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THE PROBLEM OF THE PRINCIPAL-AGENT AND PROMOTION TOURNAMENTS IN RELIGIOUS ORGANIZATIONS: CHOOSING THE NEXT POPE

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ABSTRACT

This paper shows an application of Promotion Tournaments to religious organizations, which is appropriate, especially in the case of highly ranked institutions such as the Catholic Church. With this objective, we seek to verify the suitability of the use Tournaments in religious organizations, regarding the optimal structure of contracts in order to select, as well as, to promote clerics. Two models are addressed, modified from the originals, through the inclusion of psychic income, both with two clerics with homogeneous skills. Finally, we discuss the advantages and limitations of the Tournaments applied to religious organizations, including its risks and distortions therein.

Key Words: Religious Organizations, Catholic Church, Tournaments.

JEL Classification: J33, M5.

1. INTRODUCTION

All religious organization, as any other firm, have their objectives, among which are ways to attract new converts. To attain their aims, each religious organization is endowed with a diversity of options among several organizational strategies. To be successful in achieving these objectives will be conditioned, in great measure, to the skills and performance of those who are responsible for the leadership of the organization, regarding the commitment of these persons with what has been planned. It is of the utmost importance for the religious firm that its clerics, in their several hierarchical levels, superiors and subordinates, exercise a level of effort suitable with the results expected from each one of them.

The contracts established between religious organizations and its clerics (workers) may be inserted in the approach of the principal-agent problem. Within this context, the firm would be the principal and its clerics, the agents. Therefore, according to Zech (2001, p.328) this relationship principal-agent would not be immune to problems such as *moral hazard* – in the case of *shirking* behavior on the part of the workers – adverse selection – with *hidden information* – and dislodgement of objectives – where the workers might exert an effort, but in activities which are not those having priority for the firm.

The clerics, in the lack of appropriate incentives, would rather reduce their efforts to a minimum, acting in their own benefit. These problems tend to become worse when the monitoring costs are high. Evidently, the more detailed and complete the contract between the agent and the principal, the nearer they will be to the optimum relativity of the equationing of the interest of both parties involved in the contractual relationship, this means, a “*first-best*” contract. However, this contract would be conditioned to the nonexistence of *hidden information*, to measurability and to the observability of the agent’s behavior, the absence of risk or of reduced risk, as well as the possibility of the principal imposing severe penalties on the agent, in the case of the agent not

complying with the contract. When this is not possible, the alternative is to create a “*second-best*” contract.

After this introduction, we discuss in section 2, initially, the appropriateness of Tournaments for religious organizations, regarding the selection and promotion of their clergy. In section 3, we discuss the issue of optimal contract for clerics, where two model, modified from the original, through the inclusion of non-monetary income or psychic income, both with two clerics skills and a homogeneous phase: a simple model and other model with human capital investment religious. In the next topic we discuss the advantages and limitations of the Theory of Tournaments, including its risks and distortions therein. Finally, the concluding remarks will be made.

2. Promotion Tournaments for religious organizations.

Religious organizations¹, from the point of view of the Theory of Religious Markets, which is one of the fundamental pillars of Economics of Religion, are treated as business establishments in the market that seek to maximize their utilities through the supply of religious goods and services. Hull and Bold (1989) modeled churches, a classical religious organization, as firms dedicated not only to production but to the propagation of their doctrines, such as The Ten Commandments, therefore, reducing the costs of transactions in the society through the application of a system of laws.

The maximization of the utility of religious firms is reached when, besides the number of churchgoers, or believers, seek for government support or other institutional conditions, with the purpose of allowing them to keep or expand their participation in the market. In this regard, as firms, it is fundamental to investigate how religious organizations, keeping this aim in view, structure labor contracts for their employees, in order to create incentive mechanisms to induce these employees to further efforts, and for them to

¹ The firm religious, from the perspective of Economics of Religion, is nothing more than a religious organization that provides goods and religious services.

cooperate with the targets of these firms. In this sense, it is fundamental to understand the functioning of the internal labor market of the religious organizations, mainly of those which have been successful in conquering the religious market.

Here, the case of the Roman Catholic Church strikes the eye. It is a *sui generis* organization with nearly two millennia of history, successful, to such a point that, nowadays, it has over one billion believers spread all over the world. And something that is peculiar to it, in view of the size of the religious market it holds: it possesses a unique central leadership in the figure of the Roman Pontiff, different from Protestantism, with thousands of denominations. It can be pointed out other religions that have had a similar success in conquering the religious market. Among them is Islam, with also more than one billion followers, with a far later date of foundation than Catholicism, which indicates that it captured an identical amount of followers, or believers, in a shorter in relation to the religious market captured by the Catholics. However, it does not possess a unified leadership and, besides, it presents several doctrinary currents, being the main ones Sunni and Shia². Among the diverse options for the application of the Promotion Tournaments to religious organizations, the Catholic Church appeared to us as the most suitable for the following reasons.

In the case of the Catholic Church, the situation is different in relation to other religious segments. It is true that there is space to accommodate religious orders with different rules in its midst, but this only can be done with the endorsement of the Holy See³. Different to the case of Protestantism, that lacks a unique leadership and is subdivided into numerous denominations, a

² The Muslim calendar begins with the *Hijra* (emigration), or escape of the prophet Muhammad, in 622 dC, to Medina. Stark (2003, p.29-31) develops, in a condensed way, the issue of the fragmentation of Islam into several sects, a phenomenon that began to take place right from the beginning.

³ Canon 361 of the 1983 Code of Canon Law (CCL 1983) defines what is Apostolic See or Holy See: "In this Code, the term Apostolic See or Holy See refers not only to the Roman Pontiff but also to the Secretariat of State, the Council for the Public Affairs of the Church, and other institutes of the Roman Curia, unless it is otherwise apparent from the nature of the matter or the context of the words".

phenomenon that continues occurring. The doctrines formulated within Catholicism need the endorsement of the Roman Pontiff to become admitted by its clerics and its faithful. Even the diversification of the Catholic religious services, as it happens with the oriental liturgical rites, among which are the Maronite, Coptic and Syriac, different from the Latin rites, are controlled and supervised by the Holy See, that regulates the functioning of all its “branches” scattered throughout the world, be they of the Latin or the eastern rites. The differentiation of religious products is large within the catholic market, but this is also a “*market-share*” strategy. The Catholic Church is the most successful multinational firm in the world, with almost two thousand years experience in the international religious market.

Certainly, the well-succeeded case of this large religious organization, which has survived the passing of the centuries, endowed with solid internal support structures for the conquering and maintenance of its *market-share*. External factors, such as the support and favor of secular governors, also contributed to this, but here we do not intend to tell the story of the Catholic Church *per se* under the point of view of the Theory of the Religious Market. The objective here is another one: the investigation of the internal labor market of the Catholic Church and its incentive mechanisms, in the form of optimal contracts, in what concerns its hierarchical dynamics, choice and promotion of its clerics under the focus of the Promotion Tournaments Theory or *Tournaments*.

And why *Tournaments* and not standard labor contracts, as, for example, pay by production? Because the internal market of a large sized religious organization, such as the Catholic Church, as well as that of large secular organizations (firms and corporations), it possess singular structures with specific solutions, regarding the establishment of optimal contracts, also with specific incentive mechanisms, with the aim of stimulating the diligence of its workers in the compliance of their duties. It also seeks to choose the best candidates for the different hierarchical levels, principally for the position that

is at the top of the Catholic hierarchy, occupied by the Roman Pontiff. Here, is essential to remember that one of the main characteristics of the *Tournaments* is that this mechanism seeks for the selection of the best candidates for the vacancies existing in a corporation. Therefore, this is a sufficiently essential justification for the application of *Tournaments* for the choice and promotion of the clerics in the Catholic Church.

Another fact should be mentioned that recommends the application of the promotion tournaments to the case of the religious organizations: the effects of common noises over its workers, (as, for instance, the adoption of government regulation measures for the religious market), are high. This would imply another favorable advantage for the appliance of promotion tournaments in religious organizations over other forms of remuneration.

Thus, it is also appropriate to say that the principles that regulate the remunerations of the Catholic clergy, as in the case of other large organizations, they are not linked, directly, to some competitive logic bound to the religious market. The hierarchical dynamics of the Catholic Church, including their promotion system, hierarchical levels with their respective rights and duties, and, above all, their remunerations, do not depend merely on the productivity of these workers. These facts are fundamental assumptions of the Promotion Tournaments.

For the question of established remunerations in the religious market, it is important to emphasize that they are not merely monetary remunerations, since there are Catholic clerics (as also is the case of many protestant clerics of different denominations) who do not receive any sort of monetary income, among them the priests who take a vow of poverty. The remuneration for this kind of worker is given, above all, in the form of psychic income (non-monetary income), as we shall see later. It is a type of remuneration related to the recognition of the public, *status*, privileges, benefits, feelings of a vital mission accomplished, meaning, existential purpose, etc.

When the remunerations of the higher hierarchical levels of the Catholic clerics are observed, comparing them to those of the lower levels, we reach the conclusion that there exists a significant remuneration differential within the Catholic Church. This differential cannot be merely explained by the productivity of its clerics because, as a matter of fact, their level, in terms of human capital, is quite homogeneous. The formation of clerics in the Catholic training schools for priesthood, spread throughout the world, is standardized and regulated by Canon Law. Therefore, the fact that a high-ranking Catholic cleric receives remuneration, even if not necessarily in money, much higher than his subordinate, is not reduced to a question of productivity differential.

