

Corruption and religion

Adding to the economic model

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Abstract: The cross-country pattern in the 1998 corruption index from Transparency International is explained by a mixed economic-cultural model: The economic model uses the level of real income per capita, the rate of inflation and the level of economic freedom. The cultural model uses a set of variables giving the shares of 11 religions in each country, and the Herfindahl-index for religious diversity. The economic model accounts for the larger part of the variance, but religions prove to have considerable additional explanatory power. The largest divide is within the Christians. The least corrupt are the Protestant and Anglicans, while Catholics, and other »Pre-Reform« Christians, deviate to the other side - as do Buddhists. Further, it is demonstrated that the more religiously divided a country, the less corrupt it is.

Key words: Corruption, economic transition, religion

Jel: K49, O11, P50

Most of the cross-country pattern of corruption can be explained by a simple economic model as shown in Paldam (1999). However, considerable residuals remain. This article attempts to reduce the residuals by considering the impacts of religion. The basis for this attempt is the logic of Table 1:

Table 1. The logical basis for the article

	Two claims and a corollary	Empirical status
A	Religion is a key determinant of »culture«	Obvious. Also reverse causality
B	Corruption has a (strong) »cultural« factor	Likely, but evidence sporadic
C	Religion is a determinant of corruption	Analyzed by article

»Culture« is a nebulous concept defying quantification, but reasonably good statistics exists for the cross-country pattern of religion. Therefore, it is possible to analyze the reduced-form relation between religion and corruption in a static cross-country framework.

1. Andreas Blom has been research assistant. The paper is the second outcome of a project under the Center of Dynamic Economics. Thanks goes to Arne Gotfredsen, Johann Graf Lambsdorff and Trine Mønsted for constructive comments. Address of author: MP, Dept. of Economics, University of Aarhus, 8000 Aarhus C, Denmark. E-mail: <mpaldam@econ.au.dk> see also netsources.

The dependent variable is the κ -index from the NGO *Transparency International* (see net-sources). It aggregates polls measuring *perceptions* of corruption from many countries. The latest posting has increased the coverage by 30 countries to a total of 85. Due to limitations in the availability of other data this study covers 78 countries only. The country value given is calculated from 3-12 national polls. The index takes values from 0 »very corrupt« to 10 »very clean«. It is thus scaled reversely of the way the index is used in casual discussion. When corruption increases, the κ -index decreases. The standard deviation of the polls for each country is also given. It is typically a little larger than 1. While the large pattern is very significant, differences of 1-2 points between countries may be random.

I want to stress that my article is no treatise on the sociology of religion, neither does it deal with theology. The purpose is to analyze empirical connections. It is interesting to speculate on the reasons why they exist, but religions differ in many and subtle ways, so it is hard to point to the relevant ones.

The statistical analysis uses a simple economic corruption model from Paldam (1999). A set of 11 religion-variables are added to this model. It is shown that several of the religions have significant effects on the level of corruption. The effect of *religious diversity* is also analyzed by a Herfindahl-index calculated on the religion shares.

The article proceeds as follows: Section I gives the set-up of the study and surveys previous findings. Section II is a brief survey of the literature. The data for the cross-country distribution of religions are discussed in Section III, and documented in Appendix (see netsources). The statistical analysis follows in Sections IV to VI, where IV presents methods, while the univariate results are discussed in V, and VI brings some multivariate analysis. The results are summarized in Section VII.

I Finding an analyzable piece of a grand picture

The relations between economic development, culture, religion and corruption are surely complex, involving »grand historical dynamics«, far exceeding the possibilities of »normal« empirical research. It might seem fool-hearted even to try such a pedestrian approach.

The purpose of Subsection I.1 is to argue that a piece of the grand pattern can be isolated and submitted to the standard »hard« tools of analysis, while I.2 briefly considers how religious diversity might matter. Subsection I.3 presents the economic model used.

I.1 Set-up of the analysis

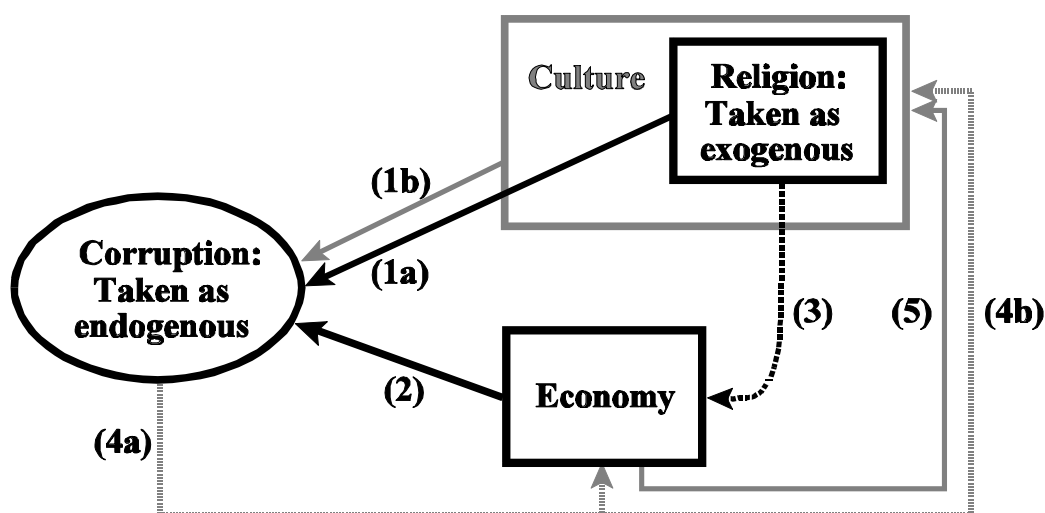
Figure 1 is a picture of the likely relations between the concepts studied. The picture is drawn in two colors: Black is used for the operationalized and analyzed parts, while grey is used for the excluded parts. The boxes are connected by arrows indicating (possible) causal links:

- (1a) The »simple« *direct* link from religion to corruption. It is the main link analyzed below.
- (1b) Other aspects of culture might influence corruption as well. An attempt to analyze all of (1) - that is (1a) & (1b) jointly - is discussed in I.3.
- (2) The economic link is covered by the economic model discussed in I.3.
- (3) The *Weber-link* is discussed in I.5. It is a causal link where »grand dynamics« (see below) is

heavily involved, and it generates an *indirect* link from religion to corruption via the economy. The indirect link is much harder to estimate than the direct one, even when the indirect link might be the strongest in the long run.

- (4a) The counter-causality link from corruption to the economy. It is assumed to work via the growth rate. As discussed in I.3 and 4, it has proven weak and fragile. However, to the extent it exists, it gives a bias in our relations, causing the economic model to be too good.
- (4b) The counter-causality link from corruption to religion is assumed to be weak too, except perhaps as a part of the »grand dynamics«.
- (5) In the longer run the economic transition from a poor stagnant LDC to a rich modern DC changes »everything« such as educational levels and family patterns. This surely has deep impacts on religion as well.²⁾ Once more, this is a field where »grand dynamics« are involved.

Figure 1. The framework of the analysis



Note: Black indicates concepts, for which variables are defined and causal links analyzed. The broken black arrow is a causal link that is discussed, but not estimated. Grey indicates excluded variables and causal links.

The list of links distinguishes between »simple« links that can be analyzed in a static cross-country analysis and »grand dynamics« links. They are parts of interrelated historical processes, where »everything« influences everything else over centuries. Such links have the following characteristics: (i) They are important in the long run, but (ii) give small or unstable short-run coefficients. (iii) They are clouded in a great deal of simultaneity and confluence. The »grand dynamics« is covered by one »catchall« variable the GDP-level, y . It is surely a simple solution to a complex problem, and y proves to be by far the most powerful variable the estimates.³⁾

2. Theocratic political systems disappear, »pagan superstition« vanishes, while agnosticism and atheism become more widespread. Part of the change is hidden in the statistics. Consider the groups of »Indigenous« farmers in Guatemala and Parisians. Most members of both groups are classified as Catholics. If asked, they will agree, so in an important sense it is true; but the »religions« of the two groups are surely rather different.
3. Also it is a cautious approach: It rather over- than underestimates the influence of the grand dynamics.

I.2 Religious diversity: Competition or collusion?

From the data giving the share of each religion in the 78 countries, it is easy to calculate the Herfindahl index, h_i , for religious diversity, using the formula given in Table 3 (below). The index is a number $0 < h_i < 1$, where h_i goes to 1 as one religion becomes more and more dominating.

The h -variable permits an analysis of the following question: Are countries with much religious diversity (low h 's) more (κ low) or less (κ high) corrupt than more homogenous ones? I.e., is the effect $\eta = \partial\kappa/\partial h_i$ positive or negative? On the face of it both signs appear possible as already discussed by David Hume and Adam Smith (see Griswold, 1999: 266-280), though in very different terms.⁴⁾

Smith's theory of good competition ($\eta < 0$): For the economist it is a natural thought that religious competition makes the individual religions behave as well as possible. So there will be less corruption the more the diversity. The closer to monopoly, the more likely is collusion and corruption.

