

## Game Theory Analysis of Incentive in *Negotiorum Gestio*: Taking Self-Study Room as an Example

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Received 6 October 2017; accepted 15 December 2017  
Published online 26 January 2018

### Abstract

In *Negotiorum Gestio*, the actor implements the act of safeguarding or enlarging beneficiary's interest based on morality without any actual benefit. This runs against Rational Man Hypothesis in economics, and the actor should have no incentive when the behavior would not maximize its personal economic interests. This article will take a game theory analysis on *Negotiorum Gestio* in self-study room, in order to strive the reasonable incentive for a rational man to act *Negotiorum Gestio*.

**Key words:** *Negotiorum gestio*; Rational man; Incentive

Xu, H. (2018). Game Theory Analysis of Incentive in *Negotiorum Gestio*: Taking Self-Study Room as an Example. *Canadian Social Science*, 14(1), 52-55. Available from: <http://www.cscanada.net/index.php/css/article/view/10077>  
DOI: <http://dx.doi.org/10.3968/10077>

### INTRODUCTION

A rational man will maximize his or her benefit at a lowest cost in Rational Man Hypothesis (Stiglitz & Walsh 2013, p.24). *Negotiorum Gestio* describes a situation that one person would take careful of other's business in order to avoid other's loss and without any statutory or contractual obligation.<sup>1</sup> These two things are highly likely conflict,

<sup>1</sup> General Provisions of the Civil Law of PRC, Article 121. A person who, under no statutory or contractual obligation, manages the business of another to prevent damage to the interest of another shall have the right to request that the beneficiary of such management reimburse the manager for necessary expenses incurred.

the management (I will call *Negotiorum Gestio* as "the management" in the following.) is motivated by protecting other's benefit and is facing with the risk of expenditure. More badly, the actor may assume civil liability when the management constitutes torts (Dawson, 1961). In other words, a person cannot expect any monetary income in the management, and must take the civil liability possibility into account, so a rational man definitely has no incentive in doing so. However, actually, there is plenty of *Negotiorum Gestio* cases, which means that incentive indeed exists and it is not possible that all actors are not economic "rational". This paper will do a game theory analysis in a self-study room management model to look for the actual incentive in *Negotiorum Gestio*.

### 1. THE CONTRADICTION BETWEEN *NEGOTIORUM GESTIO* AND ECONOMIC INCENTIVE

We will look into the design of *Negotiorum Gestio* in order to find out whether the legislative guidance itself has incentive for a rational man.

#### 1.1 The Intention of *Negotiorum Gestio*

As to this question, one viewpoint is that the purpose of *Negotiorum Gestio* is to reward people for helping each other. Because of our social attribute, other's favor is essential, *Negotiorum Gestio* can balance the benefits between actors and beneficiaries, so that the total societal welfare could be promoted. Normally, one cannot interfere with other's business, or he/she would be liable for torts. However, this common rule can make a hard time for everyone's demand on other's help, even though the management could reduce people's loss and enhance their interests (Shi, 2000, pp.57-58). Legislators and law scholars should devote themselves to coordinate the interaction between "stop meddling" and "rewarding help" (Ibid., p.331). In the meanwhile, the law should permit

the actor to manage other's business so that people would not worry about being liable for torts and *Negotiorum Gestio* should take the responsibility to harmonize actor's and beneficiary's benefits (Wang, 2005, p.64). Another viewpoint focuses on speaking highly of prevailing moral practices, clarifying property rights and safeguarding orderly transaction environment. The reasons that why *Negotiorum Gestio* is established by law are that: to enhance the pleasure in helping others, to avoid avoidable property loss, to develop good property and transaction rules (Wang, 2001).

The second point of view is more precise. The first one emphasize "reward", nevertheless, the actor not only has no extra income, but also will bear the risk on compensating the beneficiary for torts. Thus, it is hardly to find some underline implication of "reward". *Negotiorum Gestio* entitles the actor a chance to seek compensation for the management cost, this measurement will certainly encourage people to do the management with less misgivings. Yet, no matter which viewpoint, promoting actor's benefit is not included, which means that there is no intention in *Negotiorum Gestio* may become a motivation for a rational man to do the management.

### 1.2 There Is No Incentive in *Negotiorum Gestio* Itself

For the actor, without any contractual or statutory liability, all the targets doing the management are to protect beneficiary's interests. According to *Negotiorum Gestio* in General Provision of the Civil Law of PRC, the best outcome for the actor is to get the management monetary cost or loss back.<sup>2</sup> Besides economic expenditure, any other cost, for example, time or opportunity cost, is out of the question. A rational man has a lasting hope to improve its own situations, and willing to work on this insistent. When it comes to *Negotiorum Gestio*, which has no foreseeable income and is accompanied with civil liability risk, a rational man should have zero incentive for this.