Which are the fundamental features of the Tournaments, which make this mechanism appropriate for the study of the optimum contracts for workers of a religious organization such as the Catholic Church? They are the following:

(a) Distribution and the magnitude of the remunerations are established *a priori* and are not related to the absolute performance of the worker.

(b) The receiving of the remunerations is related to an assessment of relative performance (RPE – *relative performance evaluation*)

(c) The effort of the workers in a promotion tournament is directly connected to the remuneration differential. The higher this is, the stronger will be the effort to obtain the prize.

Regarding feature (c), it must be pointed out that the incentive system will be much more efficient when the participants of the Tournament are more homogeneous. If there is heterogeneity regarding the level of productivity of the workers, there might be a formation of collusions and *shirking* behavior that would diminish the efficiency of the incentives.

Keeping these considerations in mind, it may be argued in favor of the use of the Tournaments, with the aim of explaining some of the properties of the internal labor market of religious organizations such as the Catholic Church. This theoretical model is also appropriate, as we shall see, in order to

explain the remuneration mechanisms adopted by religious organizations with the objective of rewarding its clerics. This is ordinarily done through the promotion of the clerics to a higher hierarchical order, with its respective benefits, be they monetary remunerations or non-monetary, where this reward is conditioned to the relative performance of the clerics, harnessed to their respective effort levels.

The level of payment by production is not a rule in the salary structure of the internal labor markets of religious organizations, *vis-à-vis* the intrinsic difficulties in measuring the productivity of the workers of these organizations, mainly, those established by the State. Besides, also considering factors involving *moral hazard* and asymmetric information, it may be concluded that the Tournament model, with its promotions as a stimulus mechanism to obtain the maximum performance of the workers, is an appropriate theoretical framework. This is because Tournament model explains how to establish optimal contracts, both for the choice and promotion of the clerics for the Catholic Church, and other similar religious organizations that possess highly hierarchical structures.

Zech (2001, p.331) affirms that Promotion Tournaments constitute an appropriate mechanism in order to incentivate the fulfillment of the contracts established between the clerics (or candidates) and religious organizations. In this way, in order to attend to the interests, both of these organizations, as well as of their clerics, promotion tournaments might be used as an alternative to other incentive programs, among others: efficiency wage, *sorting* – which seeks to select only the workers committed with the priorities of the firm – and *backloading remuneration*. In this last case, according to Zech (2001, p.331), one of the means to incentivate the clerics to strive in their function, among others, would be to offer a satisfactory retirement plan to those who stand out or distinguish themselves throughout their religious careers.

With the aim of proposing an optimum incentive mechanism to the workers of a firm, in view of high-monitoring costs, the Tournaments Theory

was developed starting from the seminal work of Lazear and Rosen (1981). Those authors inspired the model presented here, but it is applied to the specific case of religious organizations. Even in the case in which there is no explicit objective of implementing a promotion tournament to choose its clerics, in practice, this can take place in many situations, according to Lazear (1998, p. 249).

Regarding this point, it is pertinent to point out what was said by Besanko, Dravone, Shanley e Schaefer (2004, p. 500)

An important way, in which subjective assessments are used to determine the payment of employees, is promotion. In most enterprises, promotion involves a rise in salary, which means the employees have greater incentives to take action, which will increase their chances of being promoted. However, the criteria for promotion are not written in an explicit contract. Instead, there is a general understanding, between the enterprise and its employees, regarding the type of actions that lead to promotions.

This affirmation can be applied adequately to contracts involving clerics and religious organizations since, in fact, there is no kind of formal contract, in general, containing clear, predetermined phrases, specifying which are the criteria or pre-requisites demanded for a candidate to the pastoral ministry, for example, to be promoted. Quite the opposite; since the fact that the assessments are non-explicit, this induces the participants in the religious Tournament to seek to perform the duties expected of them, in the best way possible. In the following topic, we shall present two models of optimal contracts for clerics.

3. Optimum contracts for the clergy

Here, a simple Tournaments model will be presented, based on Lazear and Rosen (1981), but slightly modified through the inclusion of psychic income. The objective of this procedure is the modification, for the purpose of this work, that considers a Tournament between two clerics, who possess homogeneous skills and abilities, to be applied to the case of a religious organization, especially, the Roman Catholic Church and religious firms with similar hierarchical structures. Further on, we shall display the Câmara (2002) model, which incorporates human capital, with one stage and two clerics, also modified by the inclusion of psychic income. In modified model, religious capital substitutes human capital.

3.1. The one stage simple model for two clerics with homogeneous abilities.

Lazear and Rosen (1981) divide the problem of the optimal worker's contract into two parts. The model here presented is a version that considers an optimal contract for clerics. First, the behavior of the cleric, who wishes to maximize the prize received, is modeled. Once this behavior is understood, we proceed by modeling the behavior of the religious organization, which wants to maximize their profit (in the case in point, the number of faithful/believers), taking into account the behavior of the worker, in order to obtain an optimum contract.

Let us consider a religious firm with two functional collocations: supervisor cleric [e.g.: Bishop (of the Catholic or protestant churches)] and auxiliary cleric [parish priest or priest (in the Catholic Church) or pastor (in the protestant churches)]. Two homogeneous individuals, this is, with identical abilities and an identical level of religious capital, compete between

themselves. Whoever wins, will obtain the post of supervisor, superintendent or Bishop⁴, receiving a prize or remuneration W_1 .

This remuneration assumes two different forms: monetary income and non-monetary income [according to Durkin and Greeley (1991), who call this income $M(f)$, relative to purpose and meaning]. This non-monetary income is also known as psychic income according to Thurow (1978) and Zech (2001, p.331; 2007, p.738), originating in status, privileges, use of titles and insignias, satisfaction in pleasing and serving God and fellow men, testimony of eternal salvation through a faithfully professed priesthood, etc⁵.

This is a necessary modification to Lazear and Rosen's model for the case of optimal contracts for clerics, where we assume here that these men, as religious people that they are, do not compete for the post of supervisor having as an exclusive priority the monetary remuneration, nor for "luxury parachutes". We mention this because, for example, in some cases, ecclesiastic ministers will only receive a monetary salary after having climbed several hierarchical steps, such as in some protestant denominations. Therefore, the main objective of the participants in the *Tournament* might be, not for the receiving of a monetary income but due to the prestige or *status* of the post in dispute or even for exclusively spiritual motives.

In several protestant denominations, for instance, the initial hierarchical stages of the ecclesiastic career do not confer the workers any receiving of salary or monetary remuneration, as in the case of the International Church of the Foursquare Gospel (ICFG). Before becoming local pastors, the candidates to become pastors in this denomination, normally must go through the stages of deacon, worker, candidate to the ministry and, only then, they reach the function of Pastor, even reaching the positions of Superintendent and National Director.

⁴ The original word in Greek, "bishop" (episkopos), means supervisor, inspector.

⁵ See also Savych, 2005, p.55-63.

In the case of the deacons, they have, among some of their functions, not only in the International Church of the Foursquare Gospel, but also in other protestant denominations, the duty of assisting the pastor or local leader in attending to and forwarding the demands of the followers, receiving visitors, collecting offerings and tithings, in the distribution of the bread and wine – when celebrating the Eucharist or Sacrament of the Lord's Supper or Holy Communion – among other duties. The worker or assistant gives support to the pastor by leading meetings in family houses, visiting the sick and ministering sermons in recently opened congregations or "preaching points". Only those who have majored in the Theological Institute of the International Church of the Foursquare Gospel can become local pastors. The candidates to the pastoral ministry are workers with at least four years experience and must be competent preachers, being able to substitute the local minister in case of absence. None of the three previously mentioned positions, that is to say, worker, deacon and candidate to the ministry entail the privilege of receiving salary or monetary remuneration, since the persons who occupy these posts, do it voluntarily, which functions like a Tournament. After acting for at least two years as an assistant pastor, the candidate can take on a local congregation as a pastor, and only then, receive a salary. Normally, this salary is proportionate to the collection or fundraising in the case of the International Church of the Foursquare Gospel. The titled pastor can continue climbing the hierarchical pyramid, which will depend of his performance, and occupy the post of Superintendent, who is responsible for the supervision of several congregations, and then continue until occupying one of the posts of National Director of the International Church of the Foursquare Gospel, who are responsible for the general strategies for the government of the ICFG⁶.

Another justification for the incorporation of psychic income to the Lazear model is that there are situations in which it is demanded, for example, as a condition to enter a Catholic religious order, among which, an Institute of

⁶ Information at http://super.abril.com.br/superarquivo/2004/conteudo_313529.shtml document consulted on 08/23/2010

Consecrated Life, in that the candidate to become a cleric makes a vow of poverty (together with the vows of chastity and obedience), giving up or renouncing any monetary gain that perchance he might receive, after having submitted to the religious rules, in favor of his order (Canons 573, 600 and 668 of the 1983 Code of Canon Law - CCL 1983). In such cases, the participant of the Tournament will only receive psychic income, without receiving monetary salary, although their material sustenance is guaranteed by the religious order.