Hume's theory of dynamic group collusion ($\eta > 0$): The alternative hypothesis is that the groups collude and try to help insiders at the expense of outsiders, also by corrupt means. As corruption is a contagious social ill group corruption might lead to other types of corruption as well.

No study appears to have been made of this matter. Fortunately the data speaks decisively on the matter. They support the view of Adam Smith as discussed in VI.5.

I.3 An empirical corruption model

Table 2 shows a mixed economic-cultural corruption model from Paldam (1999). Below only the economic part of the model is used, while the cultural variables are replaced by the religious ones.

The *pure economic model* is thus: $\kappa = \alpha_1 y_i + \alpha_2 p_i + \alpha_3 \phi_i$. This simple model has remarkable explanatory power. $R^2 = 0.68$ in column (1) of Tables 6 and 9. The diagnostic tests indicate only one problem: There is a clear non-linearity to be discussed in Subsection IV.2.

- y_i , represents the economic transition from a poor stagnant LDC to a rich DC. In the big process, corruption falls dramatically.
- p_i , inflation is one of the best indicators of economic mismanagement and chaos. Such problems are rather demoralizing, causing corruption to rise. The effect is often quite strong, but the size of the effect is not as robust as the one of y .
- ϕ_i , the economic freedom index is an attempt to measure the amount of regulation and hereby the potential for rent-seeking. A high level of regulation tends to cause corruption to be high too, but the effect lacks robustness - it fails in the estimates presented below. In view of the literature (see Section III) it has been kept.

In addition to these variables Paldam (1999) analyzes the effect of the growth rate taken to be an effect from corruption to growth. It is found to be smaller and less robust than the three effects listed.

Conversely it rather under- than overestimates the effects of religion.

4. The relevant section in Smith (1776) is Book V Article III. It seems that it is difficult to find later discussions though some relevant arguments have been made (see Klitgaard (1988, 62-74) and Rose-Ackerman (1999, 130-137) supporting both sides.

Table 2. The economic-cultural model

$\kappa_i = \alpha_0 + \Pi_e + \Pi_c$. The mixed model, where κ is the corruption index, α_0 is a constant, and i is the country index
$\kappa_i = \Pi_e = \alpha_1 y_i + \alpha_2 p_i + \alpha_3 \phi_i$, is the economic model y_i , the (natural) logarithm to real GDP per capita in 1995, using the PPP-data. Source: IBRD data (1997, 1999) p_i , the (natural) logarithm to the average rate of inflation 1991-1995. Source: IBRD data (1997, 1999) ϕ_i , the economic freedom index - averaged 1980-95. Source Gwartney & Lawson (1998, 1999)
$\kappa_i = \Pi_c = \beta_1 D_i^{WE} + \beta_2 D_i^{LA} + \beta_3 D_i^{OC} + \beta_4 D_i^A + \beta_5 D_i^O + \beta_6 \gamma_i$, is the cultural-political model, where the D's are a set of simple binary dummies for the main »cultural areas«. They are 1 if the country belongs to area, else 0 D_i^{WE} , West European cultural area, including USA, Canada, Australia and New Zealand D_i^{LA} , Latin American cultural area: Spanish/Portugese speaking countries in the Americas south of the USA D_i^{OE} , Old Communist countries. The countries of former USSR and in Eastern and Central Europe D_i^A , African Cultural area: Countries in Sub-Sahara Africa D_i^O , Oriental Cultural area: Countries with »Chinese« culture including Japan and South Korea γ_i , the Gastil index for democracy. Source: Freedom House.

The *pure cultural model* $\kappa_i = \beta_1 D_i^{WE} + \beta_2 D_i^{LA} + \beta_3 D_i^{OC} + \beta_4 D_i^A + \beta_5 D_i^O$, has almost a much explanatory power ($R^2 = 0.65$) as the pure economic model, but the cultural variables used are primitive and have various problems.⁵⁾

When the mixed model is estimated, it appears that the cultural variables explain much *the same* variation in the κ -index as the y -variable does. Countries within the same cultural area have relatively less variation in their GDP-levels (as defined by the y -variable) than in their corruption levels. So apparently the cultural area variables work as proxies for the GDP-level and not as proxies for »culture« as such.

II Notes on the literature

During the last decade corruption data have become available, but the bulk of the literature is still theoretical. Subsection II.1 introduces the theoretical literature, while II.2 & II.3 look at the new empirical research. Subsection II.4 considers the Weber-link.

II.1 From theory to the κ -index

The literature on corruption is large. Recent surveys are Bardham (1997) and Mbaku (1998). Much material is also found in two recent books: Elliot (1997) and Jain (1998).

The bulk of the literature is theoretical. It uses three approaches: One starts from the standard micro-models of non-benevolent bureaucracy (see Schleifer & Vishny, 1993, 1998). The second uses the law-and-economics framework (see Rose-Ackerman, 1978, 1999). The third relates to the theory

5. The main problem is that some countries are hard to place. The most dubious ones are put in a residual group. Also, some cultural areas as the Arab and the Indian ones are not included, due to lack of data. It should also be mentioned that the democracy index, γ shows a clear positive connection so that more democracy gives less corruption. However, this effect is dubious. It disappears, when y is included in the relation.

of organization (see Klitgaard, 1988), who also shows how corruption can develop into full scale »cleptocracy«.⁶⁾ This literature builds on more or less explicit case-studies. However, some research - as Alam (1998) - makes so systematic use of »anecdotes« as to illustrate the saying that »the plural of anecdotes is data«.⁷⁾

During the last decade survey-data for many countries of the level of corruption have appeared. These data have the country as the unit of registration. The κ -index is a compilation and calibration of the main surveys. It will take some time before systematic time-series evidence is available, so the dynamics of the pattern is still largely outside the realm of empirical analysis. The new data has already been used in two types of analyses - surveyed by Jain (1998) and Lambsdorff (1998) - covering the two causal directions:

II.2 The effects of corruption on other variables

This literature concentrates on the effect of corruption on the real growth rate. The pioneering study is Mauro (1995). He studies the effect of corruption on growth via the investment channel. The investment-growth-link is known to be strong and robust,⁸⁾ but investments are notoriously hard to predict in a time-series framework.

However, Mauro (1995), Borner et al (1995), Keefer & Knack (1995, 1998) and IBRD (1997) have shown that socio-political variables constructed from polls predict the cross-country pattern of investment reasonably well. Key variables in these models are measures of: (1) the security of property rights, (2) the predictability and transparency of government regulation, (3) the reliability of the legal system, and (4) the level of corruption. Their power is approximately in the order given.

Corruption is thus the weakest member of the group. Predictable corruption with moderate rates appears a fairly harmless phenomenon, as regards investment. Only large and arbitrary corruption is a serious problem. When the reduced form estimate of the effect of corruption on growth is analyzed, it is hence no wonder that it found to be small and fragile.

II.3 The effect of other variables on corruption

This is the *corruption-function approach* used at present. Here the literature is meager: Most studies are partial only: Ades & di Tella (1995, 1996) and IBRD (1997), look at the effects on corruption of measures for the contestability of markets. These measures prove to be negatively correlated to the level of corruption. It reduces corruption if the market is open for foreign competition, and if contracts are made more transparent. These findings all suggest a positive connection between the rent-seeking potential in the economy and the amount of corruption. Mauro (1997) looks at the effect of different types of public spending on corruption, and finds a number of minor effects.

Only a couple of studies try a more comprehensive approach: Apart from my own study, already

6. Klitgaard (1990) describe cleptocracy, see also the essays on Zaïre by Naipaul (1980) and Harden (1992).

7. The idea of Alam (working with Pakistan) is to collect stories on corruption systematically from newspapers. It is a much underrated source by social scientists - especially economists.

8. This is surely the prediction of all theories of growth. It has been reconfirmed, eg, by Barro (1991, 1997) and Levine & Renelt (1992).

discussed, I have found only Husted (1999). He uses a mixture of economic and cultural variables. The cultural variables are taken from Hofstede's (1984) classification of cultures. He (also) finds a strong effect of the GDP-level. And, some of the cultural traits become significant: notably »power distance«, »masculinity« and »uncertainty avoidance«. These findings are both interesting and puzzling, as it is unclear how operational and exogenous the variables are. Clearly a major effort is needed before these matters are well understood.

II.4 Other research (2): the Weber-link from religion to the economy

The connection from religion to economic development has been discussed in a small literature started by Max Weber (1905-6). The ideas were further developed in Tawney (1926). Since then they have kept reappearing, but they have remained unintegrated in mainstream growth and development theory.

The main idea is that certain religions - notably the more puritan strands of Protestantism - place moral value in thrift, hard work and investment, condemning idleness and consumption. Such attitudes are obviously good for investment and growth. It has been demonstrated that groups with these attitudes have often been over-represented in regions starting a growth process, and in the first wave of entrepreneurs, starting growth processes. Several authors - notably Deepak Lal (1998) - have tried to develop a more general theory covering the growth potential of all big cultures and religions.

