

Thou shall not kill! The economics of conflict, religion and social capital

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Abstract

In history and in everyday life it has often been observed that on one hand religion can enhance peaceful behaviour, but that it can on the other hand as well lead to violent extremism and intolerance. This paper argues with the help of a simple theoretical conflict model that the level of education matters crucially for the impact religion has on the likelihood of conflict. In particular, in a liberal and educated society religion is likely to be a good thing whereas this is not necessarily the case for societies with a lower level of education. Further, social capital is found to be a deterrent of appropriative conflict. In the last part of the paper evolutionary aspects are analysed as well.

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1 Introduction

In everyday life strange things happen: Lost wallets are given back by the finder without being plundered, people in shops insist that the change they have just got is too big an amount and after natural catastrophes some people spend huge amounts for assuring relief for the victims. Obviously, the greedy consumer with monotonic preferences exists and not all wallets are given back and not everybody gives money to charity. However, the existence of the phenomena described in the first place, indicates that something such as a moral cost of stealing and appropriative activities and a moral benefit from helping others exist.

Sociologists and political scientists tell us moreover that as well social norms and conventions matter. In some situations people might give back a lost wallet not so much because of reasons of individual moral, but rather because they fear that somebody might have observed them appropriating it.

This being said, one might as a result expect more religiosity to lead to a decrease of the incentives for appropriative conflicts. However, this is not always

what one observes in history. Some of the most bloody wars in humanity have been fought for religious motives and some of Sicily's most wanted mafiosi are deeply religious men.

The present contribution will attempt to explain this paradox, and argue that in a liberal and educated society, religion is likely to have a positive impact on human behaviour, whereas in fundamentalist societies with a low level of education, religion might lead to more appropriative conflicts. I will try to show this by building a static two-player conflict model, where individuals have the choice between productive and appropriative activities and where appropriative activities are associated with a moral cost.

In my present article I build up on three separated literatures, which have only extremely rarely been intermixed so far: In recent years there has been a growing literature in economics of conflict (cf. for example Hirshleifer (1991, 1995), Skaperdas (1992), Powell (1993), Grossman (1994), Grossman and Kim (1995), Gershenson (2002), Noh (2002), Muthoo (2004)). Most of these articles focus on issues such as property rights, appropriation technology, or inequality and apply static models of appropriative conflict to various issues such as civil conflicts or inter-state wars. However, almost none of these studies link the decision between productive and appropriative activities to moral and norms-related factors such as religious beliefs and social capital¹.

Another literature which is relevant for my present contribution is the one referring to the field often labelled "economics of religion" (for an overview see Iannaccone (1998)), and namely the part of this discipline which focuses on the consequences of religious beliefs. Even if, as far as I know, no study of the impact of religion on conflict decision taking has been done, there are some studies focussing on the related issue of crime. These empirical studies show that religious membership leads generally to lower crime rates (Freeman (1986), Lipford et al. (1993), Hull and Bold (1995), Evans et al. (1995)).

The third field of economic literature, which is related to the subject of the present contribution, is the one studying social capital. This recently fast increasing literature (for a survey see Dasgupta and Serageldin (eds) (1999), Putnam (2000) and Sobel (2002)) focuses mostly on issues such as trust, the economic impact of group activities and associations, social networking and civic involvement. More and more this literature takes into account results from repeated game theory. However, as far as I know, no studies have linked the concept of social capital to religion and conflict so far.

The remaining part of the present contribution is organised as follows: In section 2 a simple static model of conflict behaviour is designed, and section 3 is devoted to comparative statics related to religion and social capital, and focuses

¹The only exception is an interesting article of Grossman and Kim (2000), which introduces moral in their conflict model. However, they do not link the moral factor to neither religion nor social capital. Furthermore, in their asymmetrical model, as it's often the case in Grossman-style models, they define the roles of the players from the beginning, namely some individuals are moral (and therefore can't become predators), whereas all others are immoral. Thus, their model is very different from the model used in the present contribution. In addition, they focus on evolutionary issues like moral decay and revivals, rather than on the multifaceted impact of religion and social capital, as it's the case in my article.

as well on evolutionary aspects. Section 4 concludes.

2 The Model

We will consider a static two-player model of conflict, in which both players have the choice between productive and appropriative activities.

