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Economic Utility Obtained from "Sense of Play": Marketing in Evolution toward "Play-Oriented Economies"

Taiji HARASHIMA
Syouei Economic Research Institute
Kanazawa, Ishikawa, Japan
t-harashima@mve.biglobe.ne.jp

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Abstract:

Why are most products in retail stores designed, packaged, and decorated attractively? This paper develops a theoretical model illustrating how consumers derive utility from a "sense of play" associated with the designs and decorations of products, distinct from their practical utility. The concept of "play" is broadly defined to encompass non-functional or non-essential activities and emotions such as recreation, diversion, playfulness, and entertainment. The model demonstrates that as an economy grows and develops, the relative significance of play-related utility increases compared to practical usefulness. Consequently, product designs become more sophisticated and decorative. The study concludes that economies tend to evolve into "play-oriented economies," where the sense of play becomes a central factor in marketing strategies. Furthermore, this shift introduces a bias in the estimation of purchasing power parity.

Keywords: economic utility, marketing, play.

JEL Classification: E21; M31; O10.

Introduction

Most products sold in retail stores are designed, packaged, and decorated attractively, as are the interiors and exteriors of retail stores. On the other hand, wholesale products used as intermediate goods by firms are generally very simple in their designs and decorations. Since the cost of creating attractive designs and decorations is clearly not small, the prices of attractive products sold in attractive retail stores must be considerably higher than those of plain but equally functional products sold in non-decorative retail stores. However, most consumers want to buy attractive products in attractive retail stores even though their prices are higher and their practical usefulness is identical. For example, while attractiveness has no practical usefulness, the appearance of a car is important when it comes to sales because many consumers are more concerned about car appearance than performance. As a result, most products are attractive and are sold in attractive retail stores. Conversely, products and retail stores that are not attractive are marginalized in markets.

Why are most consumers prepared to pay more for products that are attractive but not more useful? One possible reason is that consumers obtain utility from the designs and decorations of products that are separate from their practical usefulness, that is, consumers pay a higher price because attractively designed and decorated products provide utility apart from and in addition to that obtained from practical usefulness.

In economics, utility obtained from consumption is assumed to be the same regardless of the kinds of goods or services consumed or the retail stores they are purchased in. However, the utility generated from consumption may depend on the product or service and the retail store where it is purchased. If the utility from consumption depends on the product or service, etc., then it may have to be measured differently. For example, Harashima (2016[1], 2017, 2018c[2], 2018d) showed types of utility that differ from those obtained from practical usefulness, i.e., utility obtained from ranking preference and value. Like ranking preference and value, the utility obtained from design and decoration may differ from that obtained from practical usefulness. Note that although ranking preference and value are very important for analyzing economic rents and inequality, this paper does not deal with these issues, so utility obtained from ranking preference and value is ignored. Note also that some goods are purchased to demonstrate high status of the purchaser, i.e., there are positional goods, but for simplicity, positional goods are also ignored.

In the sense that there is no practical usefulness, utility obtained from attractively designed and decorated products seems to be related to play. Here, “play” does not mean child’s play. It has a broader sense that includes any activities and feelings that are not strictly functional or necessary to thrive, e.g., recreation, diversion, playfulness, and entertainment. People may obtain pleasure or utility from a sense of play without considering the practical usefulness or necessity of a product or service. On the other hand, the term “work” can be defined here in a broader sense as an activity or feeling that is practically useful and necessary for thriving.

The importance of play was first emphasized theoretically by Huizinga (1938) and then Caillois (1958) in the fields of psychology, sociology, and cultural theory. Huizinga (1938) argued that play is a primary and necessary element in human culture, and its essential aspects are that it is “fun” and “free.” Caillois (1958) more comprehensively characterized play. However, to the best of my knowledge, there is no research in economics on the utility obtained from a sense of play. The purpose of this paper was to construct an economic model of a sense of play and to examine how play affects economic activities.

First, the utility function associated with a sense of play is defined and utilized to examine equilibriums, steady states, and balanced growth paths. The results indicate that as an economy grows and develops, the relative importance of a sense of play increases in comparison to the practical usefulness of products. Consequently, products tend to become more elaborately designed and extensively decorated. However, since design and decoration involve additional costs and the marginal utility derived from a sense of play diminishes with increased quantity, there exists an optimal level of design and decoration corresponding to each stage of economic development. Given that the significance of play-related utility increases with economic growth, economies naturally evolve toward a "play-oriented" structure, wherein the sense of play gradually surpasses practical functionality in importance.

