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Business Strategies in Intellectual Property Rights: An Example of Patent Disputes Solutions in the Taiwan High-Tech Industry

Chin-Lung Lin[1], Yu-Ting Chen[1,†], Sheng-Hsien Lee[2] and Yuan-Kai Chiang[1]

[1]Department of Business Administration, Tunghai University, Taiwan, Province of China

[2]Department of Business Administration, Yu Da University of Science and Technology, Taiwan

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Given the trend of knowledge based economy, knowledge innovation is undergoing such constant updation every minute that intellectual property related technology, management and legal protection mechanism have become the core of business competition in the high tech industry. Since changes in the legal system is often unable to catch up in time, the improper use of the patent rights as a strategy of business competition, causes imbalance in the legal system. This research uses the cobweb theory as the time series model to take the procedural justice and substantive justice as the coordinate axis to explore how business managers present the constantly changing scenario of over production or shortage on the coordinate axis, under legal rationality and economic rationality. It was found that the system may effectively adapt to the rapid change of the environment, under the premise to respect the rule of law. In contrast to sending cease and desist letter, issuing injunction order, and litigation; business managers mostly choose arbitration, which may regulate the differences between the procedural justice and substantive justice, thus allowing the system to maintain equilibrium.

Keywords: Knowledge based economy, legal rationality, economic rationality

An important outcome of knowledge based economy and globalization[1] has been that knowledge innovation is undergoing transformation every minute. As a result technology related to intellectual property right, management and legal protection mechanisms have become the core of business competition.[2] Thus has arisen the double effect of "technology legalization" and "legal economization". However, due to the fact that the design of legal mechanism is often unable to catch up with the speed of intellectual property rights; it is frequently improperly used as a tool for business competition strategies, causing an increase in the number of conflicts arising from "knowledge gap", which further causes an unbalanced legal system at all time. For instance, an 'own brand manufacturer' (OBM) often relies on its own advantages such as capital, its protection and uses cease and desist letters, injunctions and cumbersome law proceedings, to force the relatively less competitive counterparts out of the market. Currently, the high-tech industry in Taiwan is in an extremely competitive mode and the management in companies is not conscious of being affected by "knowledge gap" and of proposing proper measures in time, which has become an issue that is worth studying further.

†Corresponding author: Email: jackchen0038@gmail.com

In the process of rationalization in modern society, legal rationality provides every participant involved in economic activity with a highly predictable and precise game rule. Thus the action takers may calculate their own operational space based on this rule to assess the expected legal efficiency and responsibility which they shall bear. Thus legal rationality must follow "procedural justice".[3] However, the core value of the fairness and justice emphasized in the law cannot overlook the price the society has paid for it. From the legal economic analytic view, the law shall also change along with the spatial and temporal change of the social environment. But a change in law is necessary not only in the core value of the fairness and justice, but it must also seek to find a balance in the interests of the modern society. In consideration of the price, cost and efficiency stressed on maximization of rationality, it is better to create greater social wealth with less social cost to realize substantive justice. Consequently, speaking of the integrity of the legal system, it is not only based on the request and claim of substantive rights, but also serves as a means of rights to trial-level relief program to assure the obtaining of physical rights and damage compensation quickly and efficiently so as to realize the social fairness and justice.

In the ***Mathews*** v ***Eldridge*** case of US Federal Court in 1976, the judgment of the court first revealed a cost-effective analysis to make the idea of efficiency and cost of the economic rationality to internalize into the due process of the law. In view of this, when handling the patent dispute cases, business managers must consider not only how to ensure the patent effectiveness, but also how to maximize the patent effects. Therefore, the cost, benefits and fees and the economic incentives derived from patent dispute cases have become a leading concern for business managers. So while choosing to resolve patent dispute cases, business managers usually take decision based on rationality. Their concern is mostly how to control the time and cost under the principle of maximized effects of the business market efficiently to prevent the rigid proceedings system from delaying or causing loss of business opportunity, to solve the patent dispute cases as soon as possible and to bring business risk under control. Business managers will hence apply interchangeability of legal rationality and economic rationality in the course of accomplishing justice. Speaking of justice, in patent dispute resolution, there is a gap between the procedural justice and substantive justice. From the perspective of procedural justice, the emphasis is on legal rationality according to the due process of law, thereby increasing social cost and the number of legal dispute cases. As a result, the procedural justice curve constructed from the legal system in patents increases with time. On the other hand, from the perspective of substantive justice, the emphasis is on economic rationality to pursue the substantive justice, so that the parties will not lose business profits due to the protracted proceedings. Consequently, the substantive curve constructed from the system will decline as time goes by.

This study aims to apply the time series variable model to cobweb theory of economics to predict the possible trend in such variables. Business managers tend to choose arbitration over legal action because it is international, professional, confidential, efficient, and favourable to businesses. With this in mind, business managers tend to use arbitration than sending cease and desist letters. Thus the conflict of the procedural justice and substantive justice existing within the system apparently complies more with the rational equilibrium in the dynamic surrounding of the party concerned, which not only creates a win-win situation, but also maintains harmony among different enterprises. On the contrary, other solutions of patent dispute cases, including sending cease and desist letter, applying for injunctions, and filing a lawsuit, etc., are not the best choices to solve the problems; rather they are means of market competition strategy.