Monetary income (salary) shall be denominated M_1 and non-monetary income (psychic income) will be called A_1 . Therefore, the prize of a supervisor or Bishop will be $W_1 = M_1 + A_1$, where W_1 represents the remuneration of the cleric who wins the promotion *Tournament*. The assistant will receive a prize of $W_2 = M_2 + A_2$, where $M_1 > M_2$, $A_1 > A_2$ and consequently $W_1 > W_2$. Each prize will only be received after the end of the Tournament.

Remunerations are determined before the beginning of the Tournament and are based on the final *ranking* that reflects the relative performance of the agents involved in the dispute. In the case of the Catholic Church, those remunerations are fixed beforehand in the body of their canonic law.

The probability of winning the contest, that is to say, of being promoted or obtaining the post in dispute as the prize, will be related to the level of effort expended by each participant, represented by the religious practice and the religious service rendered by individual, besides a random shock component. Classifying the individuals j e k , we have:

$$q_j = \mu_j + a_j$$

$$q_k = \mu_k + a_k$$

Where q_j and q_k are the individual products, μ_j e μ_k are the levels of religious effort of the respective individuals that indicate their skill or average product, previously chosen by the cleric before the event; a_j and a_k are white

noise $\sim \text{iid}(0, \sigma^2)$, that indicate the random factors⁷ that affect the product of each cleric.

Each cleric wish to maximize their expected results, in order to obtain the highest value prize, given by $W_1 = M_1 + A_1$. Considering the case of cleric j , we have:

$$\max_{\mu_j} P(J, K)(M_1 + A_1) + [1 - P(J, K)](M_2 + A_2) - C(\mu_j)$$

Where $P(J, K)$ is the probability of j winning the tournament and $C(\mu_j)$ is the convex function relative to the cost of j 's effort, in other words, a monetary value associated to j 's particular level of effort. In the case of clerics who take a vow of poverty, such as the candidates who seek to enter some catholic religious orders or Institutes of Consecrated Life, that value could be measured by the salary the candidate to the priesthood would not be receiving, when he is effectively ordained and begins practicing his office, due to the lost opportunities in secular life, etc.

The first order conditions for cleric j are given by:

$$[(M_1 - M_2) + (A_1 - A_2)] \frac{\partial P}{\partial \mu_j} = \frac{\partial C}{\partial \mu_j} \quad (1)$$

The first order conditions stated above indicate, for a maximum, that the spread between prizes (where prizes assume a monetary and a non-monetary

⁷ Regarding religious organizations such as the Catholic Church, those random factors can be of diverse types or origins, such as: a) religious factors, among which the emergence of new competitive religions, sects, division or subdivision processes, schism and/or ruptures due to doctrinary/theological divergences; b) political, such as the intervention of the government in the religious market, through regulation, decrees, persecution, removal of religious liberties, alliances with governments, signing of Concordats; c) sociological, demographical and economical, such as secularizing tendencies, among which urbanization, industrialization, accelerated economic growth, recession or economic depression, scientific and technological advances, variations in birth rate, mortality and fertility, etc. Religious organizations, in many cases, do not have any type of control over these random factors.

form), called a marginal benefit of the exercised effort, measured in monetary units, times the change in the probability of j winning the dispute due to an additional unit of effort, is equal to the marginal cost associated to that effort exercised by j . In other words, this means that j will exercise that effort up to the point in which his marginal return, conferred by the spread between prizes, becomes equalized to the marginal cost related to the effort incurred in the dispute.

As an individual, j will win the contest if the level of his product is higher than that of individual k ; this is to say if $q_j > q_k$. Therefore, the probability of j winning will be given by:

$$P = \text{prob}(q_j > q_k) = \text{prob}(\mu_j + a_j > \mu_k + a_k) = \text{prob}(\mu_j - \mu_k > a_k - a_j) = G(\mu_j - \mu_k)$$

Where G is the distribution function of the random variable $a_k - a_j$. Please take note that:

$$\frac{\partial P}{\partial \mu_j} = \frac{\partial G(\mu_j - \mu_k)}{\partial \mu_j} = g(\mu_j - \mu_k),$$

Where g is the density function. However, since individuals j and k are identical *ex-ante*, there is a symmetrical Nash equilibrium, where j and k choose the same level of effort. This is because it is considered that, with similar individuals, $\mu_j - \mu_k = 0$ the equation (1) can be written as:

$$[(M_1 - M_2) + (A_1 - A_2)]g(0) = \frac{\partial C}{\partial \mu_j} = C'(\mu_j) \quad (2)$$

The equation above has two fundamental implications. The first is that the higher the spread between prizes, both in monetary as in non-monetary terms, the harder will be the equilibrium effort, since $C'(\mu_j)$ is monotonically

increasing in μ . A higher elevation in that spread, both in terms of monetary, as well as, non-monetary remuneration, would induce the competing clerics to strive proportionately more in the tournament.

Besides, it can be observed in (2) that a lower spread in monetary income can be compensated by higher spread in non-monetary income and vice-versa. Even if $M_1 = M_2$, this is, spread in monetary income is null, when the candidates receive equal monetary income, or if $M_1 = M_2 = 0$, this is, even if the candidates do not receive any monetary income, the spread in psychic income might be sufficient as a stimulus for the effort of the clerics participating in the promotion tournament. Such is the case of catholic clerics who belong to Institutes of Consecrated Life, of the Roman Catholic Church, who must take a vow of poverty (together with those of obedience and chastity) and do not receive a monetary salary. This is not a reason, for a novice who enters an order or a Catholic Institute of Consecrated Life, for example, not to seek becoming a high-ranking abbot within this organization.

In other words, when dealing with promotion tournaments applied to clerics, the spread in monetary income might be of little importance or even, not make any difference at all in stimulating the clerics to the effort. This is because, according to the exigencies made to those who wish to dedicate themselves totally to a religious life, the most significant factor, in order to extract the maximum performance from the participants of the tournament, might be the expansion in spread of the psychic income and not an increase in monetary remuneration, as it happens in secular organizations.

In these, the stimulus to increase the effort of the workers may come not only from the spread of the monetary income but also from non-monetary income, in forms such as prestige, influence, hierarchical power and *status* of the job, placed as prizes for the promotion tournament, for example. This indicates that, both in the case of secular organizations and mainly in the case of religious organizations, the Lazear and Rosen tournament model would need to be only minimally adapted, in order to include the psychic income as well, as

it is being done here and, in this way, becoming closer to situations as the one being dealt with in this paper. Besides, it is necessary to take into account that, in situations where the cleric does not receive a monetary income, the importance of include the psychic income is crucial, in order to satisfy (1) and (2). Otherwise, the marginal cost exercise incurred in by the cleric would be equal to zero, in which case a promotion tournament would be nonexistent.

This spread in psychic income, as a stimulus to a harder effort of the clerics, can be exemplified, in the case of Christianity, by a dialogue between Jesus Christ and the Apostle Peter. This dialogue is found in the New Testament⁸ (Mt 19: 27-30). Simon Peter asked the Master what would he, Peter, as an individual, and the other Apostles receive for following Christ, revealing that, in fact, his obedience to the apostolic service was not devoid of interest or without concrete objectives. This passage is pretty illustrative and indicates the way in which Jesus Christ sought to inspire his disciples to the effort of conquering souls for the Kingdom of God, keeping them motivated, in spite of the high cost of the effort arising from all the restrictions, renouncements or persecutions they may have to undergo.

27 Then Peter answered and said to Him, "See, we have left all and followed You. Therefore, what shall we have?" **28** So Jesus said to them, "Assuredly I say to you that, in the regeneration, when the Son of Man sits on the throne of His glory, you who have followed Me will also sit on twelve thrones, judging the twelve tribes of Israel. **29** And everyone who has left houses or brothers or sisters or father or mother or wife or children or lands, for My name's sake, shall receive a hundredfold, and inherit

⁸ Brams (1982) was a pioneer in the application of the Game Theory for the analysis of the Hebrew Bible, which is the Old Testament of the Christian Bible. In this case, the situation analyzed is in the New Testament.

eternal life. **30** But many who are first will be last, and the last first.

Peter's religious choice, when becoming a disciple of Christ, characterized in this passage of the scriptures, had a *theological*⁹ basis, that is to say, it sought for a definitive aim: to maximize his utility. It was a rational choice in the economic sense of the term. It was not a religious choice in the eminently webberian sense of the word, guided by values¹⁰. Christ makes a point of calling attention to the perspective of the Kingdom of Heaven: the maximizing of the utility intended by Peter, at present, would have to be postponed. First, it would be necessary to cope with the cost of the investment in the Kingdom of Heaven, at that moment in time. Later, in the future, maximization of the utility through eternal life would be possible, including the privilege of being co-regent together with Christ, sitting on thrones. Christ indicates that Peter should not think in an immediate return but, to be content, during his life on earth, with the maximization of a future expected return.

Under the perspective of the concept of compensators, as defined in the Rational Choice (Stark and Bainbridge, 1996, p.36), it might be said that Jesus Christ, instead of the immediate reward sought by Peter, offered him a compensator. Ecclesiastical history tells us that, in spite of having denied his Master at the moment of his trial, Peter accepted the compensator instead of the immediate reward he wished for and performed, as a leader, an excellent work for the Church, even being crucified because of his faith. On the other hand, another of Jesus's disciples, Judas, betrayed Christ, rejecting the

⁹ Relative to the final causes.

