PUBLIC–PRIVATE PARTNERSHIP IN LAND COMPENSATION FOR AN ECO-CULTURAL PARK: GAME THEORETICAL ANALYSIS

SAISOMPHORN LARHSOUKANH & CHENGZHANG WANG
School of Economics and Management, Southwest Jiaotong University, China

ABSTRACT
This study focuses on compensation issues in Luang Namtha province (player LNT), Laos, where the laissez faire compensation seems widely inapplicable. Solving the problem of an eco-cultural Park, a public-private partnership investment project that has been delaying since 2011, we argue, lies in readjusting the bargaining power between affected households and player LNT backed by the project investor. However, in the de facto household's perspective, the game is merely a Chicken game, which is described by player LNT's harsh penalty based on Ultimatum or Dictatorship game that appears not be prescribed strictly. We find to enhance the ex-ante sustainability of the compensation the autocratic/unautocratic style of the provincial leadership and the household's bargaining power can be key. Specifically, the project investor should contribute to the compensation payment based on the leadership style and the household's bargaining power rather than player LNT's monetary penalty system. Lastly, we discuss the household's expected payoff based on random leadership style.
Keywords: compensation for land acquisition, public–private partnership, chicken game, threat game, bargaining power, Laos.

1 INTRODUCTION

Investment promotion under sustainable development initiatives is known as usual routine in a local government report in Luang Namtha province (player LNT), Laos. Currently, only Banpe (baan-pae) investment project which player LNT aims to boost eco-cultural tourism in its provincial town (see Fig. 1), and attempts to settle compensation claims of land acquisition for public purpose. Heated, the dispute is concerning "below-average compensation" [1]. Evidently, 18 out of total 119 affected households (or 13.14%) do not accept player LNT's compensation [2]. However, almost half of the total plot of land (or 42.76%) belong to these 18 de facto households (player 18HH). In fact, the Memorandum of Understanding (MOU) on investing in the project so-called an eco-cultural park was signed on 30 November 2011 and delayed until now. In addition, early August 2017 player LNT approved a proposal for granting 30-year land concession to the tourism investor so-called the tourism supply chain investor (player TSC) as a public–private partnership (PPP) project. Failed, again, the attempt (the PPP project) acts as the signal to player 18HH how the punishment based on the Ultimatum game or the Dictatorship game will be administered.

This study argues that the key issue for defining and solving difficulties lies in readjusting bargaining power between player 18HH and player LNT backed by player TSC. The direct challenge to player LNT's game is player 18HH has special bargaining power because some of them were former members of political leaders in the province who still have important influence on resolving the problem [3]. Our argument develops over two steps. First, in the player 18HH's perspective, the land compensation dispute is captured by a Chicken game, an anti-coordination game, since player LNT has tried to signal the bald move toward appropriate punishment for player 18HH. To get close to the essence of today's problem, we investigate player LNT's mixed strategy, and propose a mixed Nash equilibrium to solve the problem. Second, in our perspective, the game is communicational. Evidently, according to

WIT Transactions on Ecology and the Environment, Vol 217,
www.witpress.com, ISSN 1743-3541 (on-line)
doi:10.2495/SDP180411