Literature Review

The Legal Rationality for Business Dispute Resolution

The process of rationality in modern society, represents not only the economic order, but also political order and legal order. Through generalization and systematization, legal rationality has high a level of predictability for economic standards of modern capitalism that enables legal order to offer a rule of game for everyone to calculate the operational space and to predict the foreseeable legal effects and responsibility. Legal order is based on the principle that practice of "due process of law" is a must. This is what a government must follow to govern the life, body, and property of the people, with the means following the substantive due process with great deal of rationality. Only thus will it be possible to embed the values of freedom, equality, human rights, democracy, and fairness and justice deep into the rule of law. Ever since the Great Charter of British (1215), the legal concept of the "due process of law" has gradually developed, and become an important basic principle of the US laws.

The idea of due process of law has also undergone modifications and adapted to the changes in society and nations. Thus the due process of law must ensure that the exercise of the legislation, judicial, and administration of a nation is based on fairness and rationality. But since each case is different in physical situation, content, requirement, the effects of the due process of law can vary too. Traditionally, the effect and evaluation of the due process of law simply emphasizes the practice of fairness and justice, without taking efficiency and cost into consideration. Since the problems of limited social resources and unequal distribution are getting serious, the cost-effective analysis model first revealed in the ***Mathews*** v ***Eldridge*** case judgment in due process of law[4], which officially internalizes efficiency and cost idea in economic rationality, should be inducted into the due process of law.

In addition, to emphasize the practice of fairness and justice, the modern due process of law should also take the cost-effective analysis constructed from economic rationality as the proportional relationship

between private interests and public interests, the risk to be wrongly deprived of, as well as the possible value guaranteed by any added or replaced procedure. In other words, the process of solving all kinds of legal disputes, according to modern due process of law, should not be time consuming and involve huge costs. Delayed justice is not in the interest of people involved in legal battles and makes them lose interest due to lack of fairness and justice in law.

The Economic Rationality for Business Dispute Resolution

Truly, legal value is diversified.[5] In addition to stressing fairness and justice, the law should also adapt the spatial and temporal changes in the social environment and balance the existing profits in society so as to realize the goals of fairness and justice.[6] The core value of justice and fairness of the law should not ignore the price of social cost,[7].that in addition to the core value of fairness and justice, the dynamic factors of the law should also be mainly based on the efficiency of the maximized rationality. Efficiency may create more social wealth with lower cost and in turn become one of the core values of the society. Legal economic analysis scholars have applied the calculation of the trading price and cost expenditure stressed in the economic order rules to study and explore the formation, structure, practice procedure, and its impact on the legal system, hoping to find an equilibrium between the legal fairness and justice and the social fairness and justice.

According to the founder of classical economic theory, father of economics – Adam Smith: if every member of the society made decisions in self-interest, and the seller and buyer mutually competed in the market; there will be an invisible hand to control the quantity assortment of the product, the distribution of the product, and the allocation of the elements to ultimately achieve the best efficiency. Classical economists believe the market economy has a self-regulation mechanism, if the government does not interfere; it will achieve an equilibrium status of the complete employment, maximized output, and stable commodity price. Thus in the completely free and competitive market, everyone will pursue the maximum efficiency and profit according to their freewill, and the traders will make decisions depending on the information spread in the market. Since supply may create its own demand[8], the market will be self-regulated to achieve the equilibrium status between the price and the demand and supply.

The Time Series Variable Model and Cobweb Theory

The purpose of using the time series model as a measurement method is to explore the relationship of the time series variables in the present and past to predict the possible trend of such variables and take it as a reference for decision making in the future. The basic theory of the time series method consists of the cobweb theory hypothesis in economics. It is the idea of long term equilibrium of the economic theory. If the equilibrium in the market really exists, it means there is "meaningful" equilibrium between price and trading volume in the market. On the other hand, if the long term value of the price is infinity, then the time series variables $t1 \rightarrow \infty$ means the market is not stable, because the long term equilibrium price of the market will become ∞. The cobweb theory hypothesis[9] is as follows:

$$\text{Demand Function}: \boldsymbol{Q_t^d} = {}_0 - {}_1\boldsymbol{P_t} \quad \ldots (1)$$

$$\text{Supplied Function}: \boldsymbol{Q_t^s} = {}_0 - {}_1\boldsymbol{P_t^*} \quad \ldots (2)$$

$$\text{Market Balanced Condition}: \boldsymbol{Q_t^d} = \boldsymbol{Q_t^s} \quad \ldots (3)$$

Of which, $\boldsymbol{Q_t^d}$ stands for the quantity of demand at time t; α_0 stands for intercept of the demand function; $\alpha_1 > 0$ means it meets the demand principle; $\boldsymbol{Q_t^s}$ stands for the quantity of supply during time t; β_0 stands for intercept of the supply function; $\beta_1 > 0$ means it meets the supply principle; $\boldsymbol{P_t}$ stands for the predicted future product price of the manufacturer at time t. The formula in (3) indicates the market equilibrium effects of the quantity on supply and demand during the time t.