The main reason why this literature has remained unintegrated, is its inoperational character. The points are plausible, and illustrated by many stories and anecdotes, but little systematic evidence of the usual type is provided, and no obvious policy conclusions emerge from the theory. So a big gap remains between Weber's theory and standard growth theory. This article cannot bridge the gap, though perhaps it will be reduced by a mite.

III The data-set for religion and religious diversity

Much data exist on religion, but the primary data have to be converted to religion-variables, which are operational relative to the models analyzed. A main problem is here that the numerous religions, denominations and sects must be reduced to a small number of religion »groups«. The groups are termed J-religions, where the J serves as a reminder that »something has been done« to the data.

Table 3 defines the religion variables used: The **r**-matrix gives the shares of 11 groups of religions relative to the population of each country, and the **h**-vector is the Herfindahl-index for religious diversity.⁹⁾ Subsections III.1 & 2 show the construction of the **r**-matrix: III.1 discusses the minimum information criteria necessary for a religion to be included, while III.2 looks at the resulting 11 J-religions included. The **r**-matrix is given in an Appendix (see netsources). Finally, Subsection III.3 takes a first look at the structure of the data found.

9. Note that the **h**-vector is calculated from the **r**-matrix. The **r**-matrix is reached after a grouping of the religions. With less grouping lower h-values would emerge. That is, while the h's reach make sense relatively, they underestimate the diversity in many countries.

Table 3. The two religion variables

	Size	Definition: In matrices the rows are countries and the columns are J-religions
r	78x11	Element r_i^j is the fraction of country i 's population having the J-religion
h	78x1	Element h_i is the Herfindahl-index for religious diversity: $h_i = \sum_j r_i^j{}^2$
i	Country index, $i = 1, \dots, 78$	
j	Index for J-religion, $j = 1, \dots, 11$, where $j = 11$ is the residual	

III.1 The demand for information: Size and broadness

To tally with the κ -index the unit of registration is a country. China and Mauritius are thus equally important information-wise.

There are probably more than 1000 different *religions, denominations and sects* in the world. Most of these religions provide too little information to be usable in our analysis. Our main source is Barrett (1982). It has data for 16 religions (J-religions), and many detailed notes. Some countries have broken up in the meantime. The data have therefore been supplemented with new, but less detailed, information from Britannica Encyclopedia and Hunter (1996). Therefore, the first **r**-matrix had 16 columns. Most columns covered groups of religions. However, to be useful in a statistical analysis the matrix has to be reduced to even fewer religions.

To be *statistically useable* a religion (or group of religions) should be *large* in some countries and *broad* in the sense of distributed over more countries. These principles lead to three information criteria listed in Table 4: $(k_1, k_2, k_3) = (2, 5, 0.05)$. Data-series which do not fulfil the criteria will be termed »thin«. Even thin data can produce significant coefficients, but then one should be cautious with the interpretation. That is, the criteria are not taken as absolute, but rather as warning lights. Their values were chosen after some experiments.

Table 4. The three information criteria: k_1, k_2, k_3

Size: The sum of the r 's in a religion-column in the r -matrix is larger than $k_1 = 2$
Broadness: More than $k_2 = 5$ of the r 's in a religion-column in the r -matrix are larger than $k_3 = 0.05$

These criteria rule out the great majority of religions. They merge all »tribal« religions to one, and rule out sects that are widespread, but have remained relatively small in all countries.

III.2 A simple operational classification leading to 11 J-religions.

The criteria reduce the number of religions to 11 in four groups:

- A: Monotheistic religions originating in the Middle East. That is, Judaism (where the information criteria fail), Christianity and Islam. These religions have the great advantage (relative to this study) that they are exclusive. They demand that their members belong to no other religion.
- B: Polytheistic religions originating on the Indian Subcontinent. That is Hinduism and Buddhism.

These religions have a propensity to mix, but they are still reasonably exclusive.

- C: Systems of belief originating in the Far East. That is Confucianism, Shintoism, etc. and (partly) Buddhism. These systems may be seen as a mixture of »old folk« religions and »philosophy«. So they are inclusive. It is common to belong to several at the same time, in a relaxed way.
- D: In addition there are some, who belong to other religions (notable tribal religions) or no religion,¹⁰⁾ so a residual column was added.

Thanks to their mixing and inclusive character groups B and C are difficult to handle statistically. Note that Buddhism exists in several forms - some belonging to group B and some to group C. However, Buddhism is treated as one religion.

Christianity is the largest and most widespread religion in the data. But Christians are divided in many denominations and sects. Our solution is to treat Christianity as one »meta-religion«, divided into two large groups, which are further subdivided in four J-religions as listed in Table 5.

Table 5. The division of Christianity in two and four J-religions

<i>Pre-Reform Christians</i>		<i>Reform Christians</i>	
<i>Old Christians</i>	<i>Catholics</i>	<i>Protestants^{a)}</i>	<i>Anglicans</i>
Churches formed »before« the Catholic Church became »Roman«: Eastern and Orthodox groups as Coptic, Greek, Serb, Russian etc.	Roman Catholic Church.	Churches formed after the Reformation, including some new denominations and sects	Data allow Anglicans to be separately analyzed.

a. Include two groups from Barrett: »Protestants« and »Marginal Protestants«.

Islam is less divided, even when the Sunni and Shia denominations are different, and a number of small new sects exist. However, the data do not allow a full separation of Sunni and Shia Muslims, and most of the new sects of Islam and Christianity are merged as »new syncretist« religions. They have been placed in the residual group. So Islam is one religion only.

Hinduism (including Shiks and Jains) provided the worst problem statistically, as the data contained only two countries (India and Mauritius) with a large r_i^j -value and a couple with 2-10%. Other countries with large shares of Hindu population (as Nepal and Guyana) are not covered by the κ -index. So, in spite of the fact that about 800 mill people belong to the Hindu religion, it just did not pass the information criteria. It was analyzed anyhow, but it did not produce significant coefficients.

However, there are enough data to analyze Buddhism as a separate religion. Also, there are enough data for tribal religions - mainly in Africa - to produce a data-series. Finally, the indigenous religions of China, Japan and Korea have been merged into one (inclusive) Oriental religion. That leaves a column of Atheists and a residual column, making all rows sum to 1.

10. The division line between the main religion and atheism is highly susceptible to politics. There is probably little difference between the fraction of devout Catholics in Uruguay, Argentina and Chile, but there are vastly more reported atheists in Uruguay, for well-known historical reasons. In the same way Sweden report more atheists than Norway and Denmark. The old and present communist countries also report large shares of atheists.

This gives a total of 11 columns in the **r**-matrix: (1*) Old Christian, (2) Catholic, (3*) Anglican, (4) Protestant, (5) Muslim, (6**) Hindu, (7) Buddhism, (8#) Oriental, (9*#) Tribal, (10#) Atheists and (11#) Residual. The *'s indicate thin series (see Table 6), while the # points to the series with the most serious aggregation problems. The 11 *r*'s add to 1, in every row. The 11 groups are thus the *J-religions* - most are, in fact, groups of religions.

Table 6. The structure of the **r**-data measuring the religion of the 78 countries

Religion	Number of countries		Size		Average income ^{a)}	
	(1) Above 0.5	(2) Above 0.05	(3) Column Σ	(4) In mill	(5) Unweighted	(6) Weighted
Christian:	54	67	46.99	1681	10311	13073
Old Chr.	2	6	2.65	84	7847	7333
Catholic	28	52	30.46	942	8950	10455
Anglicans	0	9	1.92	57	11362	12737
Protestant	6	32	11.96	598	14336	18506
Islam	7	22	10.12	658	4431	3197
Hindu	1	4	1.51	809	6699	1471
Buddhism	2	8	2.32	232	13471	10840
Oriental	3	8	2.84	397	14649	5476
Tribal	0	12	3.22	80	2557	2257
Atheists	6	26	7.07	1171	9464	4647
Residual	1	20	3.90	148	4565	1782

Note: Columns (4) and (5) uses the population sizes, while the other columns disregard country size. The calculations in (5) & (6) are based on the false assumption that all adherents of each religion have the same (average) income in each country. More precise data would surely increase the differences found.

- a. Measured in PPP values relative to the GDP per capita in the median income country of the sample.

III.3 The structure of the religion variables

The **r**-matrix reached is given in the Appendix. From the **r**-matrix it is easy to calculate the **h**-vector giving the Herfindahl index for the amount of religious »concentration/diversity«, by the formula given in Table 3. The **h**-data are also shown in the Appendix. Table 6 (overleaf) gives a few statistics summarizing the religion data.

The Weber-link is illustrated by row (5) and (6) of the table. They give an *approximate average income* of the group-members. It appears that the differences are large. The main problem for the Weber interpretation is that the relations must have looked rather differently only 3 centuries ago.