## 2. NECESSITY AND POSSIBILITY OF NEGOTIORUM GESTIO IN SELF-STUDY ROOM

Although there is no incentive in *Negotiorum Gestio*, we are curious about why lots of *Negotiorum Gestio* cases in practice.<sup>3</sup> University self-study room is a place where larceny happens frequently, if the management could take place, larceny may be restrained. This provides us with a

<sup>2</sup> General Provisions of the Civil Law of PRC, Article 122. Where a person is unjustly enriched without any legal basis, the person who so suffers a loss shall have the right to request that the person unjustly enriched return the amount to the extent of the unjust enrichment.

<sup>3</sup> Data resource: Search "Negotiorum Gestio" in Pkulaw.cn database, we got 1591 civil judgements and decisions. Retrieved from <http://www.pkulaw.cn/case/adv>.

perfect situation to exam incentives for the management. Thus, we take self-study room as instance to do a game theory analysis on *Negotiorum Gestio*, before that, we must discuss whether the management is necessary and possible in self-study room.

### 2.1 The Necessity

*Negotiorum Gestio* in self-study room is necessary because we have a lot of universities and larceny happens quite constantly. According to the latest data from National Bureau of Statistics of PRC, by the end of 2015, we got 2,560 universities and colleges with 26,253,000 students.<sup>4</sup> In the same time, especially at the end of the term, for students, self-study occupies vast majority's daily life. Thanks to the improvement of people's standard of living, high-value personal stuff like computers and smart phones become every day carry for most students. Students have to leave their seats for restroom or picking up a phone call during their self-study, the most prudent student will take all valuable belongings with them, but the majority will be bothered by the tedious steps because it is just a short absence. It is the carelessness of most students that give thieves opportunities to steal.

On May 24, 2014, Beijing police department caught a suspect of 7-time self-study room larceny;<sup>5</sup> On December 15, 2014, Jiangxi Moring Daily reported that a habitual self-study room larceny offender was still on the wanted list.<sup>6</sup> On July 23, 2015, Jinan police department caught a suspect of 30-time self-study room larceny with more than 50,000 RMB stolen goods.<sup>7</sup> On August 30, 2016, Nanjing TV reported that a self-study room larceny suspect was captured by surveillance camera.<sup>8</sup> Thus, overall, self-study room larceny exists widely and harmful. Beijing Supreme Court regards larceny case with stolen goods which values more than 2,000 RMB as "relatively large amount".<sup>9</sup> 2000 RMB is an easy threshold for a smart phone, not saying personal computers, in other words, self-study larceny is more than petty theft and should be paid serious attention.

<sup>4</sup> National Bureau of Statistics of China. Retrieved from <http://data.stats.gov.cn/search.htm?s=2017%20普通高等学校%20在校生>.

<sup>5</sup> White collar caught for 7 times self-study room burglary, (2014.6), Chinanews.com, retrieved from <http://www.chinanews.com/fz/2014/06-16/6282716.shtml>.

<sup>6</sup> Self-study room burglary happens a lot in Nanchang University, (2014.12), Nc.Jxnews.com.cn, retrieved from <http://nc.jxnews.com.cn/system/2014/12/15/013496902.shtml>.

<sup>7</sup> A 50-year-old man stole for unleashing in university self-study rooms, (2015.7), Jiangsu.china.com.cn, retrieved from [http://jiangsu.china.com.cn/html/law/case/2073281\\_3.html](http://jiangsu.china.com.cn/html/law/case/2073281_3.html).

<sup>8</sup> University self-study rooms are popular targets for thieves, (2016.8), Nbs, retrieved from [http://www.nbs.cn/tv/11/2/201608/t20160830\\_362360.html](http://www.nbs.cn/tv/11/2/201608/t20160830_362360.html).

<sup>9</sup> Some opinions on the judicial interpretation of the application of the criminal cases of theft by the high people's Court of Beijing: when courts hear criminal cases of theft stipulated in the 264<sup>th</sup> provision of the criminal law. The standard of "larger amount" is two thousand yuan or more. The standard of "huge amount" is sixty thousand yuan or more. The standard of "huge sum" is four hundred thousand yuan or more.

## 2.2 Self-Study Room Management Is Possible to Contain Larceny

Self-study room is not only a suitable place for larceny, but also a wonderful situation with natural advantages in taking precaution. Students may know each other, if not, at least, they may have a rough impression on external features of their neighborhoods. When a thief is stealing, it is not difficult for a nearby student to notice that something is wrong. If the vigilant student could interrupt the thief with merely some questions, it is high likely that the thief would give up because of nervousness and fear. The aforementioned is a kind of management behavior, if it could satisfy the four essential factors of Negotiorum Gestio (Wang, 2001, p.336), then we could take it as an example and run further analysis.