The purpose of this research is to apply the time series variable model and cobweb theory of economics to predict the possible trend of such variables and take it as a reference for decision making in the future. Therefore, in order to find the best strategy for legal patent dispute solutions, this research attempts to use the cobweb theory as the time series model by taking the quantity and price as the coordinate axis and how business managers present the constant change of over production or shortage on the coordinate axis, under legal rationality and economic rationality, to make a choice between procedural justice and substantive justice in legal dispute solution. When the change in the procedural justice and substantive justice curve tends to be in equilibrium, it reflects the equilibrium of the gap between the two conditions, thus the system is able to

maintain a dynamic equilibrium point time after time. The cobweb theory hypothesizes the following:

Substantive Justice Function: $\boldsymbol{Q_t^s} = {}_0 - {}_1\boldsymbol{P_t}$ … (4)

Procedure Justice Function: $\boldsymbol{Q_t^P} = {}_0 - {}_1\boldsymbol{P_t^*}$ … (5)

Justice Balance Condition: $\boldsymbol{Q_t^s} = \boldsymbol{Q_t^P}$ … (6)

Here, $\boldsymbol{Q_t^s}$ stands for the quantity of substantive justice; α_0 stands for intercept of the demand substantive justice function; $\alpha_1 > 0$ means it meets the demand principle; $\boldsymbol{Q_t^P}$ stands for the quantity of procedural justice during the time t; β_0 stands for intercept of the procedure justice function; $\beta_1 > 0$ means it meets the supply principle; $\boldsymbol{P_t}$ stands for the predicted future value of legal justice at t time. Finally the meaning of the formula in (6) is that legal equilibrium conditions of procedural justice equal substantive justice during the time t. (Fig. 1).

Based on the above, this research offers the following hypothesis:

When quantity and price are used as the coordinate axis, the equilibrium point of procedural justice and substantive justice curves is arbitration (Fig. 2).

Method

In general, the solutions of patent disputes in high-tech industries can be many including warning letter, preliminary injunction, arbitration and litigation. However, while pursuing justice, the logical difference between economic and rationality and legal rationality corresponds to a gap between procedural justice and substantive justice. The content of this survey is based on procedural justice and substantive justice and was weighted from score 1 ~ 5 (5 is the highest score while 1 is the lowest score). Furthermore, the questions of survey included solutions towards patent disputes – procedural justice and substantive justice.

Participants and Design

The participants who filled the questionnaire for this research were judges, lawyers, professors of law departments, chief executive officers (CEO) of high-tech enterprises, legal supervisors, R&D engineers, and patent agents, etc. There were a total of 200 questionnaires handed out and 184 copies returned of which 147 were valid questionnaires. When characterized on academic background, there were 57 bachelors, 79 masters and 11 Ph D degree holders; occupation-wise there were 7 law officers, 11 lawyers, 38 public servants, 7 law professors, 14 CEOs, 6 legal supervisors, 8 patent agents, and 56 R&D personnel. In order delve deeper into the influence of occupation on the equilibrium, the occupations were divided into different categories, such as ones related to law, accounting for 69 people and ones not related to law accounting for 78 people.

Procedure

The information collected using the questionnaire in this research also included personal interview since the participants were mostly CEOs and law related personnel The following steps were taken before the questionnaires were collected:

(1) To ensure that the person being interviewed has a certain degree of background knowledge in the related field.
(2) To obtain consent of the interviewee and explain the purpose and motive of this research before asking questions.

The data was collected between October in 2012 to February in 2013.

Measures

According to secondary data collection[10].it was assessed that if the parties use the warning letter to resolve the patent dispute, it takes 7 days, and the cost is US$ 3.5. If the parties use the injunction route to