Before discussing the specification of the model, I will briefly explain how the concept of social capital will enter the model. We will define social capital according to Coleman's (1988, p.98) widely used functionalist definition:

Definition 1: *"Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors - whether persons or corporate actors - within the structure."*

We will focus on the function of social capital in the context of conflict. More concretely, we will assume that the players have perfect recall of past interactions, may they be of a cooperative or conflicting kind. Thus, in the present section we will limit ourself to the view of social capital as a stock of accumulated past experiences. If past interactions between the two players were on the whole peaceful, the stock of social capital will be represented by a positive value, in the case of more conflicting past interactions, this stock can become negative. In section 3 we will analyse in more detail how we can define the social capital stock mathematically and how we can model its accumulation or reduction. As the social capital is regarded as being related to the interaction between the players, and not to individual characteristics of the players, we logically get the same level of social capital, s , for both players.

We furthermore assume that the two players are members of different religions and that the impact of religion on conflict behaviour is ambiguous. On one hand, a moral cost of stealing is included in our model. This refers to moral guidelines present in all major religions (and which is expressed, for example in the case of the Christian religion, by the command "Thou shall not kill!"). This moral cost of fighting is consistent with the literature about religion membership and crime behaviour discussed in section 1.

On the other hand, we assume that as well a "missionary" gain of fighting the "heathen" exists. This phenomenon has been present in history for example during the times of the Christian crusades or of Islamic jihad.

The relative importance in the church doctrine of the moral cost and the missionary gain of appropriative activities differs from religion to religion. Simplifying, we can express the global impact of religion as the sum of those two aspects:

$$r = m + z \tag{1}$$

where m =moral cost of appropriative activity, z =missionary gain of appropriative activity.

Taking the factors discussed above into account, we can now formulate a formal expression of the decision the individuals face. I assume that the individuals have only the choice between two activities, namely appropriative (expressed as L_i) and productive (expressed as $(1 - L_i)$) ones.

We have the following payoff function for player i:

$$V_i = y_i L_j + \rho y_j (1 - L_i) - (1 - L_i) \alpha_i m_i + (1 - L_i) \frac{z_i}{\alpha_i} - (1 - L_i) \varphi s \quad (2)$$

where y_i =production of player i, L_i =amount of productive activity of player i, ρ =friction of appropriative activity ($0 \leq \rho \leq 1$), φ =social capital, s =social cost of appropriative activity, α =education level ($\alpha \geq 1$).

The payoff of player i consists of the part of his production which is not "stolen" by the other player, plus the part of the other player's production stolen by player i. In addition, I have included the moral cost and the missionary gain of appropriative activities. I assume that individuals focus the more on the "love your enemies and pray for those who persecute you"-part of religion the more educated they are, and similarly the more educated they are, the less they put emphasis on the "an eye for an eye and a tooth for a tooth"-part of religion. Here the underlying idea is that education makes people more tolerant, open-minded and liberal, and less ignorant.

Furthermore, a social cost of appropriative activities is included. It is the bigger, the higher the level of social capital is initially. Typically, if the players are, for example in the case of a repeated game, already both playing "grim strategy", then the incentives to choose cooperation rather than conflict are smaller than in the case where cooperation initially prevails.

We have moreover the following production function:

$$y_i = \alpha_i \beta_i L_i^{a_i} \quad (3)$$

where β =parameters relative to player i's productivity, a =parameter ($0 \leq a \leq 1$).

The level of output depends, besides on the time spent for production, typically on the level of education (α) and of other parameters (summarised in β) influencing the total factor productivity.

Introducing (3) in (2), the payoff function can be expressed in the following way:

$$V_i = \alpha_i \beta_i L_i^{a_i} L_j + \rho \alpha_j \beta_j L_j^{a_j} (1 - L_i) - (1 - L_i) \alpha_i m_i + (1 - L_i) \frac{z_i}{\alpha_i} - (1 - L_i) \varphi s \quad (4)$$

We can next focus on the first-order conditions. Setting the first derivative of expression (4) with respect to L_i equal to zero, we obtain the following reaction function of player i (the case is similar for player j):