Finally, it should be mentioned that the average value of the Herfindahl index is 0.60 - indicating a high level of religious concentration. Table 6 shows that one $r^j > 0.5$ in 56 of the 78 countries.

IV Techniques and main regressions

The present section documents 55 regressions and presents a simple graphical technique - termed the SR-graph - that is used for presenting the main results in section V.

IV.1 Fifty five regressions

Tables 7 to 9 list the main results of a total of 55 regressions. The tables have 5 rows and a total of 19 columns. The top row contains numbers and headlines. The next three rows give estimates of three models - Model 1, 2 and 3. The bottom row gives the R²-ratio and one test - both for Models 2.

Model 1:	$\kappa_i = \beta_0 + \beta_1 r_i^j + u_{1i}$	pure J-religion model
Model 2a:	$\kappa_i = \alpha_0 + \alpha_1 y_i + \alpha_2 p_i + \alpha_3 \phi_i + u_{2i}$	pure economic model
Model 2b:	$\kappa_i = \gamma_0 + \gamma_1 y_i + \gamma_2 p_i + \gamma_3 \phi_i + \gamma_4 r_i^j + u_{3i}$	mixed model
Model 3:	$u_{2i} = \delta_0 + \delta_1 r_i^j + u_{4i}$	estimate of link (1a) from Figure 1

The three models use the following variables: r^j is column j in the \mathbf{r} -matrix, ie, it is the data-set for a J-religion, y is the logarithm to average real GDP per capita, p is logarithm to the average rate of inflation, ϕ is the economic freedom index. The u 's are the residuals.

Column (1) in Table 7 gives the estimate of the pure economic model (2a). In columns (2) to (19) all three models are estimated. Model 3 is the second stage of a two-step procedure, where the first step is always the estimate of Model 2a given in column (1). For Models (1) and (3) the constants are not given, to concentrate the table on essentials.

Table 7. Regressions for the largest J-religions

	(1) Economy	(2) Christians	(3) Muslim	(4) Hindu	(5) Buddhist	(6) Orient	(7) Tribal
Model 1 Religion alone		1.50 (2.0)	-2.23 (2.3)	-1.64 (0.6)	-0.47 (0.2)	2.16 (0.9)	-5.19 (2.0)
Model 2 Constant	-8.31 (4.2)	-7.87 (4.0)	-7.12 (3.3)	-8.20 (4.1)	-8.38 (4.4)	-8.51 (4.3)	-10.70 (4.8)
y (log gdp)	1.72 (8.3)	1.65 (7.6)	1.63 (7.4)	1.71 (8.1)	1.72 (8.6)	1.72 (8.3)	1.94 (8.5)
p (log inf)	-0.40 (2.9)	-0.43 (3.1)	-0.45 (3.2)	-0.40 (2.8)	-0.43 (3.2)	-0.40 (2.9)	-0.33 (2.4)
ϕ (ec. free)	-0.16 (1.1)	-0.16 (1.1)	-0.18 (1.1)	-0.16 (1.1)	-0.10 (0.7)	-0.11 (0.7)	-0.13 (0.9)
Religion		0.53 (1.2)	-0.79 (1.3)	-0.44 (0.3)	-3.24 (2.6)	-1.38 (0.9)	3.75 (2.1)
Model 3 Religion/res.		0.48 (1.1)	-0.66 (1.2)	-0.43 (0.3)	-3.02 (2.5)	-1.12 (0.8)	2.74 (1.8)
R ²	0.68	0.68	0.68	0.68	0.70	0.68	0.70
Reset (p %)	0.01	0.01	0.03	0.01	0.00	0.01	0.02

To discuss the logic of Tables 6 to 8, the reader should revisit Figure 1. Model 1 gives »all chances« to the J-religion to explain everything it can - by both *the direct link* (1a) and *the indirect link* (3 - 2). Model 3 is the reverse extreme as all effects of *the indirect link* is taken out in the Step 1 regression.

Model 2 is an intermediary model, where the two links are allowed to compete.

Table 8. Four Christian denominations: the big divide

	Pre-Reform			Reform		
	(8) Old	(9) Catholic	(10) (8)+(9)	(11) Protestant	(12) Anglicans	(13) (11)+(12)
Model 1						
Religion alone	-1.33 (0.7)	-1.02 (1.4)	-1.21 (1.7)	5.17 (6.5)	7.84 (1.9)	5.65 (6.7)
Model 2						
Constant	-8.50 (3.3)	-8.78 (4.6)	-9.20 (4.8)	-7.93 (5.0)	-8.86 (4.7)	-8.27 (5.4)
y (log gdp)	1.75 (7.4)	1.76 (8.6)	1.81 (8.9)	1.49 (8.6)	1.74 (8.7)	1.51 (9.1)
p (log inf)	-0.38 (3.2)	-0.32 (2.3)	-0.27 (1.9)	-0.24 (2.1)	-0.35 (2.6)	-0.21 (1.9)
ϕ (ec. free)	-0.17 (1.3)	-0.10 (0.7)	-0.10 (0.7)	-0.01 (0.1)	-0.14 (1.0)	-0.01 (0.1)
Religion	-0.69 (0.5)	-0.94 (2.2)	-1.11 (2.5)	3.65 (6.2)	5.97 (2.6)	3.59 (6.9)
Model 3						
Religion/res.	-0.59 (0.5)	-0.86 (2.2)	-0.96 (2.4)	3.09 (5.6)	5.81 (2.6)	3.04 (6.1)
R ²	0.68	0.70	0.70	0.79	0.70	0.80
Reset (p %)	0.01	0.01	0.01	0.29	0.01	1.0

Table 9. Regressions for other groups and for the Herfindahl index

	Hinduism (4), Buddhism (5) & Orient (6)			Last two groups		PS
	(14) (4)+(5)	(15) (5)+(6)	(16) (4)+(5)+(6)	(17) Atheists	(18) Residual	(19) Herfindahl
Model 1						
Religion alone	-0.96 (0.6)	0.56 (0.4)	0.07 (0.1)	0.53 (0.3)	0.33 (0.1)	-0.69 (0.7)
Model 2						
Constant	-7.88 (4.1)	-8.66 (4.5)	-8.23 (4.3)	-8.15 (4.0)	-8.48 (4.3)	-8.01 (4.3)
y (log gdp)	1.67 (8.2)	1.72 (8.5)	1.69 (8.3)	1.70 (7.8)	1.72 (8.3)	1.82 (8.9)
p (log inf)	-0.44 (3.3)	-0.41 (3.1)	-0.43 (3.2)	-0.41 (2.8)	-0.40 (2.9)	-0.38 (2.9)
ϕ (ec. free)	-0.12 (0.8)	-0.04 (0.3)	-0.06 (0.4)	-0.16 (1.1)	-0.13 (0.9)	-0.22 (1.5)
Religion	-2.14 (2.2)	-1.99 (2.3)	-1.62 (2.1)	0.31 (0.3)	1.55 (1.1)	-1.48 (2.5)
Model 3						
Religion/res.	-2.01 (2.2)	-1.65 (2.1)	-1.39 (2.0)	0.28 (0.3)	1.48 (1.1)	-1.41 (2.5)
R ²	0.70	0.70	0.70	0.68	0.68	0.70
Reset (p %)	0.00	0.01	0.00	0.01	0.05	0.09

Note that a great deal of the columns show nothing significant. However, Protestantism and Anglicanism turn out to generate very significant coefficients. Several others are significant as well: Catholicism, Buddhism, etc. Two of the economic variables are stable and consistently significant: y and p. The freedom

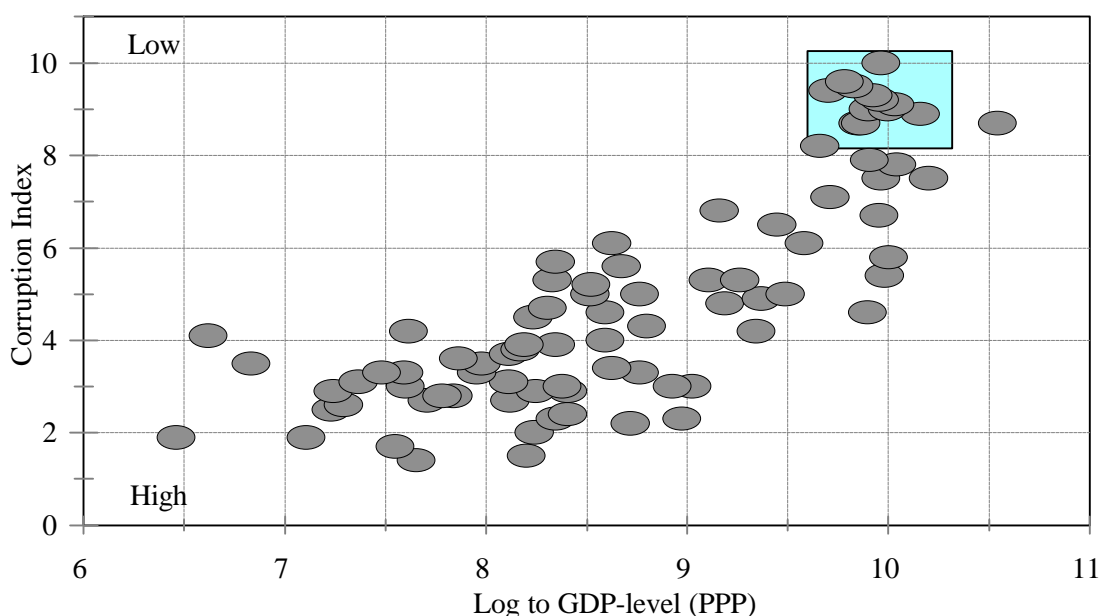
index, ϕ , never stabilizes.