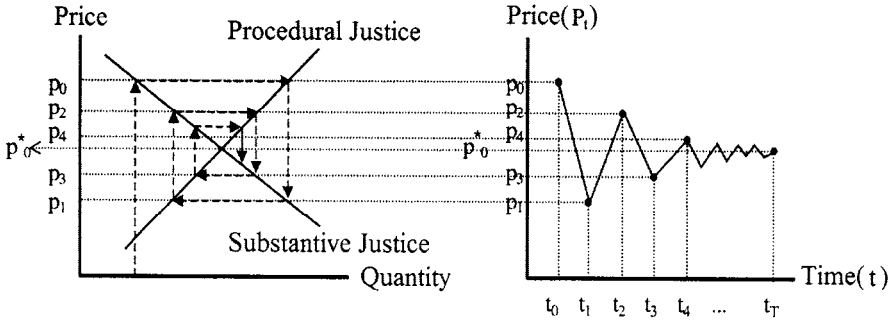

Fig. 1—The trend under Time Series – Procedural justice and substantive justice

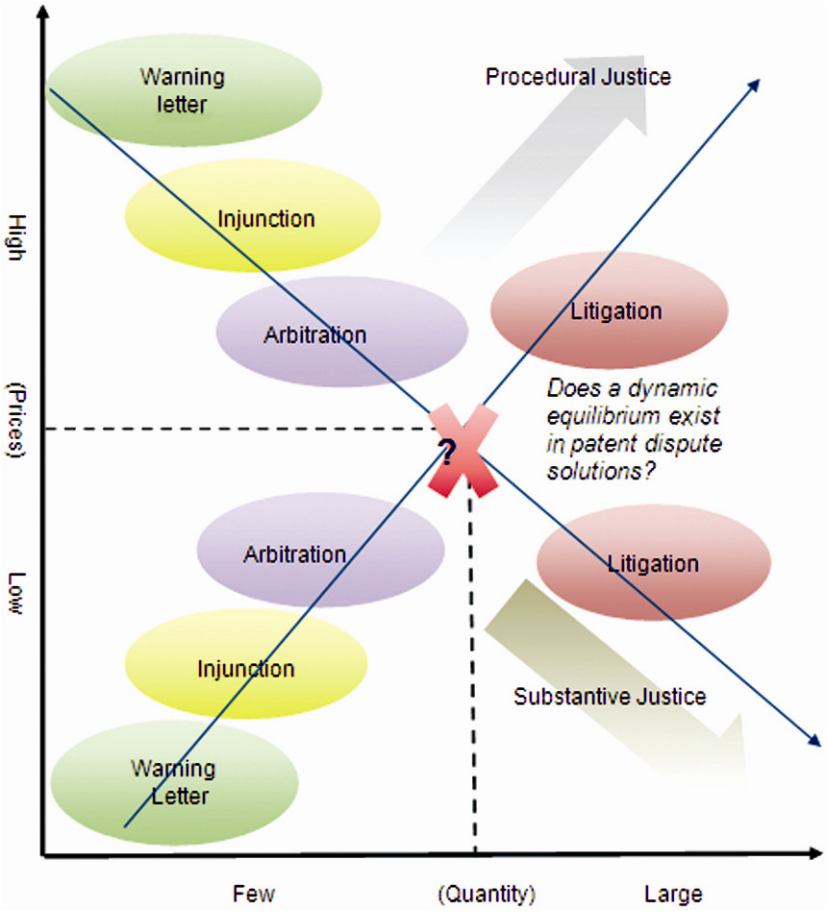

Fig. 2—Empirical analysis of balance in patent dispute solutions in dynamic equilibrium

resolve the patent dispute, it takes 75 days, and the cost is US$ 34.48. Furthermore, for the arbitration route one has to spend 90 days, and the cost is US$ 22000. Lastly, the litigation process may take as many as 480 days, and the cost is estimated at US$ 909226.

The persons who answered the questions were assumed to be knowledgeable enough to fill out the questionnaire. The currency used in this research is US dollars, for other currency, the exchange rate is 1 USD = 29 NTD (New Taiwan Dollar) or 1 Euro = 42 NTD.

Hypothesis Testing

The questionnaires of this research were examined after collection and those with incomplete answers or with mistakes were removed. The rest of the valid questionnaires were input with number and data to build files. Further, the Statitica10 package software was used for data analysis and handling. The data was analysed using regression method to get the regression lines of substantive justice and procedural justice. Finally, the two lines were drawn in same plane to find the point of intersection, which is the so-called dynamic equilibrium. The same steps were repeated three times for parts of the whole questionnaire.

The acquired regression line equation for substantive justice is Y=3.611783 - 0.00186*X (X is the number of days for all kinds of patent litigation needed; Y is the corresponding weight of substantive justice the interviewee assumed under the circumstance.

The acquired regression line equation of the procedure justice is Y=2.700298 + 0.002746*X (X is the number of days for all kinds of patent litigation needed; Y is the corresponding weight of procedural justice the interviewee assumed under the circumstance.

The point of intersection fell between 197 to 198 days as seen in Fig. 3

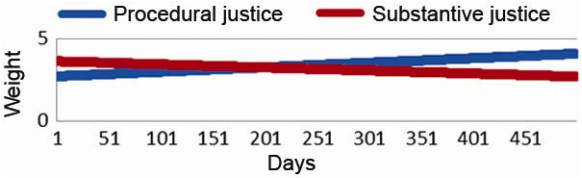

Fig. 3—The point of intersection between procedural justice and substantive justice

Legal Case Study: *Princo Corp* v *Philips Corp*

The Legal Case Background

Along with the rapid development of knowledge economy there are more and more high-tech OBM companies that depend on their financial backing and patent protection mechanisms to often manipulate patent rights and indulge in lengthy court proceedings as a part of their business strategy. In contrast many high-tech original design manufacturer (ODM) and original equipment manufacturer (OEM) companies not only do not have their own brand, own capital or patent assets, often they do not have their own technical or legal setup. Recently, OBMs taking advantage of transnational law have been to suing ODMs and OEMs for infringement in the name of exercising their legal rights. However, such action usually not only results in unfair competition in the market but also tests the competitive and cooperative relationship between national law and transnational law. Matters like those mentioned above are too numerous to be listed, and hence a case study of the lawsuit between Dutch Philips (CD OBM company) and Princo of Taiwan (CD-D OEM/ODM company) is illustrated and examined to explore the legal issues with regard to the patent dispute solutions.