¹⁰ Mariano (2008, p.44) cite Stephen Sharot's affirmation, who considers that the concept of rationality proposed by Rodney Stark, based upon the Theory of Rational Choice, has to do with types of action related to aims, of an economic seignorage, which means that an agent maximizes his gains with determinate objectives. According to Sharot's interpretation, this type of rationality, guided by aims, would be the opposite to the webberian religious rationality, orientated by values.

compensator offered by his Master, preferring an immediate reward: 30 silver coins.

Therefore, we can perceive that the demands, quite rigid and severe, in relation to the apostolic service, made by Christ, which could include abandoning family and properties and, even martyrdom, were counterbalanced with a high level promises. That, when fulfilled, would compensate efforts and restrictions to which the Apostles would submit themselves in order to accomplish their mission. Christ did not promise material riches or financial remuneration to his Apostles during this life. Quite the opposite: he stated that His Kingdom was not of this world and refused to be crowned king, at that time, by those that intended to see him as an earthly monarch (Jo 6:15). For Christ, the compensations to his Apostles, for renouncing secular life, would be reserved only for a life beyond physical death.

Therefore, what should keep them motivated during the time they would be exercising their ministry, would be, in economic language, the spread of the psychic income. Or compensators, according to the Rational Choice Theory. Christ calls attention to the fact that a certain *ranking* in the spiritual service can be transitory, and it will be only during eternity that the definitive *ranking* will be known. Therefore, those who now are in the first place of the *ranking* might end up last and vice-versa. The assessment is not only done discretely but is also an ongoing and continuous assessment. Consequently, what would determine the final *ranking* would not be the fact of occupying the first positions at a certain point in time, but yes, the way in which the performance of the spiritual service was done throughout a whole trajectory of earthly life.

Another rather instructive dialogue, found in the New Testament, which refers to the way and criteria under which a promotion tournament is characterized in the Bible, regarding the receiving of compensation conferred for the effort in the spiritual work, can also be found in the Gospel of Matthew, Chapter twenty, verses 20 – 26.

20 Then the mother of the sons of Zeb'edee came up to him, with her sons, and kneeling before him she asked him for something. 21 And he said to her, "What do you want?" She said to him, "Command that these two sons of mine may sit, one at your right hand and one at your left, in your kingdom." 22 But Jesus answered, "You do not know what you are asking. Are you able to drink the cup that I am to drink?" They said to him, "We are able." 23 He said to them, "You will drink my cup, but to sit at my right hand and at my left is not mine to grant, but it is for those for whom it has been prepared by my Father." 24 And when the ten heard it, they were indignant at the two brothers. 25 But Jesus called them to him and said, "You know that the rulers of the Gentiles lord it over them, and their great men exercise authority over them. 26 It shall not be so among you; but whoever would be great among you must be your servant, 27 and whoever would be first among you must be your slave; 28 even as the Son of man came not to be served but to serve, and to give his life as a ransom for many."

At the request of Jacob and John's mother, called in the text as the sons of Zeb'edee, for them to be seated at the right hand and the left hand of Christ when he began his reign, Jesus answers that only the Father can reserve these places for those who were chosen. Whosoever wants to obtain the first places in the Kingdom of Christ, occupying the top of the celestial *ranking*, it is demanded that such person become a servant of his fellowmen, the same as He, Christ himself, came to serve humanity. The marginal benefit of the service in the Kingdom of Christ requires incurring beforehand in the corresponding marginal cost relative to that service.

In the figure I, not only the marginal benefit is represented, deriving from the effort, represented in the vertical axis, but also the marginal cost of the

incurred effort $C'(\mu_j)$, both as a function of the level of effort, represented in the horizontal axis.

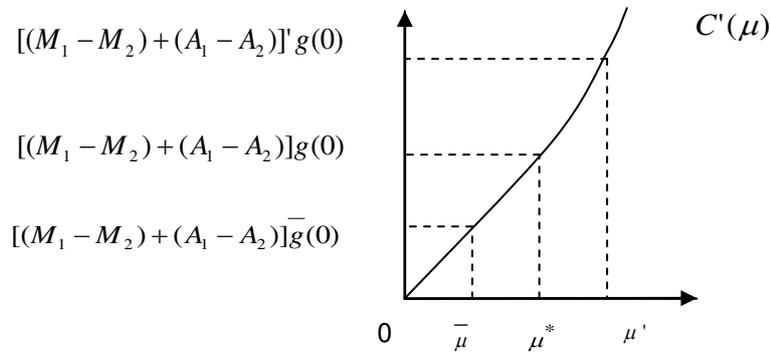


Figure 1- Optimum effort level

The solution to the first order of the problem is given by $[(M_1 - M_2) + (A_1 - A_2)]g(0) = C'(\mu_j)$, where $\mu = \mu^*$. If the marginal benefit increased, for example, to $[(M_1 - M_2) + (A_1 - A_2)]ḡ(0)$, the level of effort should be increased to μ' .

Remembering that $[(M_1 - M_2) + (A_1 - A_2)]g(0) = \frac{\partial C}{\partial \mu_j} = C'(\mu_j)$, and considering that $g(0)$ is the inverse measurement of the importance of the random effects within that context, the second implication is that the smaller $g(0)$ is, the lesser will be the level of effort exercised in the balance. This means to say, as well, that the greater the importance of the random effects, the smaller will be the effort in the equilibrium. When the random effects are not significant, in such a way that the $a_k - a_j$ differential is insignificant, so then, $g(0)$ goes to infinity. If the random effects are significant, this is to say, when the distribution of $a_k - a_j$ has a fat tail, $g(0)$ becomes extremely small, and the cost of the effort becomes exceptionally burdensome, which induces to *shirking* behavior. Therefore, the higher the role of the random effects in the dispute, the more the exercised effort will decline due to the spread between prizes¹¹.

¹¹ Further on we will explain, through historical examples, what types of effects can

If the density function were $\bar{g}(0) < g(0)$, indicating a significant role of the random effects in the tournament, the optimum effort level would decline to $\bar{\mu}$, as it can be observed in figure 1. When the random effects perform a secondary role, the corresponding density function will be higher.

If the random effects have a strong influence in the final result of the tournament, then the competitors will not exert themselves as far as they could in order to win the dispute. Hence, in order to induce them to the highest endeavors and win the prize, avoiding the *shirking* behavior of the clerics, the spread between prizes must be amplified. In the case of the Catholic Church, the spread between prizes takes on monetary and non-monetary forms. Since there are cases of catholic clerics who do not receive a monetary salary, the expansion of the spread must be done, mainly, through the increase of the psychic income. This means that there must be an expansion of the benefits and privileges for the higher ranks of the catholic hierarchy. The objective here is not to enter into detail regarding the historical aspects of this question, but, in fact, evidently this was what happened in several moments in the history of the Catholic Church, when the higher-ranking clerics, within their hierarchy, began receiving many benefits.

Given the work offer represented by equation (2), the problem of the religious firm is given by:

$$\max_{M_1 M_2 A_1 A_2} \mu - \frac{[(M_1 + M_2) + (A_1 + A_2)]}{2} \quad (3)$$

s.t.

$$\frac{[(M_1 + M_2) + (A_1 + A_2)]}{2} = C(\mu) \quad (4)$$

random effects have on the level of effort exercised by the clerics in a tournament.

What equation (4) explains is that clerics must receive enough, in average, in order to feel incentivated, to exercise their maximum effort. Being the cost related to the effort exercised, $\frac{[(M_1+M_2)+(A_1+A_2)]}{2}$ represents the salary expected, what each participant expects to receive. When substituting (4) into (3) the maximization problem turns into:

$$\max_{M_1 M_2 A_1 A_2} \mu - C(\mu)$$

The first order conditions, therefore, are:

$$\frac{\partial}{\partial M_1} = (1 - C'(\mu)) \frac{\partial \mu}{\partial M_1} = 0$$

$$\frac{\partial}{\partial M_2} = (1 - C'(\mu)) \frac{\partial \mu}{\partial M_2} = 0$$

(5)

$$\frac{\partial}{\partial A_1} = (1 - C'(\mu)) \frac{\partial \mu}{\partial A_1} = 0$$

$$\frac{\partial}{\partial A_2} = (1 - C'(\mu)) \frac{\partial \mu}{\partial A_2} = 0$$

The solution for the equation system in (5) implies in $C'(\mu) = 1$. The religious firm should establish a remuneration scheme, according to the results stated above, through which the competitors are incentivated to exercise a level of effort, to the point where, their marginal cost is the same as their marginal benefit. In this way, tournaments prove to be efficient since they stimulate the clerics to exercise an optimum effort level, throughout their whole career and in all hierarchical levels. Substituting $C'(\mu) = 1$ in (2) we can find the optimal remuneration spread, given by:

$$[(M_1 - M_2) + (A_1 - A_2)] = \frac{1}{g(0)} \quad (6)$$

Equation (6), together with equation (4) form a system of two equations with two unknown quantities, considering $W_1 = M_1 + A_1$ e $W_2 = M_2 + A_2$. As we can see in (6), the remuneration spread varies inversely with the density function that reflects the importance of the random effects. The higher the role of the random effects, the lower $g(0)$ is, and the higher the remuneration spread should be in order to avoid a *shirking* behavior among the participants, since by the system formed by (4) and (6) we have:

$$C(\mu) = \frac{1}{2g(0)} \quad (7)$$

Equation (7) informs us that the higher the role of the random effects within the promotion tournament, $g(0)$ will be lower and, the higher will be the cost associated to a particular level of effort.