A sense of play will be important in marketing. How much should products be designed and decorated; for example, how much should car makers spend on the styling of their cars besides its effects on aerodynamics and fuel efficiency? The answer will depend on consumers’ sense of play. The same applies to the interior and exterior decorations of retail stores and sale events. Generally, luxury goods are more sophisticatedly designed and heavily decorated than non-luxury goods, which can be explained by a sense of play.

Another important economic effect of a sense of play is the possibility that it biases estimates of purchasing power parity (PPP) because the prices of goods and services in developed countries are very likely higher than those in developing countries even if their practical usefulness is identical. The prices are higher in developed countries because creating utility from a sense of play costs money.

1 Harashima (2016) is also available in Japanese as Harashima (2018b).
2 Harashima (2018c) is also available in Japanese as Harashima (2021b).

1. Utility from Sense of Play

Economic utility obtained from sense of play

Products sold in retail stores are usually designed, packaged, and decorated colorfully and fashionably to attract consumers. But why are consumers attracted to stylish designs and decorations rather than practical usefulness or performance, for example, the appearance of cars? If the only function of stylish designs and decorations is to get the attention of consumers, designs and decorations should be far more garish, gaudy, and shocking; however, they are usually stylish, cute, or beautiful. This means that stylish designs and decorations have an important function that is different from just getting the attention of consumers. So after products are noticed by consumers, what attracts them will be appearances that are stylish, cute, beautiful, etc. As a result, many consumers purchase products not only because of their practical performance but also because of their designs and decorations.

A lack of practical usefulness implies that feelings about such products are related to play and not work. As Huizinga (1938) argued, play is not "real life" because it is not connected with material interests or profit. Even though they are not functional or necessary, people will be attracted to stylish designs and decorations, which strongly implies that people obtain pleasure and economic utility from a sense of play in addition to those obtained from practical usefulness.

On the contrary, note that play may be indirectly useful and important for thriving. For example, it may strengthen social bonds among those playing and boost their immune systems. Because of these merits, people may have evolved to want to play. Nevertheless, play's usefulness is very indirect; therefore, even if useful, play is not useful in a practical and direct way.

Play in psychology, sociology, and cultural theory

Why a sense of play generates pleasure and utility is a question that has not been considered in economic research. In contrast, play has been studied in psychology, sociology, and cultural theory. From Huizinga's (1938) pioneering work, Caillois (1958) more comprehensively characterized play. In psychology, sociology, and cultural theory, many studies have focused on play in childhood, but the essential nature of play is also incorporated in the lives of adults because most adults like to play in daily life, e.g., recreation, diversion, playfulness, and entertainment. It seems highly likely that play, which is not functional or necessary, gives people pleasure and utility throughout their lives.

2. Economic Model of Sense of Play

2.1. Utility Function of "Play Goods"

Functional form

For simplicity, this paper assumes that quality is identical for all goods and services for practical uses and a sense of play, and only quantity matters in terms of the utility function. Goods and services consumed for their practical usefulness are referred to as "practical goods" and those consumed for a sense of play as "play goods." However, products can be in part both practical goods and play goods, for example, a practical and useful product that is also attractively designed and decorative.

Let c_{pr} and c_{pl} be the consumption of practical goods and play goods, respectively. A unit of c_{pr} is equal to that of c_{pl}. A product that consists of both practical goods and play goods comprises some units of c_{pr} and some of c_{pl}. Therefore, when a consumer purchases a product, they usually obtain utilities from both c_{pr} and c_{pl} simultaneously. The ratio of units of c_{pr} to those of c_{pl} in a product can differ depending on the product. Most simply, the following two types of utility functions, types (a) and (b), can be assumed:

(a) $u(c_{pr}, c_{pl}) = u(c_{pr} + c_{pl})$ and (b) $u(c_{pr}, c_{pl}) = u_{pr}(c_{pr}) + u_{pl}(c_{pl})$

where: $u(\cdot)$ is the utility function of consumption set (c_{pr}, c_{pl}), and $u_{pr}(\cdot)$ and $u_{pl}(\cdot)$ are the utility functions for c_{pr} and c_{pl}, respectively.