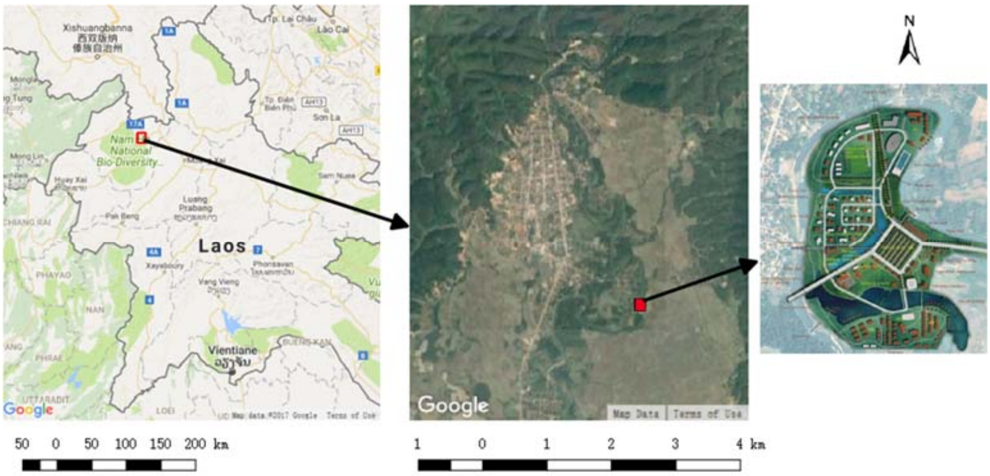


Figure 1: The planned PPP project of Banpe eco-cultural park.

the district committee's report about land compensation for the delaying project [2], between 5 September and 3 November 2016, as a first step, the committee invited chief deputies from district and provincial fronts for national construction, and senior ethnic representatives and village heads from each affected village to meet and discuss how to solve the issue for public purposes acknowledged in the district socio-economic development plan. As a second step, the committee went to each village to pay the land compensation based on provincial rate (P_{LNT}). As a result, the majority of affected villagers (87%) accepted the compensation with the exception of player 18HH. This is a threat game, which is negotiable based on player's bargaining power. Usually, local governments in Laos including player LNT attains its dominant bargaining position of land acquisition for public purpose. This study, however, seems to suggest the opposite. Player 18HH has eventually evolved toward achieving unique bargaining position. Specifically, if we follow a Nash bargaining result, then player 18HH will face tough choices whether to pursue the negotiating solution or to resort to brinkmanship.

Our contributions undergo two-step process. First, we aim at analyzing the PPP with bargaining power problem, the negative externality, which are central to the delaying project. Specifically, player 18HH is the one who can produce unfortunate result of the whole game. For example, based on bureaucratic hierarchy of Laos, player 18HH can pose a threat to bring the problem to central authorities including the National Assembly so the project (i.e., eco-cultural park) appears not to fit the definition of ecological conservation and sustainable development rather than for-profit park. This is a game of credible threat. Second, we consider the situation in which the sustainability of the compensation bargaining is based on player TSC's contribution.

2 THE PLAYER 18HH'S CHICKEN GAME

First, at a quick glance, the game of Fig. 2(a) seems to be designed for a simple bargaining game, which players can offer or reject freely. However, player 18HH's rejection will be coped with player LNT's punishment such as fines since player LNT has recognized the delaying project as for public purpose. The most likely explanation about the punishment imposed by player LNT for "antisocial behavior" rests on Melis and Semmann [4]. Therefore, in the player 18HH's perspective, he/she is simply playing a Chicken game with asymmetric payoff. Mathematically, let U_{18HH}^{min} be player 18HH's minimum expected payoff, which is based on benefit and cost analysis. Specifically,

$$U_{18HH}^{min} = P_{LNT}\Xi_{18HH} - \mathrm{C}_{18HH}, \tag{1}$$

where P_{LNT} is the value of compensation payment per hectare authorized by player LNT. Ξ_{18HH} and C_{18HH} are player 18HH's area of land (i.e., hectare), and general costs (i.e., transportation costs, opportunity costs and so on), respectively. Let U_{18HH}^{*} denote player 18HH's payoff determined by the above-average compensation payment (or above minimum payoff), which is based on player TSC's contribution (P_{TSC}^{*}). We can write an equation