The importance of the tournament using relative comparisons is that they exclude “common noises” that agents averse to risk do not wish to hear. In this case, the consequence of the random effects is identical on both individuals and, therefore, the individual who obtains the best performance might be chosen as the winner even though his absolute result may have been compromised by external variables.

Application: The inverse relationship between random effects and effort exercised by the participants in a tournament might explain, at least in part, the moral laxity in which a part of the catholic clerics lived. This fact included even some of its Pontiffs, such as Alexander VI (Nunes, 2007, p.116-117; Duffy, 1998, 146-147), during the period immediately before the Catholic Counter-Reformation of the XVIth century, ratified by the Council of Trent (1545-1563), and the relatively scarce efforts some clerics exercised when performing their

ministry.

At the time, the election of a Roman Pontiff was influenced by political and economic criteria, where influential secular authorities managed to interfere in the election of Popes. Rich and powerful families, such as the Medici's and the Borgia's, contended the nomination of one of their members for the office of Pontiff, during the period immediately preceding the Catholic Counter-Reformation.

On the other hand, the signing of Concordats, such as the one of Bologna with France (Duffy, 1998, p.153), and the *Padroado*¹², this is, the right of introducing clerics for an ecclesiastic benefit (Praça, 1869, p.15), conferred by the Popes to secular governors, besides the old practice of simony (sale of sacred appointments), were interference factors in the ecclesiastic life of the Church (R. J. Sturz, in Elwell, p. 94,95, v.III, 1990). Those facts, acting either individually or collectively, worked as random effects that harmed the performance and the effort of the Catholic clerical class. The branch of the clergy that was committed with the real, more spiritualized fundamentals of the Catholic doctrine, did not, in fact, have control of the Church, because this control was in the hands of the more secularized and materialistic branch. This correlation of power only changed with the Council of Trent, when more spiritualized clerics began to be at the head of the purpose of the Catholic Church.

Stark (2003, p. 40-41; 2005, p. 202-203) sustains that, at that moment in time, the two churches lived together (coexisted): one was the "Church of Piety", with ascetic clerics, who defended a simple life. The other one was the "Church of Power", which effectively began its existence after the ascension of Constantine, who established the Decree of Milan (313), conceding not only religious freedom to the Christians, but a series of privileges to the clerics. Besides, some of the high posts within the catholic hierarchy, since having become so prestigious and carrying so much social *status*, were bought and

¹² In relation to the Portuguese *Padroado* and its reflection on Colonial Brazil, see the observation of Carreiro (2007, p. 68, 69).

occupied, literally, by members of the higher social classes, according to Stark (2003 p. 40). Stark also affirms that the Church of Piety was born as a reaction against the Church of Power and its excesses, vindicating a return to primitive Christianity.

Against these and other forms of abuse, a series of cleansing initiatives appeared, centuries before the Catholic Reformation, such as during the period of Pope Gregory Magnum (590 – 614), the first monk to occupy the post of Roman Pontiff, who sought to repress simony and attempted to moralize the clergy.

The emergence of the Protestant Reformation catalyzed the efforts sought out, for a long time, by the Church of Piety¹³, leading to the convocation of the Council of Trent (1545-1563). This Council established moralizing and disciplinary measures, such as the abolition of the sale of ecclesiastic office and the institution of a large network of seminaries in order to prepare the catholic clerics in the most appropriate way for each existing diocese (Ekelund Jr, 2006, p. 135-160; Royal, 2006, p. 173; F.S. Piggin, in Elwell, v.I, 1993, p.312-314). F.S. Piggin (in Elwell, v.I, 1993, p.313) says that:

The repentant episcopate recognized that the Lutheran revolt had been originated by the “ambition, avariciousness and greed” of the bishops. The Council, therefore, condemned the absenteeism of the bishops and priests. The clerics should “avoid even the smallest faults, that in them would be considerable”¹³.

¹³ According to Stark (2003, p. 40) the Protestant Reformation and the Catholic Counter-Reformation were events whereof their beginning was associated to the monastical movement that began in the III century, rooted in the Jewish asceticism (such as the Qunrā community), which already proposed the reform of the practices of the Christian Church. The expansion of monaquism or monasticism coincided with explosive increase of aristocrats in the Christian clergy. By the middle of the IV century there were thousands of monks and nuns, living in organized communities. Due to their lives of devotion and asceticism, they were considered spiritually superior to the members of the secular clergy. Their clashes with them, according to Stark were not due to the fact that the secular clergy did not follow asceticism but because many of them lead an immoral life.

¹³ In the countries where there are State churches, such as the case of the Anglican Church in England and the Lutheran Church in Sweden, where the clerics are paid by

The influence of political and economic criteria in the choice of clerics, at the time before the Council of Trent, reflected a substantial weight of the random effects on the promotion tournaments for the choice of catholic priests, which implied, on their part, a higher cost associated to the level of religious effort to be exercised. This, evidently, discouraged the compromise of the clerics with their ecclesiastical duties and contributed towards laxity in behavior and conduct on their part. The tridentine criteria established more rationality for the selection of new clerics, among which exigencies were the fact that candidates to priesthood should attend a catholic seminary before being ordained.

Political interference in the appointment of clerics was also opposed. These had the role of reducing the random effects in the promotion process of the clerics and, thus, consequently, stimulate the increase of the effort exercised in order to obtain access to higher hierarchical positions, improving the profile of the candidates qualitatively. Nowadays, civil authorities have lost the condition of exerting any influence in the appointment of catholic clerics, whether it be in terms of election, nomination, designation or introduction of these, as in the case of Bishops (Canon 377 § 5 of the 1983 Code of Canon Law).

3.2. Simple model of Promotion Tournament with investment in religious human capital and clerics with homogeneous skills.

In this subsection, we will present a version of Câmara's *Tournaments* model (2002), which includes the possibility of the participants in the promotion tournament to invest in human capital. However, here we will consider an adaptation of the model for the purpose of this work, specifically for religious

the State, since they are public servants, there is a tendency in that political issues influence the promotion criteria of the clerics, increasing the amount of random effects. Thus, there is a tendency of these clerics adopting a *shirking* behavior due to a lack of competition, as it has been pointed out by Adam Smith in *The Wealth of the Nations* [See also Iannaccone, Finke and Stark (1997) and Gill (1999)].

organizations. Instead of the wider concept of human capital, considered by Câmara in his work, the concept of religious human capital will be considered. The main modification is the inclusion of psychic income or non-monetary income in the model, in a similar way to what was done with the Lazear and Rosen model (1981), presented in the previous subsection.

The model has one stage and two competing clerics, j and k , who present a differentiated production function given by $f = f(\mu, R)$, where μ represents the effort, R is the religious capital of the cleric, $f(0,0) = 0$ and $\partial f / \partial \mu > 0$, $\partial f / \partial R > 0$, $\partial^2 f / \partial \mu^2 < 0$, $\partial^2 f / \partial R^2 < 0$. The cost function is given by $C(\mu, R) = C_\mu(\mu) + C_R(R)$ in which $C_\mu(0) = C_R(0) = 0$, $C'_\mu(\mu) > 0$, $C'_R(R) > 0$, $C''_\mu(\mu) > 0$, $C''_R(R) > 0$. The clerics have identical functions, both in terms of production and cost, presenting in this way, homogeneous abilities. Besides, they present neutrality to risk.

The religious organization will observe the production q of each cleric participating in the *tournament*, which will be a function of $f(\mu, R)$, multiplied by a random error a common to both clerics participating in the *tournament*. Here, we consider the common error and not individual and independent errors, since the heavier the weight of the common error the higher the efficiency of the *tournament*. In this way, clerics j and k , will present the following individual productions:

$$q_j = f(\mu_j, R_j)a \tag{1}$$

$$q_k = f(\mu_k, R_k)a$$

The probability $P(J, K)$ of cleric j overcoming cleric k will be given by:

$$P(J, K) = \frac{f(\mu_j, R_j)}{f(\mu_j, R_j) + f(\mu_k, R_k)} \tag{2}$$

Where the random factor a , that is common to both clerics and has the propriety of being multipliable, is annulled, and does not affect the probability of the two clerics to win the dispute.