If type (a) utility function is assumed, then:

$$\frac{\partial u(c_{pr}+c_{pl})}{\partial c_{pr}} = \frac{\partial u(c_{pr}+c_{pl})}{\partial c_{pl}} = \frac{du(c_{pr}+c_{pl})}{d(c_{pr}+c_{pl})} \quad (1)$$

Equation (1) implies that c_{pr} and c_{pl} do not need to be distinguished because the marginal utility of c_{pr} and c_{pl} are identical and equally affected by the amounts of c_{pr} and c_{pl} in the same manner, that is, $c = c_{pr} + c_{pl}$ can represent all in consumption.

However, it is highly likely that the utility obtained from practical goods is felt and recognized differently by consumers than that from play goods because the origins of their utilities differ. The origin of the utility obtained from a practical good is its practical usefulness, but from a play good, it is a sense of play. Given their different features, it is highly unlikely that practical usefulness and a sense of play are correlated with each other. Hence, the marginal utility of c_{pr} will not be affected by the amount of c_{pl} and vice versa, i.e., the marginal utility of c_{pr} is independent of the amount of c_{pl} and that of c_{pl} is independent of the amount of c_{pr}. Therefore, considering these natures, type (b) is the most realistic functional form of a utility function that incorporates both practical goods and play goods because

$$\frac{\partial u(c_{pr}, c_{pl})}{\partial c_{pr}} = \frac{\partial [u_{pr}(c_{pr}) + u_{pl}(c_{pl})]}{\partial c_{pr}} = \frac{du_{pr}(c_{pr})}{dc_{pr}}$$

and

$$\frac{\partial u(c_{pr}, c_{pl})}{\partial c_{pl}} = \frac{\partial [u_{pr}(c_{pr}) + u_{pl}(c_{pl})]}{\partial c_{pl}} = \frac{du_{pl}(c_{pl})}{dc_{pl}}.$$

In this paper, therefore, type (b) is assumed, and, in particular, the following conventional functional forms are assumed:

$$u_{pr}(c_{pr}) = \frac{c_{pr}^{1-\varepsilon_{pr}}}{1-\varepsilon_{pr}} \quad \text{if} \varepsilon_{pr} \neq 1 \quad (2)$$

$$u_{pr}(c_{pr}) = \ln c_{pr} \quad \text{if} \quad \varepsilon_{pr} = 1$$

and,

$$u_{pl}(c_{pl}) = \frac{c_{pl}^{1-\varepsilon_{pl}}}{1-\varepsilon_{pl}} \quad \text{if} \quad \varepsilon_{pl} \neq 1 \quad (3)$$

$$u_{pl}(c_{pl}) = \ln c_{pl} \quad \text{if} \quad \varepsilon_{pl} = 1$$

where ε_{pr} and ε_{pl} are constants.

Essential difference between practical goods and play goods

An important question is whether $\varepsilon_{pr} > \varepsilon_{pl}$ or $\varepsilon_{pr} < \varepsilon_{pl}$. This is an empirical question, but it is highly likely that $\varepsilon_{pr} > \varepsilon_{pl} > 0$ because practical usefulness is far more indispensable for people's lives than is a sense of play. This means that people are less risk averse with regard to play goods than practical goods, i.e., they can accept large fluctuations in the consumption of play goods but not of practical goods. As will be shown in the following sections, the inequality $\varepsilon_{pr} > \varepsilon_{pl} > 0$ is the essential factor that differentiates practical goods and play goods.

2.2. Equilibrium

The analysis begins by examining the nature of play goods within a static model framework. Consider the following household maximization problem:

$$Max\ \ u_{pr}(c_{pr}) + u_{pl}(c_{pl})$$

subject to:

$$y = p_{pr}c_{pr} + p_{pl}c_{pl} \tag{4}$$

where y is the household's budget; p_{pr} and p_{pl} are the prices of c_{pr} and c_{pl}, respectively, and *y*, p_{pr}, and p_{pl} are all constant.