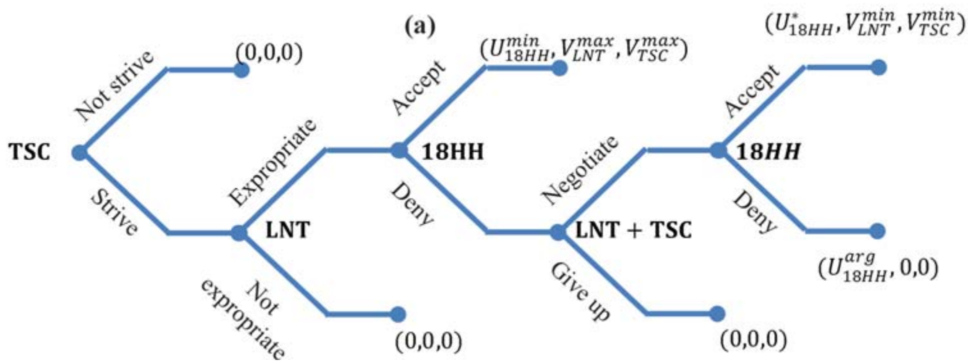
$$U_{18HH}^{*} = (P_{LNT} + P_{TSC}^{*})\Xi_{18HH} - \mathrm{C}_{18HH}. \tag{2}$$

Let U_{18HH}^{arg} be player 18HH's arbitrary (arguing) outcome, meaning that he/she can sell their plot of land at market price, or can earn higher income by doing something else. U_{18HH}^{arg} is characterized by $U_{18HH}^{arg} \geq U_{18HH}^{*}\Xi_{18HH} - \mathrm{C}_{18HH} - F$. Based on eqn (2) we obtain

$$U_{18HH}^{arg} \geq (P_{LNT} + P_{TSC}^{*})\Xi_{18HH}^{2} - (1 + \Xi_{18HH})\mathrm{C}_{18HH} - F, \tag{3}$$

where F is the punishment, which is administered by player LNT. In addition, player LNT and player TSC can place high expected value (i.e., V_{LNT}^{max} *and* V_{TSC}^{max}, respectively) of the delaying project, or low value (i.e., V_{LNT}^{min} *and* V_{TSC}^{min}). We refer to Fig. 2(a) how players interact with each other. Notably, we shall work under a Chicken game condition as $U_{18HH}^{arg} > U_{18HH}^{*} > U_{18HH}^{min} > -F$. We refer to Fig. 2(b) for numerical example. We also see the rest of affected households can sometimes free-ride.

(a)



(b)

		Player TSC Player LNT Offer above-average compensation	Offer below-average compensation
Player 18HH	Accept	$U_{18HH}^{*}, V_{LNT}^{min}, V_{TSC}^{min}$	$U_{18HH}^{min}, V_{LNT}^{max}, V_{TSC}^{max}$
	Deny	U_{18HH}^{arg}, 0,0	$-F$, 0,0

For example, $U_{18HH}^{arg} = 8$, $U_{18HH}^{*} = 2$, $U_{18HH}^{min} = 1.4$, and $F = 1$. Unit: USD 1,000 per hectare.

Figure 2: (a) The Game Tree; (b) The Chicken game and its numerical example.

www.witpress.com, ISSN 1743-3541 (on-line)

Clearly, there are three solutions for the Chicken game including {accept, offer below-average compensation}, {deny, offer above-average compensation}, and {the mixed strategy}. In this section we attempt to solve the mixed strategy of the delaying project. Specifically, we attempt to estimate the value of U_{18HH}^{*} and P_{TSC}^{*}, which are amplifying signals for value of U_{18HH}^{arg}, the player 18HH's arbitrary payoff (eqn (3)). Notably, our solutions are based on sub-game perfect equilibrium of sequential game with complete information.