For the problem of maximization of each one of the clerics, an alteration of Câmara's (2002) model will be made, which is the inclusion of the psychic income differential between clerics. Therefore, we have that:

$$\max_{\mu_j R_j} P(J, K)(M_1 + A_1) + [1 - P(J, K)](M_2 + A_2) - C(\mu_j, R_j) \quad (3)$$

As in the previous simple model, without religious human capital investment, M_1 and A_1 represent, respectively, the monetary and non-monetary income of the cleric who obtains the first place in the Tournament (that of Bishop or Supervisor); M_2 and A_2 represent the same thing for the cleric classified in second place (assistant). With that, the remuneration of the Supervisor or Bishop will be $W_1 = M_1 + A_1$, and the remuneration of the assistant will be $W_2 = M_2 + A_2$. Besides, as in the previous case, having $M_1 > M_2$, $A_1 > A_2$ and consequently $W_1 > W_2$, for the marginal effort to be positive. Substituting (2) into (3) we have that:

$$\max_{\mu_j R_j} \frac{f(\mu_j, R_j)}{f(\mu_j, R_j) + f(\mu_k, R_k)} (M_1 + A_1) + \left[1 - \frac{f(\mu_j, R_j)}{f(\mu_j, R_j) + f(\mu_k, R_k)} \right] (M_2 + A_2) - C(\mu_j, R_j) \quad (4)$$

The first order conditions will be given by:

$$\frac{\frac{\partial f(j)}{\partial \mu_j} f(k)}{[f(j) + f(k)]^2} (\Delta M + \Delta A) = \frac{\partial C(j)}{\partial \mu_j} \quad (5)$$

$$\frac{\frac{\partial f(j)}{\partial R_j} f(k)}{[f(j) + f(k)]^2} (\Delta M + \Delta A) = \frac{\partial C(j)}{\partial R_j} \quad (6)$$

Where:

$$f(j) = f(\mu_j, R_j)$$

$$f(k) = f(\mu_k, R_k)$$

$$C(j) = C(\mu_j, R_j)$$

$$\Delta M = M_1 - M_2$$

$$\Delta A = A_1 - A_2$$

Rewriting equations (5) and (6), the result is:

$$\frac{f(k)(\Delta M + \Delta A)}{[f(j) + f(k)]^2} = \frac{\frac{\partial C(j)}{\partial \mu_j}}{\frac{\partial f(j)}{\partial \mu_j}} \quad (7)$$

$$\frac{f(k)(\Delta M + \Delta A)}{[f(j) + f(k)]^2} = \frac{\frac{\partial C(j)}{\partial R_j}}{\frac{\partial f(j)}{\partial R_j}} \quad (8)$$

In this manner, the first order conditions (F.O.C) will be respected when:

$$\frac{C'_{\mu}(j)}{f'_{\mu}(j)} = \frac{C'_R(j)}{f'_R(j)} = \frac{f(k)(\Delta M + \Delta A)}{[f(j) + f(k)]^2} \quad (9)$$

Where $C'_{\mu}(j) = \frac{\partial C(j)}{\partial \mu_j}$, $C'_R(j) = \frac{\partial C(j)}{\partial R_j}$, $f'_{\mu}(j) = \frac{\partial f(j)}{\partial \mu_j}$ and $f'_R(j) = \frac{\partial f(j)}{\partial R_j}$

The conditions of the second order require that the one derived from the cleric's maximization function j , given by equation (4), be a negative semi-defined Hessian matrix.

In this way, we have that:

$$C'_{\mu}(j) \left\{ \frac{f''_{\mu}(j)}{f'_{\mu}(j)} - \frac{2f'_{\mu}(j)}{[f(j) + f(k)]} \right\} - C'_{\mu}(j) < 0 \quad (10)$$

$$C'_R(j) \left\{ \frac{f''_R(j)}{f'_R(j)} - \frac{2f'_R(j)}{[f(j) + f(k)]} \right\} - C'_R(j) < 0$$

The same reasoning is applied for cleric k . Rewriting equation (9) we have that:

$$\frac{f'_R(j)}{f'_{\mu}(j)} = \frac{C'_R(j)}{C'_{\mu}(j)} = \frac{f(k)(\Delta M + \Delta A)}{[f(j) + f(k)]^2} \quad (11)$$

The equation above indicates that, in a situation of balance, the marginal substitution rate (MSR) between μ_j and R_j , this is to say, between the effort of cleric j and his religious capital, must be equal to his marginal substitution cost (MSC). It also informs that those variables depend upon the spread between prizes, whether monetary or non-monetary.

Equation (11) indicates that the values related to effort and religious human capital chosen by cleric j , given respectively by μ_j and R_j , will depend on the spread between monetary income and non-monetary income (psychic income), given, respectively, by ΔM and ΔA . Here, differently from the Câmara (2002) model, where ΔM should be positive, due to the inclusion of the non-monetary income, ΔM may assume a null value, but only if ΔA is positive for the clerics who participate in the tournament to have incentives to do their best and invest in religious human capital. According to what has been explained in the simple model, and seen previously, the case of the Institutes of Consecrated Life of the Catholic Church are an excellent example in which ΔM can be null, since the regular clerics that belong to them do not receive a monetary salary, considering that they are bound to the vow of poverty.

Still observing equation (11), it can be perceived that an increase either in ΔM and/or in ΔA , increases the ratio on the right hand side of the equation. With the objective of maintaining the equality, the ratio between the marginal cost and the marginal product of μ_j and R_j , on the left hand side, should also increase correspondingly. This means that an increase in ΔM and/or in ΔA gives rise to an increase of the effort μ_j and of the investment in religious capital R_j of cleric j . Identical reasoning is applied to cleric k .

In equations (9) and (11) the effects of the variations of the production function of cleric k are not constant, since $f(k)$ is present both in the numerator as in the denominator of the equations. Therefore, increases in $f(k)$, when its value is sufficiently small, will imply in corresponding increases in $f(j)$, until there is a balance in $f(k)$. Beyond that point, increases in $f(k)$ will imply corresponding decreases in $f(j)$. This means that cleric k will respond to the increase of effort and of religious capital investment of cleric j equivalently, with the objective of winning the tournament, according to the description in equation (9) until there is a balance. Beyond that point, it will not compensate,

in terms of benefit, for cleric k to increase μ_k and R_k , where the cost $C(\mu, R)$ will be so high that the cleric prefers not to continue disputing the tournament.

Equation (11) informs the entire range of optimum choices in terms of μ^* and R^* , in order to satisfy the F.O.C. so to maximize the individual utility of the cleric. In this way, with the aim of obtaining the best response function, each optimal bundle must be substituted, in (4), by a feasible equivalent variable $y = (\mu^*, R^*)$, $\forall \mu^*, R^*$. With this, the function to be maximized would be the following:

$$\max_{y_j} \frac{f(y_j)}{f(y_j) + f(y_k)} (M_1 + A_1) + \left[1 - \frac{f(y_j)}{f(y_j) + f(y_k)} \right] (M_2 + A_2) - C(y_j) \quad (12)$$

The F.O.C. conditions will be given by:

$$\frac{f'(y_j) f(y_k)}{[f(y_j) + f(y_k)]^2} (\Delta M + \Delta A) = C'(y_j) \quad (13)$$

The second order conditions will be given by:

$$D = C'(y_j) \left\{ \frac{f''(y_j)}{f'(y_j)} - \frac{2f'(y_j)}{[f(y_j) + f(y_k)]^2} \right\} - C''(y_j) < 0 \quad (14)$$

The reaction function of cleric j will be given by:

$$\frac{\partial y_j}{\partial y_k} = \frac{\left[\frac{f'(y_k)}{f(y_k)} \right]}{-D[f(y_j) + f(y_k)]} [f(y_j) - f(y_k)] \quad (15)$$

The reaction function of cleric k will be symmetrical. Both reactions functions are represented in the following figure:

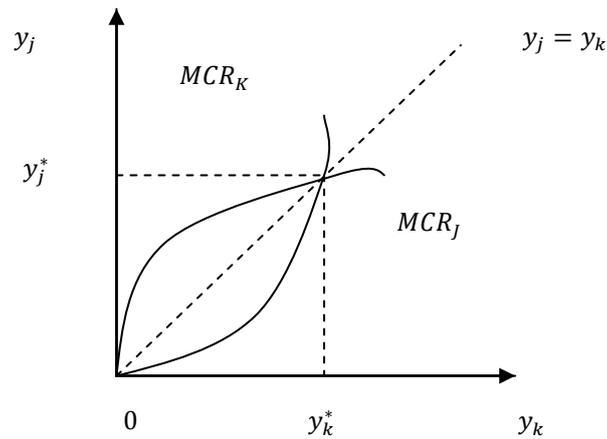


Figure II- Best reply curves of the clerics

Figure II, as well as the reaction function in (15), indicates that, considering the existence of a Nash balance in pure strategies, it will result in $y_j^* = y_k^*$, which derives in $\mu_j^* = \mu_k^*$ and $R_j^* = R_k^*$. This is, in the balance, both clerics will present the same level of effort and investment of religious human capital, where the probabilities of each one of them winning the tournament will be equal to $P(J, K) = 0,5$.

4. Advantages and Limitations of the Tournament Theory in Religious Organizations

According to Zech (2001), promotion tournaments represent an efficient contract for the principal-agent relationship involving religious organizations and clerics. In churches with several congregations, that present several degrees of riches and prestige, clerics who aim at reaching a post in a larger congregation first need to prove a good performance in the congregation where they are serving.

Zech (2001) mentions different cases of promotion tournaments in churches, in the United States. The American Episcopalian Church, for example, has a central department, the *Church Deployment Office*, in the city of New York, that takes care of the selection and hiring of clerics for their congregations. Any Episcopalian congregation interested in hiring a cleric establishes a committee that establishes the profile of the desired candidate and gets in touch with the central office, where Episcopalian clerics must keep their personal information up to date every year. At the most, 100 candidates are selected. The committee interviews the short listed contestants and the chosen person is submitted to the bishop of the congregation for approval.