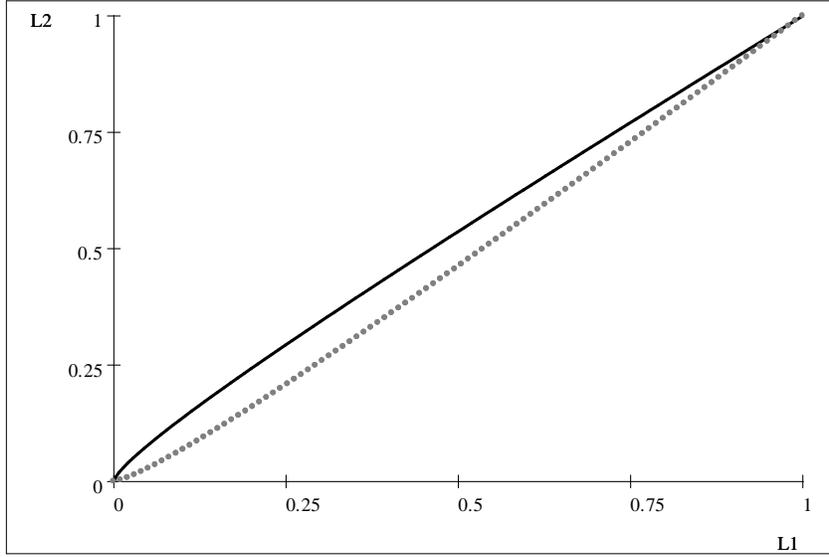


Figure 1: The reaction functions of the two players

$$L_i = \left[\frac{\alpha_i \beta_i a_i L_j}{\rho \alpha_j \beta_j L_j^{\alpha_j} - \alpha_i m_i + \frac{z_i}{\alpha_i} - \varphi s} \right]^{\frac{1}{1-a_i}} \quad (5)$$

As we don't want the denominator to become negative, we will include the constraint $\rho \alpha_j \beta_j L_j^{\alpha_j} - \alpha_i m_i + \frac{z_i}{\alpha_i} - \varphi s \geq 0$. Moreover, as L_i can't become bigger than 1, we will reformulate the reaction function as follows:

$$L_i = \left\{ \begin{array}{l} \left[\frac{\alpha_i \beta_i a_i L_j}{\rho \alpha_j \beta_j L_j^{\alpha_j} - \alpha_i m_i + \frac{z_i}{\alpha_i} - \varphi s} \right]^{\frac{1}{1-a_i}} \quad \text{if } \frac{\alpha_i \beta_i a_i L_j}{\rho \alpha_j \beta_j L_j^{\alpha_j} - \alpha_i m_i + \frac{z_i}{\alpha_i} - \varphi s} \leq 1 \\ 1 \quad \text{if } \frac{\alpha_i \beta_i a_i L_j}{\rho \alpha_j \beta_j L_j^{\alpha_j} - \alpha_i m_i + \frac{z_i}{\alpha_i} - \varphi s} > 1 \end{array} \right\} \quad (5')$$

Figure 1 represents the reaction functions for both players for particular values² of the different variables. The interaction of the two reaction functions corresponds to the Nash equilibrium, which in this particular case are (0,0) and (1,1).

²The reaction functions in figure 1 correspond to the following values of the different variables: $\alpha_i = \alpha_j = 2$, $\beta_i = \beta_j = 1$, $a_i = a_j = 0.5$, $\rho = 0.45$, $z_i = z_j = 0.7$, $m_i = m_j = 0.3$, $\phi = 1$, $s = 0.35$.

3 Comparative statics and evolutionary aspects

Taking the first derivative of the reaction function with respect to φs , we can easily see that in the present simplified model the higher the social cost of appropriative activities, φs , is, the lower will be the chosen level of those activities. As the parameter φ is always positive, we obtain the result, that a higher social capital, s , results in a lower level of appropriative activities chosen. We can summarise this finding in the following proposition:

Proposition 1 *A higher level of social capital is always a deterrent of appropriative activities.*

The impact of religiosity on appropriative behaviour is less clear-cut. More religiosity results in less appropriative activities if the following condition $m_i > \frac{z_i}{\alpha_i^2}$ holds. Thus, more religiosity makes in our simplified framework a person only more peaceful if his level of education is relatively high or if it is a relatively "pacifist" religion. The following proposition summarises this implication:

Proposition 2 *Religion results in a lower level of appropriative activities if the condition $m_i > \frac{z_i}{\alpha_i^2}$ holds, e.g. if education is high or if it is a "pacifist" religion.*

This having been said, it appears clear that from the point of view of the policy recommendations above all more education spending seems attractive. The level of social capital can't be influenced by any policy parameters, and simply functions as an amplifier of existing trends, as we will see in the next section. By contrast, the moral cost of appropriation can be increased and the missionary gain of appropriation can be decreased through education spending.