2.1 Lemma 1

In the player 18HH's perspective, let δ be the probability for player LNT's mixed strategy of the Chicken game. We can estimate player 18HH's arbitrary expected payoff $\left(U_{18HH}^{arg}\right)$ at

$$U_{18HH}^{arg} = U_{18HH}^{*} - U_{18HH}^{min} - F + \frac{F + U_{18HH}^{min}}{\delta}. \qquad (4)$$

Proof. The solution for player LNT's mixed strategy based on Fig. 2(b) is agreed upon $\delta U_{18HH}^{*} + (1-\delta)U_{18HH}^{min} = \delta U_{18HH}^{arg} + (1-\delta)(-\mathrm{F})$. After a few algebraic steps we get $U_{18HH}^{arg} = U_{18HH}^{*} - U_{18HH}^{min} - F + \frac{F + U_{18HH}^{min}}{\delta}$.

Our intuitive judgment is based on player 18HH's arbitrary value of compensation $\left(U_{18HH}^{arg}\right)$ based on eqn (2) and (3). Once U_{18HH}^{*} or P_{TSC}^{*} are known, we can solve the problem easily. Unfortunately, it seems our Chicken game offers no easy solution because it is challenging to determine the probability δ. In principle, the probability can be suggested by "outside observer" [5], however, it remains nearly impossible to send such outside observer because of player LNT's signal as autocratic leadership style based on the Ultimatum game or the Dictatorship game. In addition, player LNT was inevitably doomed to failure in deploying the legitimate tactic from the start [6] so after signing the MOU initiating the delaying project in 2011 it made a confusing signal for recognizing the project as for public purpose rather than a for-profit park. Based on Madani [6], player LNT has happened to prefer chickening out; as a result, its harsh penalty seems not be prescribed strictly, which leads us to Section 3, the threat game. To present the study we make use of the notation as shown in Table 1.

3 THE THREAT GAME

In our perspective, the game is never a Chicken game, it is merely a threat game regardless of the Ultimatum game or Dictatorship Game. We now analyze a bargaining problem. Like a game with complete information and by using backward induction, the solution of the threat

Table 1: Main notation used in the study.

$U_{18HH}^{min}, U_{18HH}^{*}, and\ U_{18HH}^{arg}$	The player 18HH's minimum payoff, above minimum payoff, and arbitrary (arguing) payoff, respectively.
$V_{LNT}^{min}\ and\ V_{LNT}^{max}$	The player LNT's minimum and maximum values of the delaying project, respectively.
$V_{TSC}^{min}\ and\ V_{TSC}^{max}$	The player TSC's minimum and maximum values of the delaying project, respectively.
δ	The probability for player LNT's mixed strategy of the Chicken game.

game is to obtain the payoff vector $(U_{18HH}^{arg}, V_{LNT}^{min})$ (see Fig. 2(a)). The disagreement point is, therefore, the payoff vector $(U_{18HH}^{*}, V_{LNT}^{max})$. The objective function of the bargaining game is to maximize $\mathcal{L}_{game} = \left(U_{18HH}^{arg} - U_{18HH}^{*}\right)^{\beta}\left(V_{LNT}^{min} - V_{LNT}^{max}\right)^{1-\beta}$. Where β is player 18HH's bargaining power. Again, in the player 18HH's perspective, the objective function becomes

$$\max_{U_{18HH}^{*}>0} \mathcal{L}_{18HH} = \left(U_{18HH}^{arg} - U_{18HH}^{*}\right)^{\beta}\left(U_{18HH}^{*} - U_{18HH}^{min}\right)^{1-\beta}. \tag{5}$$

Meaning that, for example, player LNT can achieve the minimum value V_{LNT}^{min} and the maximum value V_{LNT}^{max} of the delaying project, if player 18HH accept the compensation U_{18HH}^{*} and U_{18HH}^{min}, respectively.