Most diagnostic tests point to no problems. But one test is consistently problematic: the Reset-test for functional form. The next section deals with this problem.

IV.2 The curvature problem

Tables 7 to 11 and Paldam (1999) show that the strongest and most robust explanatory variable in all variants of our models is y (log GDP per capita). Figure 2 shows the scatter-plot for the y -variable at the horizontal axis, and the κ -index at the vertical axis. It is obvious that there is a strong connection.

Figure 2. The κ -index »explained« by y (the GDP level)



It is also clear why the Reset-test detects a non-linearity. The average curve through the points bends upward due to the *block* of observations lying closely together (in the grey box) at the extreme top-right end of the figure. This block is formed by North-West European countries, which are all rich and honest - it will be termed the »NW-block«.

If a NW-European dummy is included the slope to y falls from about 1.75 to 1.6. All other coefficients stay much the same, and the Reset-test shows that the problem has disappeared. Most countries in the NW-block are Protestant, so the NW-dummy is correlated with the $r^{\text{Protestant}}$ -series. However, there are also Protestants outside the NW-block. Consequently, the inclusions of the $r^{\text{Protestant}}$ -series reduces the problem, but it does not make it disappear fully.

Two of the three poorest countries may also deviate on Figure 2; but this deviation is not statistically significant, see however Section V.3.

IV.3 Generating the SR-graphs - ie, the shaded residual graph

The residuals from Model 2a are shown on Figure 3. The points above the model-line (representing the model prediction at each y) show countries with below average corruption (the κ -index is »too big«), and vice versa. The NW-block is in a grey box - once more it is a distinct group.

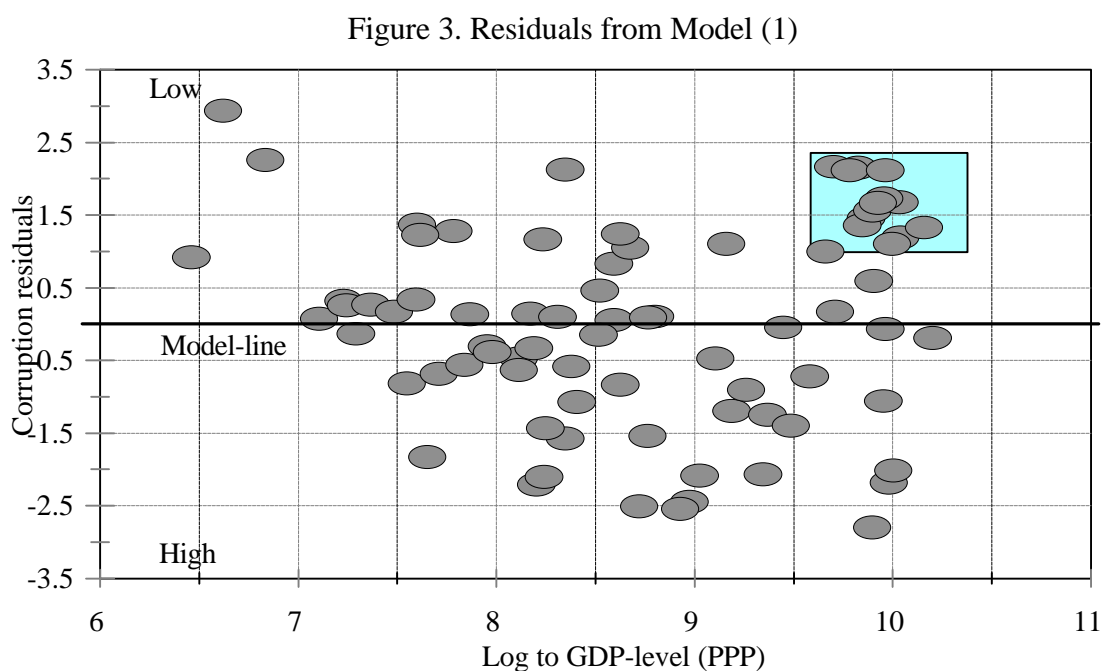


Figure 3 is used for calculating the *SR-graph* for different J-religions. It is made by shading the residuals in different intensity from white to black. The color indicates the density of the J-religion in the country of that particular residual. The *SR-graphs* are drawn to allow the reader to see - with the naked eye - both the Weber-effect and the corruption-effect of the J-religion. The effects appear as a skewness in the shading:

A **Weber-effect** appears in the left to right (horizontal) dimension. If most of the shading is to right, it indicates that the adherents of the J-religion are relatively wealthy, and vice versa.

A **corruption-effect** appears in the upward-downward (vertical) dimension. If most of the shading is above the model-line, the adherents of the J-religion are relatively honest, and vice versa.

A dozen *SR-graphs* have been calculated. Figures 4 to 7 and 9 are specimens used to illustrate the most interesting results reached in Tables 6 to 8.

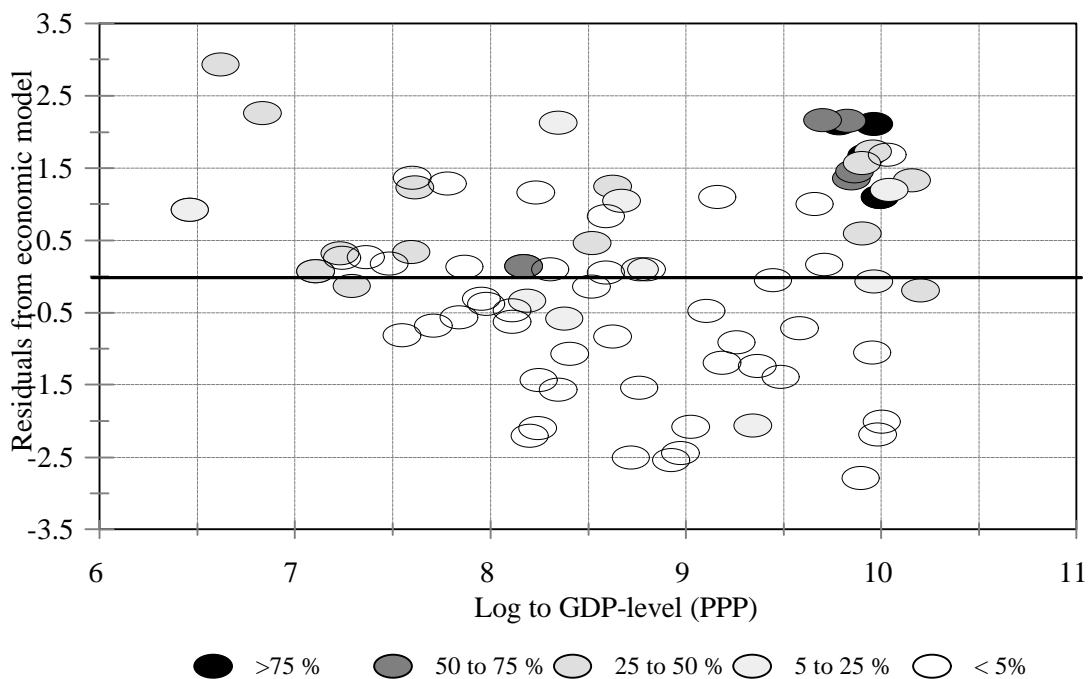
V The univariate results for the religions

After these preliminaries it is time to look at the results. Subsection V.1 considers the effects of Christianity, while V.2 turns to Islam. The case of Tribal religion is discussed in V.3, and the Asian J-religions are considered V.4. The effect of religious diversity is analyzed in Subsection V.5.