We can as well put emphasis on evolutionary aspects. Assuming that the stock of social capital growth in a given period less than half of the overall resources were devoted to appropriation, we can formulate the following difference equation for the social capital:

$$\Delta s = s^t - s^{t-1} = \gamma [1 - ((1 - L_i^{t-1}) + (1 - L_j^{t-1}))] \quad (6)$$

where γ is a positive parameter.

Thus, in that case a higher s would lead to a higher L , and thus would in the case of $L_i^{t-1} + L_j^{t-1} > 1$ lead to a further increase in s . Therefore the case of $L_i^{t-1} + L_j^{t-1} = 1$ is a saddle-point, an unstable equilibrium, and values of $L_i^{t-1} + L_j^{t-1} < 1$ will result in a long-run equilibrium where all time is used for appropriation. In the case of $L_i^{t-1} + L_j^{t-1} > 1$ we could in the long-run end up in an equilibrium, where both players spend all their time for productive activities³. Note that in the case $L_i^{t-1} + L_j^{t-1} > 1$, the outcome $L_i = L_j = 0$

³We obtain this result because the always increasing value of the social capital will lead in the long-run to an infinitely small positive value of the denominator of the reaction functions (remember the non-negativity constraint). As a result, the amount of productivity will eventually reach its maximum value 1.

is not an equilibrium anymore, because zero values for both L_i and L_j would violate the condition $L_i^{t-1} + L_j^{t-1} > 1$.

One important question still remains: Might it be possible to reverse a negative trend of social capital decumulation or do we face a fatalist process? I would argue that even though it might not be easy, stopping escalation should be possible by the mean of policy shocks, such as increased education or changing people's beliefs.

If we define religion in very broad way⁴, which permits to include political ideology as well, we can consider the case of denazification in Germany. The successful replacing of nazi ideology by liberal democracy ideology after world war II (among others by the mean of anti-propaganda, e.g. documenting the horrible implications of the nazi regime) and an increased focus on critical thought in education has permitted to inverse the trend of escalation and to build up social capital in Europe.

Another historical example would be the impact of the French revolution. Even though in the immediate aftermath of 1789 war spread all over Europe, after 1815 Europe was relatively stable and peaceful for almost hundred years. One could argue that the ideology of human rights and democracy, as well as the simultaneous rise of liberalism has played an important role in building up social capital between Europe's countries. Moreover, the period 1815-1914 is as well characterised by the fact that several European nations have put a huge emphasis on education, and people have started thinking of religion in a more liberal and tolerant way.

Similarly, in the case of present political challenges in Iraq and Afghanistan, the policy means used in Germany's case appear to be relevant. After the military defeat of Hussein's Baath party, the USA and their allies face now the far more difficult task of "winning the hearts" of the local population. I would argue that for assuring political stability in the long-run in those two countries, above all better education leading to a more critical and open-minded view of society and convincing the people of the advantages of the ideology of a "liberal democracy" governed by the rule of law is needed.

4 Conclusion

The present contribution has focused on the impact of religious beliefs and social capital on the level of appropriative activities chosen by individuals. After a brief introduction and literature review, a simple static model of conflict has been built, in which conflict is represented by mutual stealing and where a friction of appropriation is included. Moreover a social and a moral cost, and a missionary gain of appropriation have been included.

We have found that higher social capital always decreases the level of appropriative activities chosen, and that the same conclusion only holds for religion

⁴It would as well be possible to find historical examples of changes in religious beliefs stricto sensu leading to more or less conflict. However, as this is a "hot" topic, likely to hurt some people's feelings, I prefer focussing on examples of political ideologies.

if the education level is high or if a particular religious doctrine is relatively "pacifist". Moreover, it has been shown, that from an evolutionary point of view the social capital plays the role of an amplifier of trends, and that we can expect to obtain extreme values of appropriation in the long-run. This idea that a virtuous cycle of growing social capital, trust and political stability on one hand and a vicious circle of decreasing social capital and increasing hate and conflict exist is consistent with historical evidence. Reversing a bad trend of social capital decumulation can be achieved by policy shocks such as sudden, massive increases in education or replacement of an existing religion or ideology by a more peaceful one.

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