3.1 Lemma 2

In our perspective, by using a threat game we can estimate player 18HH's optimal expected payoff at

$$U_{18HH}^{arg} = \frac{1}{1-\beta}\left(U_{18HH}^{*} - \beta U_{18HH}^{min}\right). \tag{6}$$

Proof. From eqn (5), the first-order derivative with respect to U_{18HH}^{*} gives us a maximized solution. That is, $\partial\mathcal{L}_{18HH}/\partial U_{18HH}^{*} = \beta\left(U_{18HH}^{arg} - U_{18HH}^{*}\right)^{\beta-1}(-1)\left(U_{18HH}^{*} - U_{18HH}^{min}\right)^{1-\beta} + \left(U_{18HH}^{arg} - U_{18HH}^{*}\right)^{\beta}(1-\beta)\left(U_{18HH}^{*} - U_{18HH}^{min}\right)^{1-\beta-1} = 0$. After algebraic manipulations, we can simplify to $U_{18HH}^{arg} = \left(U_{18HH}^{*} - \beta U_{18HH}^{min}\right)/(1-\beta)$.

3.1.1 Theorem

Based on the PPP, Player TSC can contribute to solve the land compensation problem by providing the optimal compensation (P_{TSC}^{*}) satisfying

$$P_{TSC}^{*} = \frac{1}{\beta}(1-\beta)\left(\frac{1}{\delta} - 1\right)\left(P_{LNT} + \frac{F - \mathrm{C}_{18HH}}{\Xi_{18HH}}\right). \tag{7}$$

Proof. First, we obtain an equilibrium value of U_{18HH}^{arg} based on results of Lemma 1 and 2 as follows $U_{18HH}^{arg} = \left(U_{18HH}^{*} - \beta U_{18HH}^{min}\right)/(1-\beta) = U_{18HH}^{*} - U_{18HH}^{min} - F + \left(F + U_{18HH}^{min}\right)/\delta$. Next, simple algebra shows that $U_{18HH}^{*} = \left[\left(2\beta + \frac{(1-\beta)}{\delta} - 1\right)U_{18HH}^{min} + \left(\frac{1}{\delta} - 1\right)(1-\beta)F\right]/\beta$. Based on eqns (1) and (2) we find $(P_{LNT} + P_{TSC}^{*})\Xi_{18HH} - \mathrm{C}_{18HH} = [(2\beta + (1-\beta)/\delta - 1)(P_{LNT}\Xi_{18HH} - \mathrm{C}_{18HH}) + (1/\delta - 1)(1-\beta)F]/\beta$. Again, routine algebra gives us $P_{TSC}^{*} = (1-\beta)(1/\delta - 1)(P_{LNT} + (F - \mathrm{C}_{18HH})/\Xi_{18HH})/\beta$ ∎

Not surprisingly, the theorem reaffirms player LNT's monetary penalty (F) seems to unsubstantially influence how much player TSC provides the compensational contribution (P_{TSC}^{*}). For example, in Luang Namtha province, Lao PDR, a typical monetary penalty is not to provide the provincial rate of compensation (i.e., $P_{LNT} = 0$) to player 18HH [7]. Graphically speaking, although $P_{LNT} = USD\ 2000$ per hectare (see Fig. 3), the current penalty system seems economically inefficient as we apply the penalty 50 times $(F = 5000)$ heavier than the base value $(F = 100)$ in order to look effective (the green dotted line in Fig. 3(b)). In addition, the monetary punishment illustrates minor-to-no differences in the punishment system efficacy if player LNT signals a bold move toward stronger probability $\delta \to 1$, or if player 18HH has tremendous bargaining power $\beta \to 1$. Clearly, the stronger probability δ and the high bargaining power β, the lower value of the compensation (P_{TSC}^{*}), meaning that player TSC can reduce its cost of doing business. Significantly enough, however, the probability δ may be under the impact of the player LNT's leadership style, which leads us to consider further investigation below.