At the end of 1980 and early 1990, Philips, Sony, Taiyo Yuden, and Ricoh worked together to research and develop recordable compact discs (CD-R) and rewritable compact discs (CD-RWs) and set up standard specifications on the Orange Book which was initially of the standard form applied in the CD-R market. In order to be able to collect royalties, Sony, Taiyo Yuden, and Ricoh jointly authorized Philips to request package licence to manufacturers who applied either the essential patent or not-essential patents to make CD-Rs and CD-RWs. The licensee was liable pay 3% or JP¥10 (whichever was higher) of the net sale price as the royalty as long as any of the patented techniques related to "Raaymakers Patents" or "Lagadec Patents" was applied.[11] Philips signed a Technology Licence Agreement with Princo and Gigastorage (Taiwan based companies). However, this licence agreement involved patent rights misuse and anti-competition provisions and as such the legitimacy of such patent licence agreement was highly doubtful. The related lawsuit proceeding of the same case was not only executed in Taiwan but was also filed in the United States of America and European Union.

Princo Technology of Taiwan was a manufacturer of the CD-Rs and CD-RWs. Since at the time signing the licence agreement with Philips, there was a sharp drop in the market price of compact discs (CD), Princo asked Philips to cut the patent licence fees which was rejected by Philips and as a result Princo was unwilling to renew the agreement when it expired in 2008. Philips therefore not only filed a patent lawsuit to request for patent licence royalties payment in Taiwan but also demanded that the International Trade Commission of the USA and the customs of the EU seize CD products made by Princo. The case went on for 12 years; the main facts from the case are as follows:

The Legal Proceedings in Taiwan

In 1999, Philips filed a patent lawsuit at Hsinchu District Court of Taiwan claiming that Princo should abide by the regulations of the licence agreement signed by both parties to pay the royalties. Princo pleaded that: (i) it was a manufacturer of CD-Rs and CD-RWs and that the conditional sale of the products having nothing to do with the patents of the two items should be deemed non-essential patents and therefore Philips was involved in violation of fair trade law; and (ii) Philips' market share of the CD sale was so high that it forced the licensee to cover the net profit with a price higher than the cost, and hence Philips did not meet the principle of equity in law and was probably involved in patent misuse. Nonetheless, Philips won the lawsuit in the Hsinchu District Court of Taiwan.[12] Princo refused to comply and appealed to the Intellectual Property Court, whose judgment remained the same as the Hsinchu District Court due to the fact that although the Fair Trade Commission and the Administrative Court thought that the joint licensing of Philips and the other manufacturers violated the regulation on Paragraph 2, Article 10 of the Fair Trade Law which deemed the agreement invalid; since Philips had signed the patent licence agreement with Princo, it could not be included in the invalid list. The Court hence overruled the appeal of Princo.[13] Princo then appealed to the Supreme Court which

reversed the original decision and returned the case to the Intellectual Property Court for judgment.[14]

In the course of the patent lawsuit filed by Philips at Hsinchu District Court of Taiwan against Princo to demand Princo to pay royalty, Princo not only requested for relief according to the patent litigation procedures but also has reported to the Fair Trade Commission of the Executive Yuan claiming that Philips violated the regulations of the Fair Trade Law on patent licence agreement and such patent licence agreement was invalid since 1999. In April 2002, the judgment of the Fair Trade Commission of the Executive Yuan declared that the royalty collected by Philips for the CD licence violated the regulation of Paragraph 2 (monopoly to improper maintenance of the price of goods), Paragraph 4 (other misuse of market place) of Article 10, and Article 14 (concerted action) of the Fair Trade Law. Philips did not accept the judgment of the Fair Trade Commission of the Executive Yuan and appealed further but was overruled and filed an administrative litigation in the Taipei Supreme Administrative Court, which decided to revoke the judgment of the Fair Trade Commission of Executive Yuan and maintain the original judgment in 2003.[15] However, the Fair Trade Commission of Executive Yuan R.O.C did not comply with the judgment and appealed. Later in 2007, the Taipei Supreme Administrative Court overruled the appeal of the Fair Trade Commission.[16] The Fair Trade Commission of Executive Yuan R.O.C appealed again and the Taipei Supreme Administrative Court overruled the appeal for retrial in 2009.[17]

Although a final verdict in this case was delivered at the Supreme Administrative Court, and it disposed again the appeal by the Fair Trade Commission of Executive Yuan R.O.C, the Fair Trade Commission still considered Philips, Sony, Taiyo Yuden, and Ricoh etc., violators of the relevant regulations of the Fair Trade Law; thus it demanded that such violation be stopped and the that the violators pay a fine, on 29 October 2009.[18] Philips appealed further but the appeal was overruled by the decisions of the Executive Yuan R.O.C on 12 August 2010.[19] Then, Philips filed a lawsuit in Taipei Supreme Administrative Court against the decisions of the Fair Trade Commission; the court ruled that this case should be reviewed by the Intellectual Property Court for rehearing.[20] Finally, the Intellectual Property Court too decided that Philips, Sony, Taiyo Yuden, and Ricoh, violated the relevant regulations of the Fair Trade Law and overruled the appeal of Philips on 23 April 2014.[21]