V.1 Christianity: the big divide

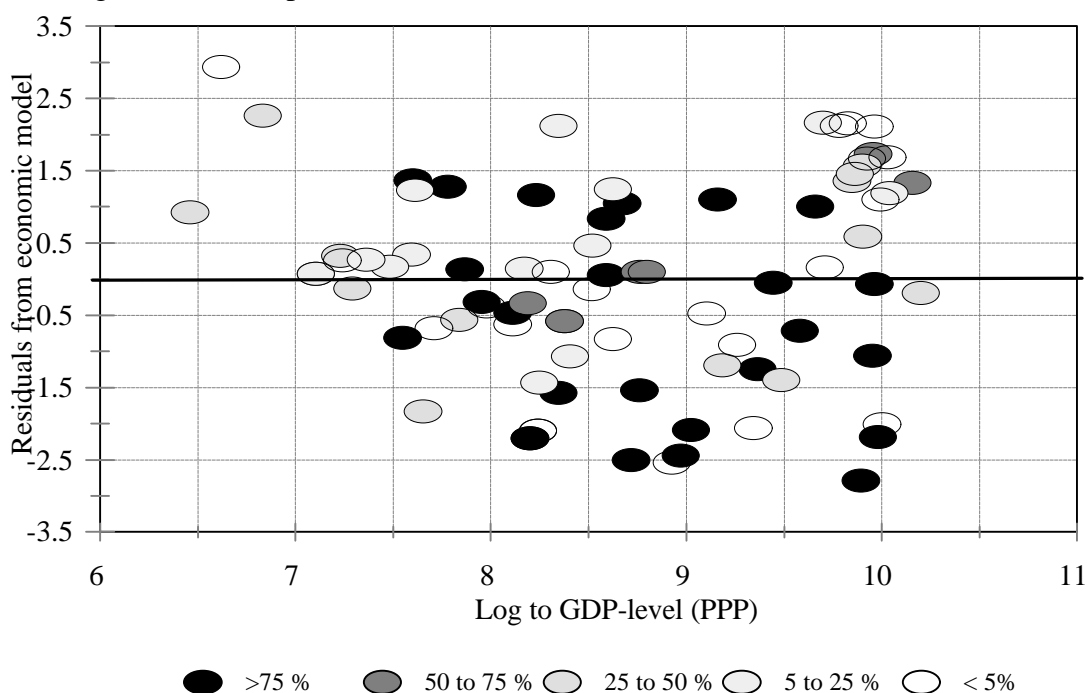
Column (2) in Table 7 analyzes the effect of Christianity. All three coefficients to religion in the table show a positive effect of Christianity on corruption, but it is modest and (mostly) insignificant. Christians are thus less corrupt than non-Christians, but not significantly so.

Figure 4. SR-Graph for Reform Christians: Protestants and Anglicans



This is a dull result, but when the Christians are divided into 4 groups in Table 8 the result is dramatic. The table shows that »Reform-Christians« (Protestants and Anglicans) are 4 (or more) points less corrupt than Pre-Reform Christians (Catholics and »Old« Christians) at the same level of economic development. The data for two of the groups are thin: »Old« fails to obtain significance, while Anglican produces unreasonably large coefficients (see below). However, when added to the other denomination with the same sign - as done in columns (10) and (13) - the significance of the coefficient increases.

Figure 5. SR-Graph for Pre-Reform Christians: Old Christians and Catholics



Both the estimate of about -1 to Pre-Reform Christianity and the estimate of 3 - 3½ to Reform Christianity are significant. As they have different signs the gap between the two is even more significant. In other experiments reported below the gap decreases a little, but it is always highly significant. The corruption-gap between the two groups can thus be assessed to be between 3½ and 4 points on the κ -scale. As the κ -index has a range from 0 to 10 such a difference is so large as to be barely believable.

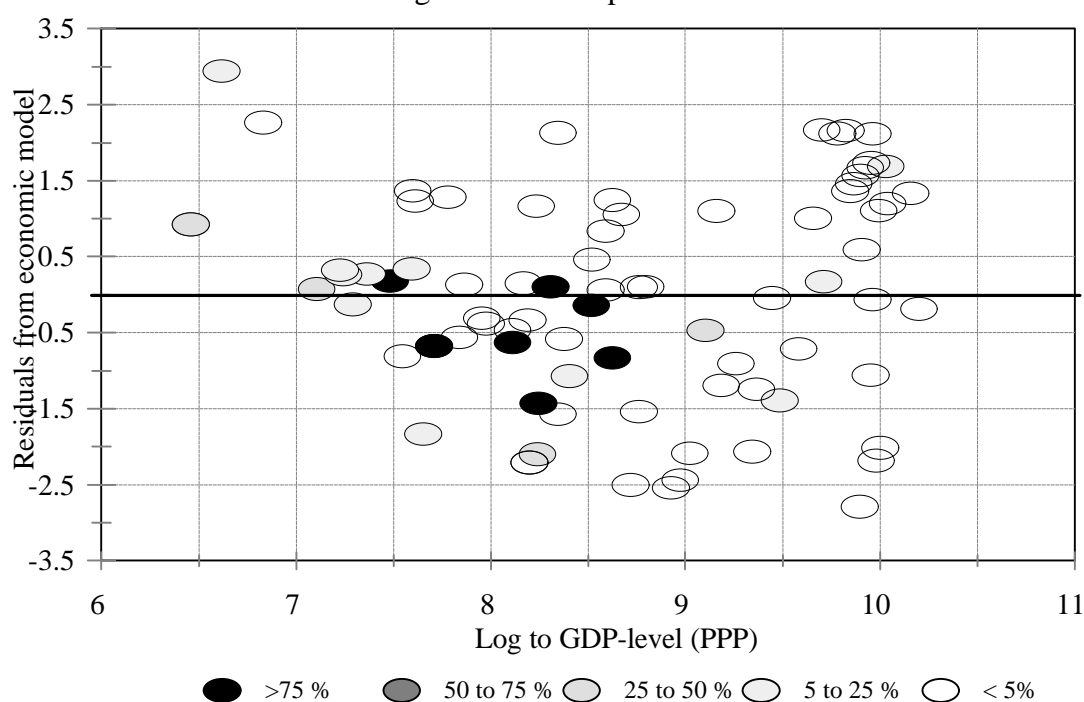
Figures 4 and 5 show the SR-graphs for the two groups. Part of the reason why Figure 4 shows such a significant picture is the NW-block in the upper right side of the graph. But, even without that block nearly all points are above the line. This graph should be confronted with Figure 5 showing the Pre-Reform Christians, ie, the Catholics and Old Christians. The difference between the two types of Christians is very visible on the graphs.

It should also be added that the Protestantism in columns (11) and (13) shows clear collinearity with the y-variable, indicating that the indirect link is of some importance here. The results thus confirm that Max Weber was right in pointing to the importance of Protestant »ethics«.

One of the key purposes of the Reformation (almost 500 years ago) was precisely to fight the corruption (broadly defined) of the Catholic Church. Historians have pointed to other - more complex - reasons as well, but the moral stand against corruption was surely important.

It is thus arguable that reverse causality entered into the Reformation process. It was the more »moralist« countries, who chose the various »Reformist« denominations, while those more »tolerant« remained with their old denominations. However, this happened very long ago. In the meantime there have been many changes within all denominations - including »moral reforms« also within the Catholic Church. So it is amazing that such a large gap in »ethics« still remains.

Figure 6. SR-Graph for Islam

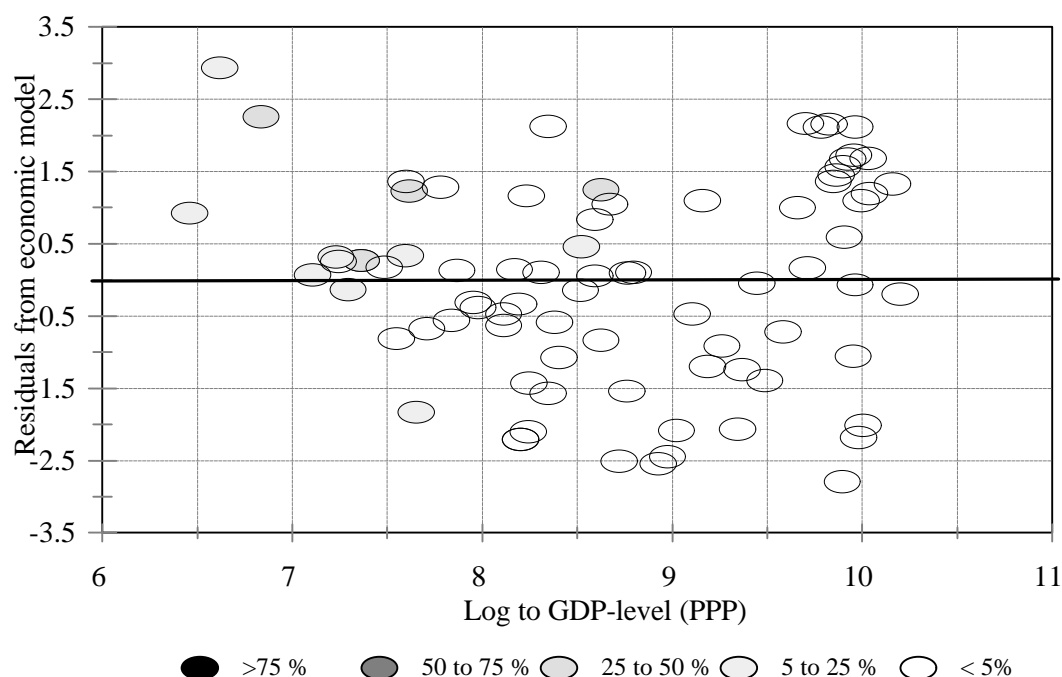


Column 3 in Table 7 and Figure 6 look at the results for Islam. Both skewnesses are present. Muslims are poorer and more corrupt than non-Muslims in our data, but the second effect is insignificant. When Christians and Muslims are compared in columns (2) and (3) of Table 7, there is a difference, but it is only just significant.

