictions on capital flows. They could indicate that property rights for the poor might be weaker in societies in which only some groups have access to finance, higher education, and technology, resulting in significant inequalities. Such possibilities require further research to test and confirm the underlying relationships.

#### 4. CONCLUSIONS

This paper has examined a number of measures of the strength of property rights. These have been constructed in various ways and take different perspectives on security of tenure and property rights. Although some of the measures are highly correlated, this is not so in all cases. It is important therefore to understand how the measures are constructed and how the security of property rights in each is defined before they are used.

There is a rich source of economic, political, social, and environmental indicators available from BTI, WEF, the World Bank, OECD, and Yale University, amongst others. These enable the factors that are associated with strength of property rights to be explored. The analysis suggests that strength of property rights is associated with the level of development of business and the economy, with democratic government, high standards of governance, and respect for the rule of law. The correlation analysis carried out in this paper does not enable causation to be established. Therefore it is unclear whether stronger property rights have contributed to economic development or are the result of it. For example, does greater prosperity encourage investment in land, which in turn strengthens property rights or does investment in secure property promote economic growth? Further work needs to be undertaken in modelling the associations between property rights and the various factors identified in this paper.

## Appendix 1 Significant correlations of the BTI property rights index with key variables

### Strength of democratic government

WBI	Voice & accountability	0.544
BTI	1.1 Monopoly on the use of force	0.476
BTI	2.1 Free and fair elections	0.453
BTI	2.3 Association / assembly rights	0.476
BTI	2.4 Freedom of expression	0.505
BTI	4.1 Performance of democratic institutions	0.497
BTI	5.1 Party system	0.466
BTI	5.2 Interest groups	0.575
BTI	5.4 Associational activities	0.512
BTI	13.2 Civil society traditions	0.526
BTI	14.1 Prioritization	0.585
BTI	14.2 Implementation	0.576
BTI	14.3 Policy learning	0.575
BTI	16.2 Anti-democratic actors	0.493
BTI	16.4 Civil society participation	0.481
BTI	17.1 Effective use of support	0.579
BTI	17.2 Credibility	0.590
BTI	17.3 Regional cooperation	0.642

### Property Registration

DB	Cost of registering property (% value)	-0.216*
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### Governance

BTI	1.4 Basic administration	0.615
WBI	Government effectiveness	0.647
BTI	15.1 Efficient use of assets	0.651
BTI	15.2 Policy coordination	0.580
BTI	16.1 Consensus on goals	0.656
BTI	16.3 Cleavage / conflict management	0.419
WEF	1.08 Wastefulness of government spending	0.429 WEF
WEF	1.09 Burden of government regulation	0.301 WEF
WEF	1.12 Transparency of government policymaking	0.226 WEF
WEF	1.13 Business costs of terrorism	0.228*
WEF	1.15 Organized crime	0.423 WEF
WEF	1.16 Reliability of public services	0.345
WBI	Political Stability & absence of violence/terrorism	0.456

## Equality of opportunity, including for women and ethnic, racial and religious minorities

BTI	1.2 State identity	0.368
BTI	6.1 Socioeconomic barriers	0.605
BTI	10.2 Equal opportunity	0.624
BTI	13.3 Conflict intensity	0.396
OECD	Women's access to land	0.273*

## Rule of law

WBI	Rule of law	0.670
BTI	3.1 Separation of powers	0.549
BTI	3.2 Independent judiciary	0.620
BTI	3.4 Civil rights	0.577
WEF	1.6 Judicial independence	0.407
WEF	1.10 Efficiency of legal framework in settling disputes	0.595 WEF
WEF	1.11 Efficiency of legal framework in challenging regulations	0.555 WEF

## Corruption and state capture

WBI	Control of corruption	0.646
BTI	2.2 Effective power to govern	0.452
BTI	3.3 Prosecution of office abuse	0.616
BTI	4.2 Commitment to democratic institutions	0.497
BTI	7.1 Market-based competition	0.751
BTI	7.2 Anti-monopoly policy	0.598
WEF	6.03 Effectiveness of anti-monopoly policy	0.288
BTI	9.2 Private enterprise	0.705
BTI	15.3 Anti-corruption policy	0.666
WEF	1.03 Diversion of public funds	0.330
WEF	1.04 Public trust of politicians	0.442 WEF
WEF	1.05 Irregular payments & bribes	0.476
WEF	1.07 Favouritism in decisions of government officials	0.493 WEF

## Corporate governance

WEF	1.17 Ethical behaviour of firms	0.345
WEF	1.18 Strength of auditing and reporting standards	0.491
WEF	1.19 Efficacy of corporate boards	0.425 WEF
WEF	1.20 Protection of minority shareholders' interests	0.615 WEF
WEF	1.21 Strength of investor protection	0.245*

### **Environmental sustainability**

BTI	12.1 Environmental policy	0.645
YEPI	Environmental burden of disease	-0.424
YEPI	Access to adequate sanitation	0.395
YEPI	Access to adequate drinking water	0.482
YEPI	Forest cover change	0.241
YEPI	Greenhouse gas emissions per capita	0.251