Litigation in USA

In 2002, Philips USA appealed to United States International Trade Commission (ITC) and claimed that Princo of Taiwan violated 19 U.S.C. § 1337(a)(1)(B)[22] and demanded that the import into USA of CD-R/CD-RW made by Princo be forbidden. Princo then appealed to ITC for counter-charge of patent misuse. ITC reached a final verdict on 31 March 2004 and ruled that Philips USA was involved in patent misuse thus denying the request of Philips USA which then appealed to United States Court of Appeals for the Federal Circuit (CAFC) in April 2004. This case was tried by CAFC which returned the case to ITC for investigation in September 2005. Later according to the ITC verdict of February 2006, it was decided that Princo violated the regulation on Article 337 of the Tariff Law of USA and Princo was forbidden to sell any CD-R/CD-RW products in the US territory. Princo immediately appealed to CAFC which decided in April 2009 that part of the original judgment be maintained and part remanded for retrial.[23] In August 2010, CAFC quoted the Antitrust Guidelines for the Licensing of Intellectual Property that was set up in 1995 to explain that negotiation and cooperation in R&D of new technology goods, cuts costs and promotes innovation rather than hindering competition. It decided that Philips USA did not indulge in patent misuse. This case was brought to the Supreme Court of the United States by Princo which in turn overruled the request of Princo in May 2011. It was not until 24 December 2013 that Princo and Dutch based Philips signed a formal settlement agreement in the matter of CD-R/CD-RW products.

The Legal Issues

The Competition between Economic Rationality and Legal Rationality

The dispute in this case was about the demand of Dutch based Philips to Princo of Taiwan to pay royalties for the patent. It appeared that Philips intended to exercise the legal rationality according to patent rights. However, what remained hidden was the consideration of economic rationality based on the enterprise market profit. That was why Philips tried every means for relief in patent disputes to maintain the profit in the global CD market. As a result Philips not only used the Patent Relief Procedure of Taiwan to file a lawsuit at Hsinchu District Court but also appealed to ITC of USA to promulgate the injunction. It is true that the serial legal relief actions of Philips

were not based on legal rationality but on the tremendous economic incentive hidden behind it that Philips must make good use of every legal relief procedure to maintain its economic profit.

For the same reason Princo, in addition to following the patent litigation procedure to seek relief, reported to the Fair Trade Commission of the Executive Yuan claiming that Philips violated the regulations of the Fair Trade Law on patent licence agreement. However along with the sharp drop in the market price of CD sales, considering the economic rationality commensurate with industrial strategy, Princo and Philips were forced to seek legal relief. Ever since 1999 when Philips filed a patent lawsuit against Princo at the Taiwan Hsinchu District Court up to 24 December 2013 when Princo and Philips signed a formal settlement agreement in the matter of CD product patent litigation, it has taken more than fourteen years for the two parties to go through the domestic and international litigation procedures some of which were won and others lost. Hence any form of lawsuit will take time and money and even the reputation of the corporate in consideration of the economic rationality.

Arbitration as the Best Option based on Procedure Justice and Substantive Justice

In practice, patent dispute resolution could be a warning letter by mail, a preliminary injunction, arbitration and litigation. From the economics viewpoint, the warning letter by mail is using minimum cost for maximum effectiveness, but will violate the anti-trust law [24] if the warning letter is improperly issued. Therefore, it is obvious that the warning letter by mail is not the best option under substantive justice and procedural justice. Requesting a preliminary injunction in the same league as a warning letter since the court injunctions have to comply with equity law.[25] Since the short product life cycles require rapid access to markets, while litigations consume a long time, it is effectively "justice delayed is justice denied" even if the parties win the lawsuits after all. Therefore, the litigation is also not the best option under the consideration of substantive justice and procedural justice.

On the other hand, arbitration is superior to the warning letter and the preliminary injunction strategy in terms of the rule of ***res judicata***, although it is not superior when considering the time and cost. Nonetheless, arbitration is superior to litigation in the time and cost, and on par when considering ***res judicata***. Therefore, arbitration is the best option under the consideration of substantive justice and procedural justice when compared to a warning letter, preliminary injunction or litigation.

Although in this case, both parties tried all legal means for relief based on "legal rationality" while considering "economic rationality" all the time, doubtless final settlement was the best choice in the zero-sum game. In the viewpoint of this article, if the parties had applied for arbitration at the beginning of the disputes, it may saved not only time and money in substantive justice, but would have also complied with due process of law.

Results and Interpretation

Indeed, the patent system aims to enhance the innovative capability of human beings. It gives the inventor an incentive for innovation through the profit from the monopoly system of the patent. In view of this, the design of the patent system involves a trade-off relationship in economics[26] i.e., on the one hand it highlights the innovation aspect of invention wherein public interests are prominent, on the other hand, the public interests are diminished due to the fact that the national authority gives the inventor the exclusive patent right. Thereby a balance between public and private interests is maintained. However, under the rapid changes in the social environment, the search for a balanced patent system and the design of an ideal legal system often deviates from subjective common sense and prevailing values of modern society.