The first factor is managing other's business. Self-study room management stops thief from harming other's property rather than actor's, the management is legal, and could trigger Negotiorum Gestio obligation. The second factor is that actor has the intention to manage. The actor in self-study room management clearly knows that it is acting on the behalf of other's interests, the management could not be done by accident or unintentionally. The third one is that there are no statutory or contractual obligations. Actors are usually beneficiaries' schoolmates, no managerial obligation exists between them. The last factor is that the management must benefit the beneficiary and cannot run counter to beneficiary's express or implied intention, this factor is critical on deciding whether the management is legal. Obviously, nobody wishes her/his personal property to be stolen wherever, whenever, thus the management coincides with beneficiary's intention exactly. As a result, self-study room management satisfies all essential factors of Negotiorum Gestio, and we can call it "Self-study room Negotiorum Gestio".

## 3. GAME THEORY ANALYSIS OF INCENTIVES IN SELF-STUDY ROOM NEGOTIORUM GESTIO

By virtue of the management in self-study room meets all requirements of Negotiorum Gestio, a game theory analysis can be taken to probe into rational man's incentives.

We establish a complete information static game, assume two players A and B. Each player has two strategies, careful and careless, careful means paying attention to neighborhood's external features and being vigilant, careless means the opposite. The rules are as following: (a) the cost of careful is 2, due to its disturbance on self-study, marked as -2 in the model; (b) the cost of careless is zero; (c) if one chooses careful, then the other's property would be safer and the beneficiary will enjoy 10 benefit; (d) if one chooses careless, then the other's property is less safe, however, since larceny not

happens 100% when student left their seats, we assume a 50% taking place rate, so the potential loss is  $10 * 50\% = 5$ , marked as -5 in the model. Then we could get a matrix like Table 1.

**Table 1**  
**Initial Strategy Matrix**

		B	
		Careful	Careless
A	Careful	8, 8	-7, 10
	Careless	10, -7	-5, -5

Because A and B share the same reaction function, we can know the whole picture via analyzing one of them. According to "Strict Bad Strategy Elimination Method", as for B, no matter what strategy A takes, careful is the bad strategy. Specifically, when A choose careful, because  $10 > 8$ , B will take careless; when A choose careless, because  $-5 > -7$ , B will stay with careless. Namely, careless is the better choice for B, then the model becomes Table 2.

**Table 2**  
**B's Better Strategy**

		B
		Careless
A	Careful	-7, 10
	Careless	-5, -5

At this time, as for A, because  $-5 > -7$ , A will definitely take careless. Then the model changes to Table 3.

**Table 3**  
**A Nash Equilibrium**

		B
		Careless
A	Careless	-5, -5

Here we get a Nash Equilibrium, each party will take careless strategy. This result perfectly matches with the conclusion we got before: A rational man has no incentive in Negotiorum Gestio. This phenomenon is so obvious that thieves know exactly, so they can steal sitting back and relax. In the personal perspective, even if a person was warm-hearted and delighted to take careful of other's business, normally, others would take this for granted and keep careless because they would harvest the maximum revenue without any cost. In a long term, the warm-hearted person is highly likely to give up, in the light of her/his benefit is -7, less than -5. Then (-5, -5) equilibrium backs. However, in the view of societal welfare, when (-5, -5) equilibrium reaches, societal welfare is  $-5 + (-5) = -10$ ; when one player takes careful and the other takes careless, the societal welfare is  $10 + (-7) = 3$ ; when both players choose careful, it is  $8 + 8 = 16$ . As a consequence, when each player takes careful, in other words, cooperation, will bring the best return for

the society as a whole. In the meanwhile, nevertheless, the (-5, -5) equilibrium brings the worst societal welfare. Although cooperation requires -2 cost, it has the best societal welfare and second best personal benefit, while the (-5, -5) equilibrium has worst societal welfare and second worst personal benefit. Thus, when each player takes careful instead of careless, a Pareto Improvement realizes. Here, even an economic rational man will choose careful strategy and this is the incentive for Negotiorum Gestio.

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## CONCLUSION

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There is a conflict between Negotiorum Gestio's intention and Rational Man Hypothesis, the former wishes people to help each other but offering no incentive for an economic rational man. In theory, no one will do the management, actually, hundreds of judicial cases in practice. Given these contradictions, we build a game theory model based on university self-study room example. According to this paper's theoretical deduction and game theory analysis, initially, an economic rational man does have no incentive for Negotiorum Gestio. Then, when taking

societal welfare into consideration, a Pareto Improvement will be brought by each player via cooperation, which provides even a rational man with sufficient incentive for Negotiorum Gestio.

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