The country-sample does not include any of the rich Muslim oil-countries from around the »Gulf«. It is easy to guess how they would have effected the results, if data had been available. They got rich from »windfall« gains not from going through the big process of the economic transition. It is consequently a reasonable hypothesis that they have kept the level of corruption of much poorer countries. Casual observation appears to confirm this hypothesis. As a result they would probably have very negative residuals - maybe below the bottom line of the SR-graph. The non-inclusion of these countries must therefore give an upward bias in the coefficients to Islam.¹¹⁾

My conjecture is therefore that if data had been better, Muslims would have a coefficient much like the one of the Pre-Reform Christians. It is shown later that when the two groups are merged, they get a higher joint significance than they have individually.

Figure 7. SR-Graph for Tribal religion



V.3 Tribal religion: virtue in the »original state«?

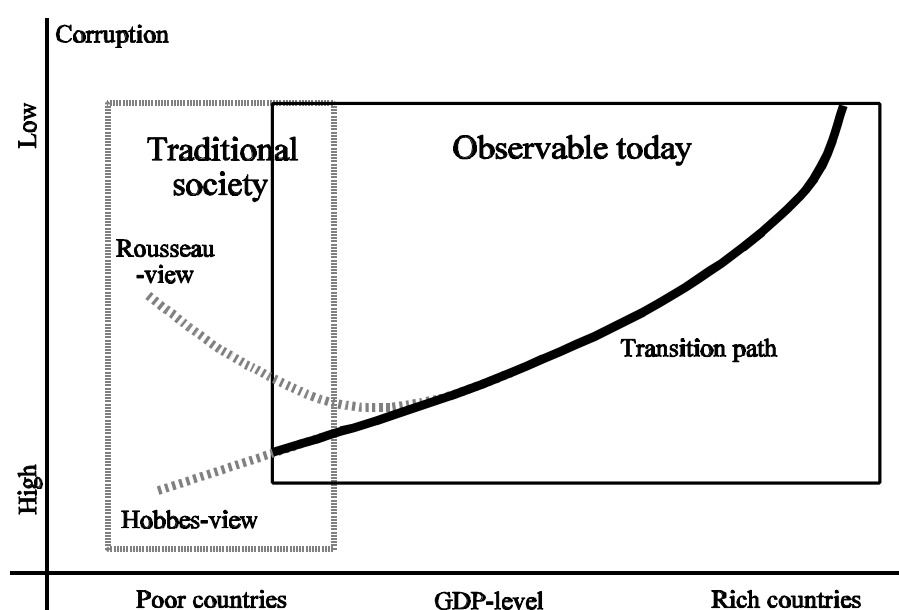
It is interesting that the group of Tribal religions generate a significantly positive coefficient. Tribal religions are found in the poorest countries (mainly in Africa) so Model 1 produces a negative coefficient. However, when the wealth of nations is accounted for in Models 2 and 3, the coefficient turns

11. In addition there is also the data-problem that Indonesia has only a Muslim share of 0.43. This is because Barrett (1982) classify another 0.36 as »New Religionists«. They are put in the Residual group. Barrett's notes and other sources term them mostly Muslims, but I have preferred to stick to the source.

positive, and even reaches significance. Both points are easy to see on Figure 7. The tribal religions are numerous and different, so the coefficient says little about any one of those. However, an alternative explanation can be given.

As illustrated on Figure 8. It has been suggested in the tradition going back to J.-J. Rousseau that people were nice and honest in the »good old days« before the start of the transition process. One can see development as a process destroying stable poor *traditional society* (and tribal religion) turning it into something of a »mess«, before it creates a new stable (rich and growing) *modern society*. Thus corruption may increase in the beginning of the process, so that the corruption transition has a U-shaped form. Corruption first rises, as per the top dotted line starting from the »Rousseau-view on the figure.¹²⁾ Then it falls as per the full black »transition path« estimated by the economic model.

Figure 8. Tribal religion as a indication of an U-shaped corruption curve



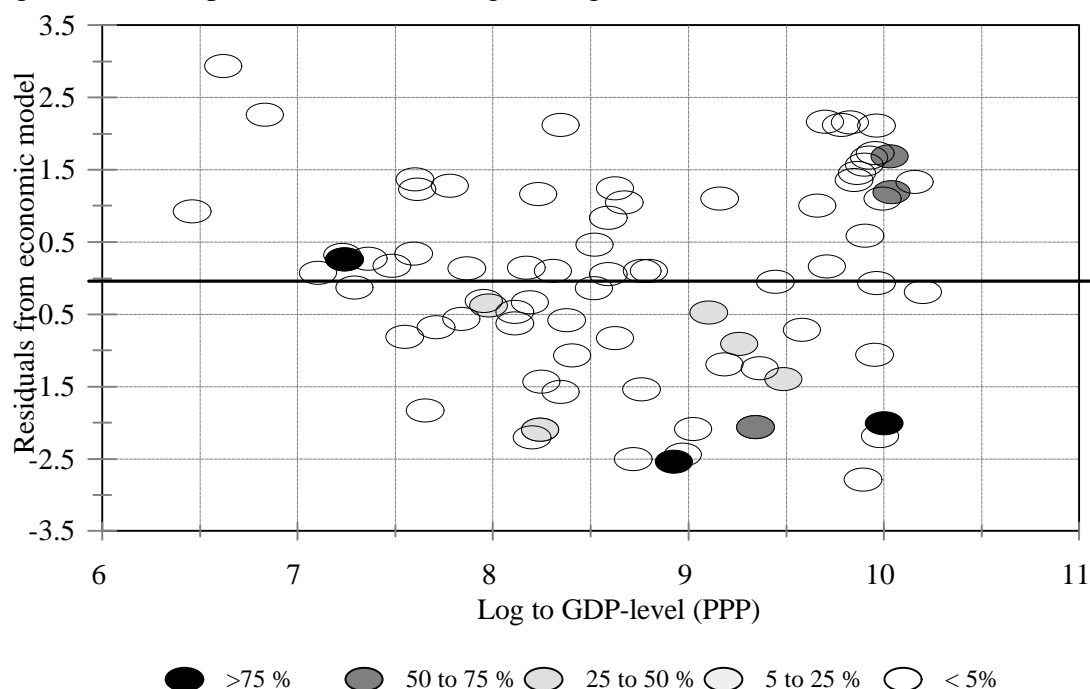
One may further argue that the κ -index available for the nations of today lack observations allowing an estimate of the first part of the U-shaped transition curve, where κ falls (corruption rises). The large and stable positive coefficient to y (GDP per capita) indicates that κ raises (corruption falls) when countries go from the »mess« to become rich.¹³⁾ In this perspective one may see the positive coefficient to Tribal religion as an indication of the first part of the transition is negative. The loss of the original tribal religions is indeed associated with a rise in corruption.

V.4 The remaining groups: Hinduism, Buddhism, Oriental, Atheists and the Residual

12. Economists have a tradition for rather believing in the »Hobbes view« that the original state was one of anarchy, as is also sketched on the figure.
13. It is easy to expand and develop the argument in this subsection and refer to much literature on duality models, social transformation, etc. However, the argument is left as a sketch only - the evidence of a significant coefficient to Tribal religion is suggestive and interesting, but it can hardly carry the weight of a major construction.

The coefficients for the three South and East Asian religions are negative, but only the results for Buddhism are significant. However the data - notably for Hinduism - are thin.

Figure 8. SR-Graph for three Asian religions together: Hinduism, Buddhism and Oriental



Therefore, some experiments were made with a further grouping of the three Asiatic religions. This is done in columns (14), (15) & (16) of Table 9. The results are similar. All groups produce significance. Figure 8 shows the SR-graph for the aggregate of all three J-religions.

It is interesting that while the coefficient to the Oriental J-religion (of China, Japan & Korea, etc) is negative, there are a couple of positive residuals for the countries of that group (notably Singapore). It is arguable that corruption is a variable that changes slowly, and that therefore countries as (South) Korea that has grown rich very fast is still in the process of changing in this field

The last J-religions are the Atheists and the Residual group. They are relatively uncorrupt, but the positive coefficients are insignificant. However, the members of each of these groups are very different, so it would have been puzzling if the data for these J-religions had produced significant coefficients.

V.5 The effect of religious concentration/diversity: the Herfindahl index

The Herfindahl index (h) for religious diversity has much the same range as the r^j -series, so it has been treated in the same way, even when it is a very different variable conceptually.