The empirical hypothesis of this research is: "On the coordinate axis of the quantity and price, the equilibrium point of the procedure justice and substantive justice is arbitration". The related research methods have taken the positivism path of questionnaires to carry out the statistical analysis with the returned data; the results indicated the intersection point of the procedure justice and substantive justice is 197 to 198 days, which falls within the arbitration area as can be seen from Fig. 3.

Thus, the practical hypothesis complies with the statistical analysis on collected data (Fig. 4). In other words, the legal system may effectively adapt to the rapid change of the environment, under the premise to respect the rule of law, in contrast to sending warning letters, issuing injunction order, and litigation, etc. As a patent legal dispute solution, business managers mostly choose the arbitration procedure, which in addition to regulating the difference between the

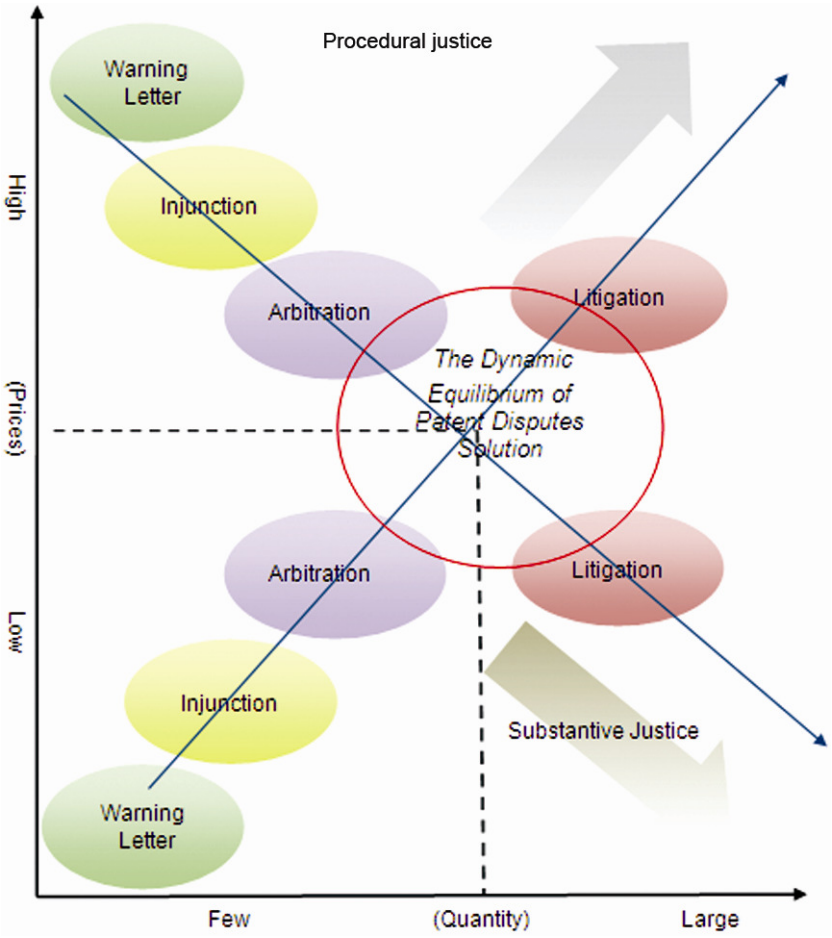

Fig. 4—The empirical analysis of the dynamic equilibrium in patent dispute solutions

procedural and substantive justice, also allows the system to maintain a dynamic equilibrium point over and over again. Also, choosing arbitration procedure as a patent dispute solution is more likely to connect with transnational law such as those governed by the World Intellectual Property Organization (TRIPS) and World Trade Organization (WTO).

Conclusion

The above research indicates that the inter-point of actual and procedural justice lies in the area between litigation and arbitration. Actually, there is no legal system without any weaknesses and because of the variable legal knowledge and experience of the judges; there may be some uncertainty of law when it comes to the judgments.[27] Second, the legal proceeding choices of the business manager are based on the economic rationality, which may have to do with expectations of the biggest profits. And the business manager is only concerned about how to solve the dispute and whether the case is within the range of the business risk which can be taken into, not the practice of the legal justice. Thus, besides the three disadvantages mentioned above, the business risk that may occur is already taken into consideration when signing the contract. Moreover, the disputes among countries can cause the deficiency of the law predictability of the parties concerned owing to the lack of awareness of the law in another country and if the international business arbitration is fully used, it will be better for solving the disputes.

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4 ***Mathews*** v ***Eldridge***, 424 U.S. 319 (1976) at 335 ("identification of the specific dictates of due process

generally requires consideration of three distinct factors: First, the private interest that will be affected by the official action; second, the risk of an erroneous deprivation of such interest through the procedures used, and the probable value, if any, of additional or substitute procedural safeguards; and finally, the Government's interest, including the function involved and the fiscal and administrative burdens that the additional or substitute procedural requirement would entail").