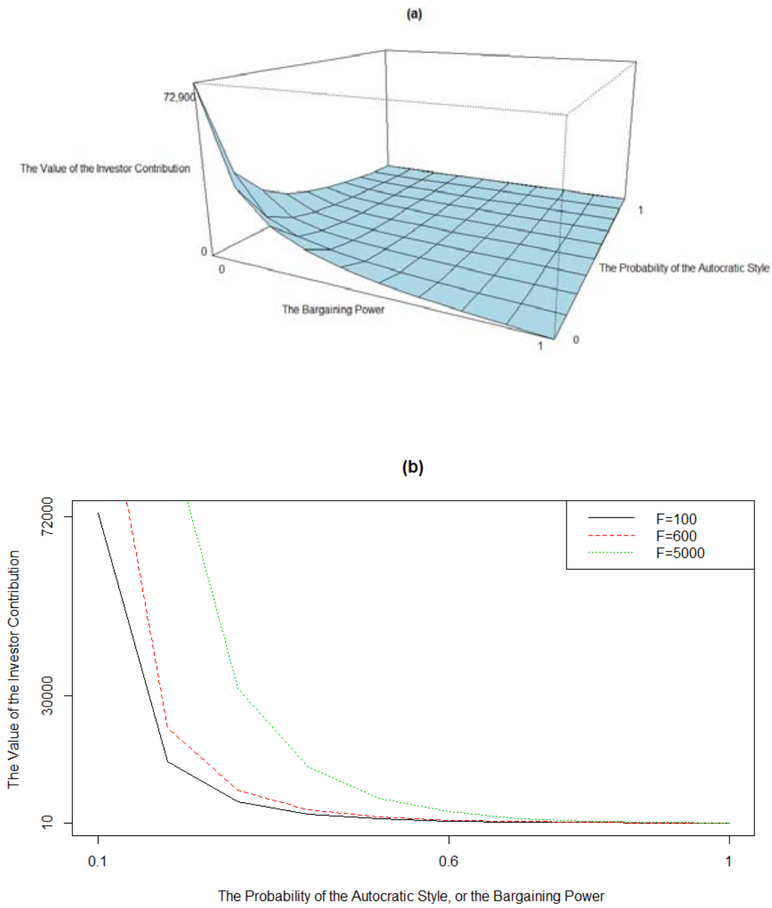


Figure 3: Player TSC's compensational contribution (see R-code in the Appendix).

Table 2: The ex-ante sustainability in land compensation based on leadership style.

Bold move (Dictatorship game)	Defensive move
$\delta = 1$	$\delta = 1/2$
$P_{TSC}^{*} = \frac{1}{\beta}(1-\beta)\left(\frac{1}{1}-1\right)\left(P_{LNT} + \frac{F - C_{18HH}}{\Xi_{18HH}}\right)$	$P_{TSC}^{*} = \frac{1}{\beta}(1-\beta)\left(\frac{1}{1/2}-1\right)\left(P_{LNT} + \frac{F - C_{18HH}}{\Xi_{18HH}}\right)$
$P_{TSC}^{*} = 0$	$P_{TSC}^{*} = \frac{1}{\beta}(1-\beta)\left(P_{LNT} + \frac{F - C_{18HH}}{\Xi_{18HH}}\right)$

4 DISCUSSION AND CONCLUSION

First, we discuss the sustainability of, or the carrying capacity for [8] the PPP in land compensation. Based on the theorem, not surprisingly, player TSC may support the bold prediction including the Dictatorship game since he/she is able to meet at a minimal cost of doing business regardless player 18HH's bargaining power (see Table 2).

In addition, our study therefore calls for Pareto improvement. Probably, the defensive move (i.e., $\delta = 1/2$) as shown in Table 2 shall achieve a workable solution. However, the Dictatorship game becomes Paretoly unacceptable because player TSC can enjoy free riding the compensation game.