### **Economic Development**

WBI	Regulatory quality	0.673
BTI	8.1 Anti-inflation / forex policy	0.572
BTI	8.2 Macrostability	0.574
BTI	10.1 Social safety nets	0.610
BTI	11.1 Output strength	0.477
BTI	12.2 Education policy/R & D	0.595
BTI	13.1 Structural constraints	0.556
BTI	7.3 Liberalization of foreign trade	0.632
WEF	1.02 Intellectual property rights	0.403
WEF	6.01 Intensity of local competition	0.418
WEF	6.02 Extent of market dominance	0.274
WEF	6.04 Extent and effect of taxation	0.347 WEF
WEF	6.08 Agricultural policy costs	0.453 WEF
WEF	6.11 Prevalence of foreign ownership	0.324
WEF	6.14 Degree of customer orientation	0.398
WEF	6.15 Buyer sophistication	0.326
WEF	11.01 Local supplier quantity	0.348 WEF
WEF	11.02 Local supplier quality	0.503
WEF	11.03 State of cluster development	0.332 WEF
WEF	11.04 Nature of competitive advantage	0.431
WEF	11.05 Value chain breadth	0.412
WEF	11.06 Control of international distribution	0.254
WEF	11.07 Production process sophistication	0.442
WEF	11.08 Extent of marketing	0.454
WEF	3. Macroeconomic Environment	0.260
WEF	7. Labour market efficiency	0.254 WEF
WEF	12. Innovation	0.368

### Development of financial systems

BTI	7.4 Banking system	0.731
WEF	6.12 Business impact of rules on FDI	0.454 WEF
WEF	8.01 Availability of financial services	0.407
WEF	8.02 Affordability of financial services	0.341
WEF	8.03 Financing through local equity market	0.407 WEF
WEF	8.04 Ease of access to loans	0.295
WEF	8.05 Venture capital availability	0.275
WEF	8.06 Restrictions on capital flows	0.421
WEF	8.07 Soundness of banks	0.287
WEF	8.08 Regulation of securities exchange	0.349

### Quality of infrastructure

WEF	2.01 Quality of overall infrastructure	0.387
WEF	2.02 Quality of roads	0.285
WEF	2.04 Quality of post infrastructure	0.306
WEF	2.05 Quality of air transport infrastructure	0.291
WEF	2.07 Quality of electrical supply	0.451
WEF	2.08 Fixed telephone lines	0.390
WEF	2.09 Mobile telephone subscriptions	0.268
WEF	9.04 Internet users	0.255

### Quality of education system

WEF	4.09 Quality of primary education	0.236*
WEF	5.01 Secondary education enrolment rate	0.431
WEF	5.02 Tertiary education enrolment rate	0.399
WEF	5.03 Quality of the educational system	0.281
WEF	5.04 Quality of math and science education	0.283
WEF	5.05 Quality of management schools	0.308
WEF	5.06 Internet access in schools	0.526
WEF	5.07 Local availability of specialized research and training services	0.213*
WEF	5.08 Extent of staff training	0.208*

Dependent variable in each case is Strength of property rights as measured by BTI, question 9.1, except where WEF appears against the correlation coefficient. In these cases the BTI data failed to produce a statistically significant correlation and WEF data on property rights was used instead.

Correlation measured using Kendall's tau.

p values in all cases = 0.000 except when marked \*, where the p value is less than 0.005.

Sources: BTI Bertelsmann Transformation Index; DB International Bank for Reconstruction and Development & The World Bank, *Doing Business*; OECD Social Institutions and Gender Index; WBI World Bank Institute Worldwide Governance Indicators; WEF World Economic Forum *Global Competitiveness Report*; YEPI Yale Centre of Environmental Law and Policy Environmental Performance Index

## Appendix 2 Significant correlations with the USAID property rights indicators with key variables

		Insecure Tenure and Property Rights	Inequitable Access to Land and Natural Resources	Poor Land Market Performance
BTI	1.1 Monopoly on use of force			-0.264 (0.017)
BTI	1.2 Citizenship agreement			-0.236 (0.038)
BTI	3.4 Civil rights ensured		-0.250 (0.018)	
BTI	7.3 Liberalization	-0.214 (0.047)		
BTI	8.1 Anti-inflation/forex		-0.255 (0.017)	
BTI	14.2 Policy implementation	-0.233 (0.023)	-0.245 (0.022)	
WEF	1.04 Public trust of politicians			-0.293 (0.005)
WEF	1.10 Efficiency of legal framework in settling disputes			-0.258 (0.013)
WEF	1.13 Business costs of terrorism			-0.210 (0.042)
WEF	1.14 Business costs of crime and violence		-0.334 (0.001)	
WEF	1.15 Organized crime		-0.200 (0.045)	
WEF	1.16 Reliability of public services		-0.238 (0.017)	
WEF	1.20 Protection of minority shareholders' interests			-0.215 (0.039)
WEF	2.09 Mobile telephone subscriptions			0.200 (0.050)
WEF	5.02 Tertiary education enrolment rate			0.228 (0.026)
WEF	5.03 Quality of the educational system		-0.235 (0.019)	
WEF	5.04 Quality of math and science education		-0.347 (0.001)	
WEF	8.01 Availability of financial services		0.204 (0.041)	

WEF	8.06 Restrictions on capital flows			0.211 (0.042)
WEF	11.09 Willingness to delegate authority	-0.233 (0.023)		
WBI	Political stability & absence of violence/terrorism		-0.208 (0.034)	-0.287 (0.005)
WBI	Rule of law		-0.236 (0.017)	
DB	Registering Property - Cost (% of property value)			-0.338 (0.001)
OECD	Inheritance			-0.317 (0.008)
OECD	Women's access to bank loans			-0.249 (0.043)
YEPI	Access to adequate sanitation			0.231 (0.024)

Correlation measured using Kendall's tau.  
p values are in brackets..

Sources: BTI Bertelsmann Transformation Index; DB International Bank for Reconstruction and Development & The World Bank, *Doing Business*; OECD Social Institutions and Gender Index; WBI World Bank Institute Worldwide Governance Indicators; WEF World Economic Forum *Global Competitiveness Report*; YEPI Yale Centre of Environmental Law and Policy Environmental Performance Index

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