Column (19) in Table 9 shows what happens: A significant negative coefficient is generated in accordance with the insight of Adam Smith: $\eta = \partial \kappa_i / \partial h_i < 0$, so a country with great religious diversity (low h) has less corruption (high κ) than a country with a monopoly religion.

In the next section it appears that - as expected - the h -variable has considerable collinearity to the r -variables it is calculated from. However, it is negative in each and every regression made, and it

»survives« as significant in regressions with one and often two of the r-variables. Therefore the negativity of the coefficient will be treated as a fact, though it is uncertain how large the coefficient is. In assessing the size of the effect it should also be noted that the h-values reached are made higher by construction, when the religions are grouped.

It is often argued that religious homogeneity is a great advantage for a country, as religious diversity may lead to political and social instability and even civil war, but as regards corruption diversity is obviously an advantage.

VI Multivariate results

Three groups of variables have been analyzed: (i) economic variables, (ii) religion-variables, and (iii) the Herfindahl-index for religious diversity. All religions sum to 1 per definition, so they cannot all be included together with a constant, as has been done for each of them. The least significant religions are the ones with adherents closest to average corruption. Four large groups of religions gave significant coefficients in Section IV: (1) Pre-Reform Christians (and Islam), (2) Reform Christians, (3) The three Asian religions combined and (4) Tribal religion. These groups will be used in this Section. Its two subsections report on two sets of experiments: VI.1 deals with experiments with combinations of the three groups of variables, while VI.2 covers experiments with different combinations the individual variables, notably the religion variables.

VI.1 Experiments with the three groups of variables

Table 10 reports estimates of all combinations of the three groups of variables. The first two columns repeat regressions already given. The third column - termed Variant 1 - shows the full model, and then follow other combinations of the groups.

Table 10. Combining the three groups of variables

	Table 7	Table 9	Variant 1	Variant 2	Variant 3	Variant 4
Pre Reform Chr	Column (1)	Column (19)	-0.58 (1.2)	-0.65 (1.4)	0.49 (0.7)	0.44 (0.6)
Reform Chr			2.82 (4.3)	2.88 (4.7)	6.26 (6.4)	6.35 (6.7)
Three Asian			-1.17 (1.4)	-1.12 (1.4)	1.45 (1.2)	1.57 (1.4)
Tribal			1.01 (0.6)	1.46 (1.0)	-6.23 (2.5)	-5.72 (2.6)
Herfindahl		-1.48 (2.5)	-0.36 (0.6)		-0.48 (0.5)	
y (log GDP)	1.72 (8.3)	1.82 (8.9)	1.66 (8.6)	1.66 (8.6)		
p (log inf)	-0.40 (2.9)	-0.38 (2.9)	-0.18 (1.5)	-0.16 (1.4)		
ϕ (ec. free.)	-0.16 (1.1)	-0.22 (1.5)	0.06 (0.4)	0.08 (0.6)		
Constant	-8.31 (4.2)	-8.01 (4.3)	-9.29 (4.8)	-9.70 (5.4)	4.05 (4.8)	3.74 (6.7)
R ²	0.68	0.70	0.82	0.81	0.46	0.46
Reset	0.01	0.09	1.1	2.7	28.3	85.5

The economic variables - especially y - give the bulk of the explanatory power. The Herfindahl-index

is consistently negative, but it has problems with collinearity - especially with the Tribal religions, and is insignificant in most of the regressions when several religions are included.

The Weber-link predicts that the religion variables and economic variables should have some collinearity. Some examples that this is the case have already appeared in Section IV - notably with the Reform Christians. When the economic variables are deleted and the Weber-link has to work alone in Variants 3 and 4 the explanatory power of the model drops dramatically. In addition, it should be noted that all coefficients to the religion variables change significantly when the corresponding models with and without the economic variables are included. The only variable keeping its sign is the one to Reform Christians as per Weber's theory.

VI.2 Experiments with individual variables

Table 11 starts out from Variant 1 in Table 10, by deleting the least significant variables, then Islam is added to the Pre-Reform Christians - as previously suggested - and in Variant 7 everything is significant. However, now the Pre-Reform/Islam-group becomes very large.

Table 11. Experiments with different combinations of variables

	Variant 5	Variant 6	Variant 7	Variant 8	Variant 9	Variant 10
Islam		} -0.89 (1.2)	} -1.10 (1.8)			
Pre Reform Chr	-0.52 (1.1)					
Reform Chr	2.84 (4.4)	2.39 (2.7)	2.28 (2.7)	3.18 (5.5)	3.19 (5.6)	3.46 (6.6)
Three Asian	-1.14 (1.6)	-1.49 (1.7)	-1.59 (1.8)	-0.66 (1.0)	-0.74 (1.2)	
Tribal				1.01 (0.6)		1.76 (1.2)
Herfindahl	-0.57 (1.1)	-0.30 (0.5)		-0.54 (0.9)	-0.70 (1.4)	
y (log GDP)	1.62 (9.7)	1.55 (9.7)	1.53 (9.9)	1.62 (8.8)	1.56 (9.8)	1.62 (8.9)
p (log inf)	-0.21 (1.9)	-0.26 (2.4)	-0.27 (2.4)	-0.22 (1.9)	-0.23 (2.1)	-0.18 (1.7)
Constant	-8.51 (5.5)	-7.51 (4.7)	-7.38 (4.7)	-8.81 (4.7)	-8.14 (5.4)	-9.41 (5.3)
R ²	0.81	0.81	0.81	0.81	0.81	0.81
Reset	1.5	1.6	4.1	1.1	1.7	5.7

The difference between the Pre-Reformed Christians (and Muslims) at the one side and the Reform Christians stay remarkably constant around 3.4 in Variants 1, 2, 4, 6 & 7, and the difference is significant at a very high level, even when the coefficient to the largest group is often insignificant.

VII Conclusion

The analysis started from an economic model of corruption. It says that poor countries have a high level of corruption. As they pass through the economic transition to become rich, corruption drops dramatically. Also, the model shows that high inflation increases corruption. The potential for rent seeking, as measured by the economic freedom index, did not work in the model, even when it sometimes does. The economic model explains most of the variation ($R^2 = 0.68$) in the corruption index.

The purpose of the analysis was to show if cultural factors as formed by religious differences can explain the corruption index. The explanation can be either *direct* in addition to the economic variables or *indirect* through the economic model.

The direct effect is the additional effect of religion once the economic model is accounted for. It was found to add about 0.14 points (ie, R^2 increased from 0.68 to 0.82). Two groups of religions decrease corruption - Reform Christianity and Tribal religion - while two other groups of religions increase corruption - Pre-Reform Christianity and Buddhism and related Asian religions. The big divide in the data was thus within Christianity, where a large and highly significant gap appeared between Reform and Pre-Reform denominations. The Reform Christians are Protestants and Anglicans, while the Pre-Reform Christians are Catholics, Orthodox and other »Old« churches. Islam can be added to the Pre-Reform group with no change in the coefficient.

The indirect effect is also termed the Weber-link. It is the effect of the religions on economic development. It is already included in the economic model. Clear signs of this mechanism was found, but it is difficult to estimate from static cross-section data, as it has developed via historical processes. If corruption was an important factor explaining growth, the indirect effect would be a long-run consequence of the direct effect. There is evidence suggesting that a growth link does exist, but it is weak. However, the clearest positive indirect effects were found precisely for the Reform Christians, so perhaps low corruption does contribute to growth in the long run.

The most problematic aspect of the importance of the big Christian divide for corruption is that a historical perspective suggests a strange type of reverse causality. The Reformation almost half a millennium ago was a reaction of the North West Europeans to the moral decay of the Catholic Church at that time. In such a perspective the very existence of the Reform Christians becomes an effect of the different tolerance to corruption of North West Europeans and other Europeans. However, these attitudes have also spread to African countries that have been christened by missionaries from the two sides of the divide.

Another notable result was that religious diversity reduces corruption, as predicted by Adam Smith (1776). This was interpreted as an example of the virtue of competition.

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Fraser Institute: Data are »economic freedom« are available from <<http://www.fraserinstitute.ca/econ.htm>>. See also Gwartney & Lawson (1997, 1999)

Freedom House: The Gastil-index is available from <<http://www.freedomhouse.org>>. See also Freedom House under printed sources.

IBRD Anti-corruption knowledge resource center. Much information available including *An Annotated Bibliography*. No date, but frequently updated. Address: <<http://www.worldbank.org/html/extdr/anticorruption>>

Internet Center for Corruption Research. A Joint Initiative of Göttingen University and Transparency International. Source for Corruption Index. Address: <<http://www.gwdg.de/~uwwv/icr.htm>> or <<http://www.transparency.de>>

Martin Paldam homepage <http://www.econ.au.dk/vip_html/mpaldam/homepage.htm>. Links to Paldam (1999) and the data Appendix.