An alternative solution for the Dictatorship game is based on two-random value of δ [9]. We can interpret δ as two-random leadership styles such as

$$\begin{cases} \delta \\ 1-\delta \end{cases}, \; which\ implies \begin{cases} \text{autocratic style,} \\ \text{unautocratic style.} \end{cases} \tag{8}$$

Based on the result of the theorem, player LNT can therefore act as the principal and select the solution dictatorially. As a result, $P^*_{TSC} = 0.5/\beta\left[(1-\beta)\left(\frac{1}{\delta}-1\right)(P_{LNT}+(F-C_{18HH})/\Xi_{18HH})\right] + 0.5/\beta\left[(1-\beta)\left(\frac{1}{1-\delta}-1\right)(P_{LNT}+(F-C_{18HH})/\Xi_{18HH})\right]$. This problem after some algebra reads $\delta(1-\delta) - 1/\left(2\beta P^*_{TSC}/(1-\beta)\left(P_{LNT}+\frac{F-C_{18HH}}{\Xi_{18HH}}\right)+2\right) = 0$. For simplicity, let $A = 1/\left(2\beta P^*_{TSC}/(1-\beta)\left(P_{LNT}+\frac{F-C_{18HH}}{\Xi_{18HH}}\right)+2\right)$. We now obtain a quadratic equation $-\delta^2+\delta-A=0$. Solving this equation, we employ $\sqrt{\Delta}= \sqrt{1^2-4(-1)(-A)} \geq 0$. The solution for the quadratic equation is based on $1-4A \geq 0$. Therefore, $A \leq 1/4$. Now we can write the equation of player TSC's contribution to the compensation as

$$P^*_{TSC} \leq \frac{1}{\beta}(1-\beta)\left(P_{LNT}+\frac{F-C_{18HH}}{\Xi_{18HH}}\right). \tag{9}$$

Based on eqn (9), unlike the theorem, we see random leadership styles seem unable to explain any effects upon finding the optimal value of P^*_{TSC} except the bargaining power of player 18HH. Fortunately, we now find the value of player 18HH's arbitrary expected compensation $\left(U^{arg}_{18HH}\right)$, which is based on eqns (3) and (9) as follows

$$U^{arg}_{18HH} \geq \frac{1}{\beta}\left(P_{LNT}+(1-\beta)\left(\frac{F-C_{18HH}}{\Xi_{18HH}}\right)\right)\Xi^2_{18HH} - (1+\Xi_{18HH})C_{18HH} - F. \tag{10}$$

In addition, considering worst-case scenario and abandoning the delaying project in favor of limiting such negative externalities including political argument, an immediate solution to player LNT's problem is to undergo bidding process.

In all probability, an attempt to strengthen the PPP should be made by being aware of cronyism so player TSC can be the recipient of corruption and cronyism indirectly, or directly [10].

4.1 Conclusion remarks

Our study goes into the PPP in land compensation for the quasi-public park in Luang Namtha province, Lao PDR. The delaying project was possibly caused by two arguments about land acquisition including for the "public purpose" and "fair" compensation [1] as Lao economy is in transition striving to adequately protect property rights, that is the laissez faire compensation seems widely inapplicable. We aim to solve the ongoing problem based on game theoretical analysis. First, we see player LNT's harsh penalty seems not be prescribed strictly such as monetary penalties because player LNT has appeared to prefer chickening out. This is a consequence of what we view two games (i.e., Chicken and Ultimatum/Dictatorship games) from two different perspectives of two players (i.e., player 18HH and player LNT) involved. Notably, the punishment is administered by player 18HH's Chicken game scenario which is described by the player LNT's Dictatorship or Ultimatum games. We find the PPP can solve the problem as player TSC should contribute to the compensation payment based on player LNT's leadership style and player 18HH's bargaining power. A topic for future research should be based on Markov chain to solve the ongoing problem provided player 18HH's current denying ratio (18/119) is the initial state of distribution matrix.