Another case of promotion tournaments mentioned in Zech is that of the American Presbyterian Church. The Presbyterian ministers, interested in obtaining a post as Pastor of a congregation where there is an open vacancy, must submit their curriculums, to be selected, to a central committee designed for that purpose. A board of the presbytery from the congregation without a pastor visits the congregation of each candidate and analyses his performance during the sermons. When the central committee and the congregational board approve and select a candidate, his name is submitted to the vote of the congregation, which has a vacancy for a minister, for his approval.

On the other hand, as observed by Conyon and Sadler (2001, p.154) the Tournament Theory has also suffered restrictions from some researchers. They cite Dye (1984) who points out certain limitations of the Tournament Theory, among others, in what measure it would be viable to build an appropriate incentives plan; the difficulties of assessment of the multidimensional

performance in an ordinal sense; as well as the problems of coalition and sabotage among the participants in the tournament¹⁵.

Canyon and Sadler (2001, p. 154) also mention the work of Baker *et alii* (1988) that question the pertinence of the use of tournaments as an incentive mechanism, especially in the case of promoting non-qualified competitors for posts of command. Although this questioning of Baker *et alii* can not be discarded, this never could be taken as a rule, but only as an exception, since promotion tournaments seek exactly to select those who present the best performance, throughout successive stages of a competition, for positions of command. The more the stages of a tournament, the higher will be the probability that the best candidates become the winners. Therefore, the solution to the problem of eventually choosing a competitor who is not the most able among the candidates is to increase the stages of the tournament.

The Tournament Theory, still according to Canyon and Sadler (2001), foresees that the prize in dispute will be so much the bigger the larger the amount of participants. In a religious firm, this means that, the more the number of hierarchical levels, the bigger should be the prize to be disputed for the highest post. This prize does not necessarily involve monetary income only, being also possible to accrue in the shape of psychic income, as pointed out by Zech (2001).

In summary, the following advantages can be pointed out in favor of the use of Promotion Tournaments as an instrument to incentivate the performance of agents in a religious organization:

- a) Lower measurement cost of the agents performance;
- b) Random factors, that affect agents in a global manner, tend to become neutralized by the relative assessment, increasing the impact of the incentives;

¹⁵ The question of sabotage in promotion tournaments was studied by Cheng (2003) regarding its nature, determinators and impact. Cheng also proposes possible solutions for this problem. This question will be broached presently.

c) Higher probability that the best candidates will be chosen for leadership posts, especially if the stages of the tournament are increased.

Among the disadvantages of promotion Tournaments are:

a) Possibility of coalition of agents adopting a shirking behavior. This possibility tends to decrease the larger the number of agents, mainly in the case of organizations with many hierarchical levels or, in the case of hiring employees from outside the firm. In the case of religious organizations, such as the Catholic Church, the hiring of outsiders does not exist.

b) Another possibility is that of each participant of the tournament adopting sabotage practices in order to hinder his competitors from winning the prize.

In the case of religious organizations, however, such as the Catholic Church, these problems tend to become nullified, or at least minimized, because of its larger number of hierarchical levels and since love of fellowmen is a mandatory commandment to be observed by clerics and laymen. For this, *shirking* behavior and sabotage, in theory, are problems that tend to occur in a lesser scale in religious promotion tournaments.

In this manner, for example, in order to eliminate distortions such as sabotage in the election of the Roman Pontiff, a crucial stage of the *Tournament* in the Catholic Church, it is interesting to observe what articles 79 to 83 of the Apostolical Constitution *Universi Dominici Gregis* regarding this issue (Chapter VI – MATTERS TO BE OBSERVED OR AVOIDED IN THE ELECTION OF THE ROMAN PONTIFF):

79. Confirming the prescriptions of my Predecessors, I likewise forbid anyone, even if he is a Cardinal, during the Pope's lifetime and without having consulted him, to make plans concerning the election of his successor, or to promise votes, or to make decisions in this regard in private gatherings.

80. In the same way, I wish to confirm the provisions made by my Predecessors for the purpose of excluding any external interference in the election of the Supreme Pontiff. Therefore, in virtue of holy obedience and under pain of excommunication *latae sententiae*, I again forbid each and every Cardinal elector, present and future, as also the Secretary of the College of Cardinals and all other persons taking part in the preparation and carrying out of everything necessary for the election, to accept under any pretext whatsoever, from any civil authority whatsoever, the task of proposing the *veto* or the so-called *exclusiva*, even under the guise of a simple desire, or to reveal such either to the entire electoral body assembled together or to individual electors, in writing or by word of mouth, either directly and personally or indirectly and through others, both before the election begins and for its duration. I intend this prohibition to include all possible forms of interference, opposition and suggestion whereby secular authorities of whatever order and degree, or any individual or group, might attempt to exercise influence on the election of the Pope.

81. The Cardinal electors shall further abstain from any form of pact, agreement, promise or other commitment of any kind which could oblige them to give or deny their vote to a person or persons. If this were in fact done, even under oath, I decree that such a commitment shall be null and void and that no one shall be bound to observe it; and I hereby impose the penalty of excommunication *latae sententiae* upon those who violate this prohibition. It is not my intention however to forbid, during the period in which the See is vacant, the exchange of views concerning the election.

82. I likewise forbid the Cardinals before the election to enter into any stipulations, committing themselves of common accord to a certain course of action should one of them be elevated to the

Pontificate. These promises too, should any in fact be made, even under oath, I also declare null and void.

83. With the same insistence shown by my Predecessors, I earnestly exhort the Cardinal electors not to allow themselves to be guided, in choosing the Pope, by friendship or aversion, or to be influenced by favour or personal relationships towards anyone, or to be constrained by the interference of persons in authority or by pressure groups, by the suggestions of the mass media, or by force, fear or the pursuit of popularity. Rather, having before their eyes solely the glory of God and the good of the Church, and having prayed for divine assistance, they shall give their vote to the person, even outside the College of Cardinals, who in their judgment is most suited to govern the universal Church in a fruitful and beneficial way.

The determinations are very clear and have as objective to dissuade individuals and groups of interest engaged in obtaining personal advantage in the succession of the Roman Pontiff. The hypothesis of negotiations, in this sense, are not admitted while the Pontiff is still alive, without his consent, even though those involved hold a seat in the College of Cardinals. Compromises and pacts previously agreed upon, to be put into practice, in the hypothesis that this or that individual being elected for the office of Pontiff, in the case of a vacant see, are totally unauthorized and have no value at all in juridical terms. Any deliberation in these terms is considered invalid juridically, even when done under private oath.

Article 83 is the one which interests most in this discussion, since it urges the electors of the College of Cardinals to adhere to the spirit of the Gospel and avoid any mean-spirited attitudes, which include sabotage, in the case of the succession of a Pontiff. Quite the opposite, they must endeavor to leave out any personal issues, seeking not to use as criteria for choice, links of friendship or feelings, listening to reason in order to choose the best candidate

among all the possible options, even if the chosen one were not a Cardinal. Beyond this, the electors of the College of Cardinals must not allow themselves to be influenced by pressure, be it of society, the media, fear, apprehension or for the search of projection. Therefore, the possibilities of a sabotaging behavior on the Cardinals part, in order to obstruct the election of a given contestant, may not be eliminated but at least minimized and controlled.

4.1. Risk and distortion in Promotion Tournaments

As seen in Lazear and Gibbs (2008), two fundamental issues, to be considered, regarding the advantages and disadvantages in tournaments are risk and distortion.

Risk – Taking into account a religious firm with two clerics, one who leads a congregation in the city of J and another one who is the leader of the congregation in the city of K , their performance is affected not only by the effort, given by μ (as discussed in section 3), but also by random effects (commonly called good or bad luck). It is supposed these factors are divided into two: the first is made up by the combined set of local factors (such as the level of religiousness in each of both cities) and the behavior, strategies and actions of the clerics in each of their respective local markets, which might be called idiosyncratic. This factor is represented by ε .

The second factor, represented by η , is related to ordinary events that might affect both the local markets, such as a government intervention in the religious market, demographic factors, or a recession or a national or worldwide economic depression. This latter type of event, according to Iannaccone (1988), tends to increase religious frequency in churches, since the increase of unemployed people, the relative value of time for these individuals decreases, allowing them to allocate part of this time to attend religious services. In this way, the frequency in the congregations of both clerics increases, but this cannot be considered a result of their performance.

Keeping these considerations in view, the marginal productivity of both clerics will be given by:

$$PM_J = \mu_J + \varepsilon_J + \eta$$

$$PM_K = \mu_K + \varepsilon_K + \eta$$

The term that represents the common factors, η , does not present a subscript since it affects both local markets, J and K in an identical manner. In the occurrence of using a tournament to select the cleric who will be promoted, then the winner will be the one that has the best relative performance in both local markets. In the case of taking the relative performance of the cleric in the city of J , as an assessment criterion, we have that:

$$RPED_J = PM_J - PM_K = \mu_J + \varepsilon_J + \eta - (\mu_K + \varepsilon_K + \eta) = \mu_J - \mu_K + \varepsilon_J - \varepsilon_K$$

Where $RPED_K = -RPED_J$. When a *standard* assessment is used, we have that $RPED_J = PM_J$. The tournament differs from the standard assessment in three main aspects: a) by the fact that the term η , that affects both clerics, is eliminated, reducing the term of error for the cleric of the city of J ; b) there is an influence of the effort dispended by the cleric of the city of K , given by μ_K and c) inclusion of the local factors that affect the performance of the cleric of the city of K .