5 Duan Lin, ***Konfuzianische Ethik und Legitimation der Herrschaft im alten China—Eine Auseinandersetzung mit der vergleichenden Soziologie Max Webers***, (Duncker & Humbolt, Berlin), 1997, p. 12.

6 Wolfgang F, Legal Theory, 5th edn (Columbia University Press, New York), 1967, p. 97.

7 Bingyuan Hsiung, Economics 0, 1, 2? - Illustrating the core insights of economic analysis, ***Journal of Interdisciplinary Economics***, 2006, pp. 188-218.

8 The basis of Say's Law (J B Say, 1767-1832) is that there can be no general glut of goods, because additional supply will create additional demand, cited by Ching-Hsi Chang, Jia-Dong Shea & Tsong-Ming Wu, ***Economics Theory and Practice***, Vol II (Han Lu Book & Publishing Co, Taipei), 1987, pp. 594.

9 Yi-Nung Yang, ***Time Series Analysis in Economics and Finance*** (Yeh Yeh Book Gallery, Taipei), 2009, pp. 4-6; Shone Ronald, ***Economic Dynamics - Phase Diagrams and Their Economic Application*** (Cambridge University Press, New York), 2002, pp. 87-90; Mordecai Ezekiel, The Cobweb theorem, ***The Quarterly Journal of Economics***, 52 (2) (1938). 255-280.

10 The second data resources include (a) Taiwan Intellectual Property Court, The Procedure of Civil Cases Concerning Intellectual Property for Preliminary Injunction Cases, data available at http://ipc.judicial.gov.tw/ipr_internet/index.php?option=com_content&view=article&id=62:2011-01-24-03-23-53&catid=52:2011-01-04-01-50-21&Itemid=373; (b) WIPO Arbitration and Mediation Center, the WIPO Center develops tailor-made dispute resolution procedures for specific types of recurrent IP disputes, data available at http://www.wipo.int/wipo_magazine/en/201/01/article_0008.html; (c) WIPO Arbitration and Mediation Center, Schedule of Fees and Costs Arbitration /Expedited Arbitration, data available at http://www.wipo.int/amc/en/arbitration/fees/index. html; (d) WIPO Arbitration and Mediation Center, The average length and costs of patent litigation in various jurisdictions, data available at http://www.libnet.sh.cn:82/gate/big5/www.wipo.int/wipo_magazine/en/2010/0 1/article_0008.html (accessed 31 October 2014).

11 Taiwan Hsinchu District Court (88) Chung-Su-Tz-No. 37: The plaintiff Philips claimed: "According to the regulation on Article 4.02 of the License Agreement, the plaintiff shall pay the royalty for 3% of the sale price or JP￥10 whichever is higher".

12 Judgment (88) Chung-Su-Tze No. 37.

13 Judgment (97) Ming-Chuan-San-Tze No. 14.

14 Judgment (97) Ming-Chuan-San-Tze No. 14.

15 Case No. (92) Su-Tze No. 908.

16 Case No. (96)Pan-Tze-No.553.

17 Case No. (98) Pan-Tze-No. 661.

18 Case No. (98) Kung-Chu-Tze-No. 098156.

19 Case No. (99) Yuan-Tai-Su-Tze-No.0990101660.

20 Case No. (99) Su-Tze-No. 1854.

21 (100) Kung-Su-Tze-No.3 (Dutch based Philips), (100) Kung-Su-Tze-No.4 (Japan based Sony), (100) Kung-Su-Tze-No.5 (Japan based Taiyo Yuden).

22 19 U.S.C. § 1337(a)(1)(B).

23 ***Philips Corp*** v. International Trade Commission, 424 F.3d 1179 (Fed. Cir. 2005).

24 35 U.S.C. 287(b)(5)(B): A written notification from the patent holder charging a person with infringement shall specify the patented process alleged to have been used and the reasons for a good faith belief that such process was used. The patent holder shall include in the notification such information as is reasonably necessary to explain fairly the patent holder's belief, except that the patent holder is not required to disclose any trade secret information.

25 ***Smith International Inc*** v ***Hughes Tool Co***, 718 F.2d 1573, 1581 (CAFC 1983).

26 Miller A R & Davis M H, Intellectual Property: Patents, Trademarks, and Copyright, 3rd Edn (West/Wadsworth, New York), 2000, p. 16; Beckerman-Rodau A, Patent law - balancing profit maximization and public access to technology, ***Columbia Science & Technology Law Review***, 4 (1) 2002; Arrow K J, in ***The Rate and Direction of Inventive Activity: Economic and Social Factors***, edited by R R Nelson (Princeton University Press, Princeton), 1962, pp. 609-625; Clement D, Creation myths--Does innovation require intellectual property rights?, http://reason.com/archives/ 2003/03/01/creation-myths. (accessed 31 October 2014).

27 Shih-kuang, Pan (2006), Challenges to Patent Validity Brought by Third Parties - the United States Supreme Court's 1971 Decision in Blonder-Tongue, ***Intellectual Property Rights Journal***, 89 (2006) 41-48, Intellectual Property Office, Ministry of Economic Affairs, Taipei R.O.C (in Mandarin).