APPENDIX

```
Figure 3###3D (a)
P=1000
R=1
C=200
F=100
b <- seq(0.1,1,len=10)
δ <- seq(0.1,1,len=10)
g <- function(b,δ){ Ptsc <- ((1–b)/b)*(1/δ–1)*(F+P*R–C)/R }
Ptsc <- outer(b,δ,g)
Ptsc
persp(b, δ, Ptsc, main="(a)", axes=FALSE, theta = 25,expand = 0.5, col = "lightblue")
##
text(x=0.553, y=–0.2, label="The Probability of the Autocratic Style", adj=1)
text(x=0.34, y=–0.1, label="1", adj=1)
text(x=0.23, y=–0.32, label="0", adj=1)
##
text(x=–0.1, y=–0.27, label="The Bargaining Power", adj=1)
text(x=0.17, y=–0.33, label="1", adj=1)
text(x=–0.37, y=–0.2, label="0", adj=1)
##
text(x=–0.43, y=–0.03, label="The Value of the Investor Contribution", adj=1)
text(x=–0.42, y=0.09, label="72,900", adj=1)
text(x=–0.4, y=–0.17, label="0", adj=1)
Figure 3###(b)
δ=b=seq(0.1,1,len=10)
P=1000
R=1
C=200
F=100
##
Ptsc <- ((1–b)/b)*(1/δ–1)*(F+P*R–C)/R
Ptsc
plot(Ptsc,main="(b)", type="l",col="1",lty=1,axes=FALSE,
xlab="The Probability of the Autocratic Style, or the Bargaining Power",
ylab="The Value of the Investor Contribution")
##
Ptsc2<- ((1–b)/b)*(1/δ–1)*(600+P*R–C)/R
```

```
Ptsc2
lines(Ptsc2,type="l",col="2",lty=2)
##
Ptsc3<- ((1–b)/b)*(1/δ–1)*(5000+P*R–C)/R
Ptsc3
lines(Ptsc3,type="l",col="3",lty=3)
##
legend("topright",legend=c("F=100","F=600","F=5000"),
col=c("1",(="2","3"), lty=1:3)
box()
axis(side=1, at=c(1,6,10), labels=c(0.1,0.6,1.0))
axis(side=2, at=c(10,30000,72000), labels=c(10,30000,72000))
```

REFERENCES

[1] Deininger, K. & Jin, S.Q., Securing property rights in transition: Lessons from implementation of China's rural land contracting law. *Journal of Economic Behavior & Organization,* **70**(1–2), pp. 22–38, 2009. DOI: 10.1016/j.jebo.2009.01.001.

[2] L.N.D. Committee, *Report on the Progress of the Land Compensation for Banpe Eco-cultural Park (Lao Language)*, Luang Namtha Province, 2016.

[3] Alton, C., Bluhm, D. & Sananikone, S., Para Rubber Study Hevea brasiliensis Lao PDR, *GTZ, Lao German Program Rural Development in Mountainous Areas of Northern Lao PDR*, Vientiane, Lao PDR, 2005.

[4] Melis, A.P. & Semmann, D., How is human cooperation different? *Philosophical Transactions of the Royal Society B: Biological Sciences*, **365**(1553), pp. 2663, 2010.

[5] Maschler, M., Solan, E. & Zamir, S., *Game Theory*, Cambridge University Press, 2013.

[6] Madani, K., Game theory and water resources. *Journal of Hydrology*, **381**(3–4), pp. 225–238, 2010.

[7] Governor, L.N., *Provincial Decree on Compensation Payment for Boten Economic Zone (Lao Language)*, Luang Namtha Province, Laos, 2004.

[8] Thomas, F., Addressing the measurement of tourism in terms of poverty reduction: Tourism value chain analysis in Lao PDR and Mali. *International Journal of Tourism Research*, **16**(4), pp. 368–376, 2014. DOI: 10.1002/jtr.1930.

[9] Myerson, R.B., *Game Theory: Analysis of Conflict*, Harvard University Press, 1997.

[10] Kurtz, M.J. & Schrank, A. Growth and governance: Models, measures, and mechanisms. *Journal of Politics,* **69**(2), pp. 538–554, May 2007.