The variance of the two performance measures, both in the standard assessment, as in the case of the tournaments, considering that η and its residues are not correlated, is given by:

$$\sigma_j^2 = \sigma_\varepsilon^2 + \sigma_\eta^2 \text{ (standard assessment)}$$

$$\sigma_{RPE}^2 = 2\sigma_\varepsilon^2 \text{ (Tournaments)}$$

A situation in which it would be advantageous to employ *Tournaments* would be that one in which the common factors, represented by η , have a more important role over the performance of the clerics of both cities in relation to the weight of the local factors on this performance. If this were the case, tournaments would reduce the risks, improving the incentives. However, if the idiosyncratic factors have a predominant role, the standard assessment would be the most advisable.

Distortion – Tournaments, in a general way, can distort the incentives that the workers have to cooperate each other. Let us consider a multitask model in which each worker can exert two kinds of effort. The first type, e^P , is performed by the workers in order to benefit their own individual performance. The second type of effort diminishes the performance of another competitor and is given by e^S . In this way, in a simple sabotage model, the absolute performance measure for competing workers is given by:

$$PM_J = \mu_J^P - \mu_K^S + \varepsilon_J + \eta$$

$$PM_K = \mu_K^P - \mu_J^S + \varepsilon_K + \eta$$

The relative assessment for worker J is given by:

$$\begin{aligned} RPED_J &= PM_J - PM_K = (\mu_J^P - \mu_K^S + \varepsilon_J + \eta) - (\mu_K^P - \mu_J^S + \varepsilon_K + \eta) \\ &= (\mu_J^P - \mu_K^P) + (\mu_J^S - \mu_K^S) + (\varepsilon_J - \varepsilon_K) \end{aligned}$$

In the case of Tournaments, a worker can improve his performance in two ways: increasing his own effort, μ^P , and acting in a way that sabotages the performance of another competitor, μ^S . On the other hand, when the evaluation is through individual performance, there are no existing incentives for sabotage. It is essential to call attention, however, to the fact that, in tournaments in religious organizations, as in the case of the Catholic Church, it

is expected that clerics, who observe the commandment of loving their fellowmen as they love themselves, loose any stimulus in committing acts of sabotage to impair his competitors. This behavior, this is to say, sabotage, must be seen as an exception in religious organizations.

Coming back to the previous example, that of the clerics of cities *J* and *K*, it is necessary to remember a specificity of religious organizations: the relative independence in the effort exerted by the clerics when seeking a promotion. The cleric of the city of *J* does not need to sabotage the cleric of the city of *K* in order to obtain the prize. His congregation (or parish) has precise jurisdiction limits. Cannon 265 of the CCL does not admit, for instance, unattached or transient clerics, since all of them must be incardinated in a church. Each presbyter – parish priest has to exert their pastorship in their own parish. The possibility of trying to attract the faithful of another cleric's parish, in order to increase their own, is not admissible, no matter by what means or strategies. This would be contrary to the spirit of brotherhood and charity preached by the church, violating the objectives the church aims to reach, among which are the preservation and the promulgation of the revealed truth, through the preaching the Gospel, to all peoples (Can. 747 § 1.); the teaching of moral principles, including those regarding social order (Can. 747 §2) and the salvation of souls, considered in the CCL as the supreme law of the Catholic Church (Can 1752).

Another distortion in tournaments emerges in cases in which a worker has a space where he can try to influence, in his favor, the opinion of his superiors, with the aim of obtaining a better appraisal or when giving in to their whims or impositions, even though these attitudes do not contribute to the organization in which they work for, diminishing cooperation.

However, from the moment in which measures to incentivate cooperation and combat sabotage can be put into practice, distortion in Tournaments can be eliminated. One of these measures is to signalize that the workers who do not

work as a team to promote the interests of the organization, will not be promoted.

In the case of religious organizations, cooperation is considered as a principle of action and of conduct. Clerics who adopt non-cooperative behaviors have remote chances of promotion, unless they change their attitude. In this way, another advantage of the application of *Tournaments* in religious organizations is that the work of the clerics is relatively independent in what it refers to the exercise of their functions¹⁶. On the other hand, in the case of the Catholic Church, clerics of lower hierarchical level are subjected to constant monitoring by their superiors and all clerics are subordinated, directly or indirectly, to the supreme authority of the Roman Pontiff. That is also an advantageous aspect of the application of *Tournaments* to these cases, since religious organizations count on some efficient monitoring mechanisms and devious behavior are relatively easy to detect. One of these mechanisms is residing in the same place together with other priests and clerics, such as parish priests and parochial vicars (Can. 533 § 1, 550 § 1,2), members of the Society of Apostolic Life (Canon 731 § 1, 740) and members of Religious Institutes (Can. 607 § 1, 665 § 1). Through this mechanism of communal residence, the Ordinary superior, can constantly monitor the behavior of each one of these clerics and religious men.

Final considerations

Remuneration per product is not a rule among organizations to stimulate the effort of their workers, and this is particularly true for religious organizations, considering the intrinsic difficulty in measuring and monitoring the performance of their clerics (Zech, 2001, p.331). Therefore, in this work, we consider promotions as an incentive remuneration mechanism, that is to

¹⁶ In this case, the production function of the clerics of the Catholic Church would be additive.

say, the *Tournaments* Promotion Model, as an explanatory and plausible theoretical framework for the remuneration rules of the workers in religious organizations. Tournaments are commonly used by religious organizations, even if they are not aware of it, in order to stimulate their workers, who act in the scenario of an organizational internal market, where asymmetrical information and relatively high monitoring costs are highlighted, and where promotions are the main form of incentive.

If the monitoring costs are high, the *Moral Hazard* problem is incurred into, where the product efficiency gain, based upon the product-salary payment scheme, can be overcome by the relative loss due to risks division. The remuneration of the agents, based on the *ranking*, alters the measurement costs, as well as the nature of the risks run by the agents. Tournaments seek to solve the *moral hazard* problem, within the internal labor market of the firms, where there are posts involving complex tasks, with intrinsic monitoring and measuring difficulties. This is the specific case of religious organizations where, generally speaking, there are no external selections or contracts for their appointments and functions; merely an internal selection or contract. This is one more specificity of the religious market.

For the *Tournament* to be successful, it is essential that each participant, individually, perceives he will have the necessary conditions to be the winner, being sufficient for this that he employs his maximum effort throughout all his career. In this way, the tournaments are used to create a competitive scheme within the organization, with the objective that the agents employ their best abilities and strategies to reach the best possible performance. In what refers to religious organizations, this performance can be assessed in terms of the number of faithful converted and/or baptized, attendance to divine worship and religious services in general, volume of financial contribution, number of churches built, etc.

Observing the relative performance of the agents at the end of the competition, the size of the increase, related to a specific promotion, can be

determined. That remuneration scheme possesses normative proprieties which are useful, taking into account the incentives that tournaments create, under certain assumptions, allowing to deal with the *moral hazard* problem, where the prize for the winner is differed in time but, the effort demanded must be performed continuously. According to Ehremberg and Bognanno (1990, p. 1308) this makes the tournament model a target of interest for academic research, since it seems to describe, in an appropriate way, the compensations received by agents who work in different organizations. For Weiss and Stiglitz (1983), one of the advantages of the tournament model is that it allows to create, automatically, an adaptable incentive structure to the changes observed in the workplace. In the case of the religious labor place, this, generally involves internal aspects such as teaching, indoctrination and counseling of the faithful, ministrations of the Eucharist, christenings and weddings; and external ones, such as mass evangelization, visiting the sick in hospitals, visits to orphanages and shelters, prisons, etc.

Promotion tournaments have as an aim to stimulate, within the organization and in all the hierarchical structure, the creation of effort incentive mechanisms and for the better relative performance of its workers, through a classification criteria (ranking) where all relevant information must be contained. The *pay-off* of an agent depends only of his classification. If any worker, individually, can be certain that he is given and warranted all the conditions to reach the top of the hierarchical structure of the organization he works for (*CEO*), then this agent should endeavor, with the firm compromise, to reach that objective. The finality of a promotion tournament within a religious organization must be, therefore, that of incentivating its clerics to make the maximum effort, avoiding shirking behavior, in order to, through the means of assessment of their performance, in relative terms, allow for the choice of the best candidates to be promoted to the existing vacancies, mainly for the top of the religious hierarchy.

In the case of the Roman Catholic Church, for instance, the post of the Roman Pontiff (Pope), when it becomes vacant, is open, in theory, to any catholic (Can 1024). In practice, however, due to the tradition created in the last centuries, the Roman Pontiff is chosen only by those electing Cardinals, that compose the College of Cardinals. To reach this level, it is required from the candidate to advance, step by step, within the hierarchical structure of the Catholic Church and that he obtain excellency in the performance of his attributions. According to the premises of the Promotion Tournament Theory, this should certainly contribute to motivate each and every catholic cleric. The objective is that the clerics should employ, from the very beginning of their career, in the religious organization in which they chose to work for, all their effort, in the sense of performing, in the best possible way, their functions in each hierarchical stage, avoiding shirking behavior, to be able, ultimately, to occupy the post of Roman Pontiff in the case the post were vacant.

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