By the optimality condition of the optimality problem,

$$\frac{p_{pl}}{p_{pr}} = \frac{\frac{\partial u_{pl}(c_{pl})}{\partial c_{pl}}}{\frac{\partial u_{pr}(c_{pr})}{\partial c_{pr}}} \tag{5}$$

By equations (2), (3), and (5),

$$\frac{\frac{dc_{pl}}{c_{pl}}}{\frac{dc_{pr}}{c_{pr}}} = \frac{\varepsilon_{pr}}{\varepsilon_{pl}}.$$

Because $\varepsilon_{pr} > \varepsilon_{pl} > 0{,}1 < \frac{\frac{dc_{pl}}{c_{pl}}}{\frac{dc_{pr}}{c_{pr}}} =$ constant. (6)

Inequality (6) indicates that play goods (c_{pl}) increase more rapidly than do practical goods (c_{pr}) as an economy grows in the sense that c_{pr} grows.

2.3. Steady State

The analysis proceeds by examining the nature of play goods within a dynamic model, focusing particularly on their characteristics in a steady state. Harashima (2018a) demonstrated that households can attain a steady state not only by forming rational expectations - referred to as the rate of time preference (RTP)-based procedure - but also by maintaining their capital-wage ratio at the maximum degree of comfortability (MDC), known as the MDC-based procedure. Although both MDC- and RTP-based procedures are theoretically equivalent (Harashima, 2018a, 2021a, 2022), the MDC-based approach has the advantage of not requiring ordinary households to precisely calculate their consumption levels in each period to achieve a steady state. For the purposes of this study, however, the RTP-based procedure is assumed, as it offers greater simplicity for mathematical analysis and interpretation of the results.

Suppose that the representative household behaves by solving the following optimization problem:

$$Max\ E\int_0^{\infty}\left[u_{pr}(c_{pr,t}) + u_{pl}(c_{pl,t})\right]\exp(-\theta t)\,dt$$

subject to:

$$\dot{k}_t = y_t - c_{pr,t} - c_{pl,t}$$

where $c_{pr,t}$, $c_{pl,t}$, k_t, and y_t are the consumption of practical goods, play goods, capital, and production per capita, respectively, in period *t*; θ is RTP; and *E* is the expectation operator.

The production function is:

$$y_t = A^{\alpha} {k_t}^{1-\alpha} \tag{7}$$

where A is technology, and α is a constant between 0 and 1 that indicates the labor share.

By the optimality conditions of the optimization problem,

$$\frac{\dot{c}_{pr,t}}{c_{pr,t}} = \left(-\frac{c_{pr,t}u''_{pr}}{u'_{pr}}\right)^{-1}\left(\frac{\partial y_t}{\partial k_t} - \theta\right) . \tag{8}$$

By equations (2) and (8),

$$\frac{\dot{c}_{pr,t}}{c_{pr,t}} = {\varepsilon_{pr}}^{-1}\left(\frac{\partial y_t}{\partial k_t} - \theta\right) \tag{9}$$

Similarly,

$$\frac{\dot{c}_{pl,t}}{c_{pl,t}} = {\varepsilon_{pl}}^{-1}\left(\frac{\partial y_t}{\partial k_t} - \theta\right) \tag{10}$$

Equations (9) and (10) indicate that because $\varepsilon_{pr} > \varepsilon_{pl} > 0$,

$$\frac{\dot{c}_{pr,t}}{c_{pr,t}} < \frac{\dot{c}_{pl,t}}{c_{pl,t}}$$

that is, play goods ($c_{pl,t}$) grow at higher rates than practical goods ($c_{pr,t}$) before reaching a steady state at which

$\frac{\partial y_t}{\partial k_t} = \theta$ and therefore $\frac{\dot{c}_{pr,t}}{c_{pr,t}} = \frac{\dot{c}_{pl,t}}{c_{pl,t}} = 0$.

Note that because equation (4) holds at steady state, the ratio of play goods to practical goods at steady state is determined by their prices, i.e., the costs to produce a unit of each of them.

2.4 Balanced Growth Path

2.4.1 Endogenous Growth Model

The analysis is extended by examining the nature of play goods within the framework of an endogenous growth model, with particular focus on their characteristics along a balanced growth path. The asymptotically non-scale endogenous growth model developed by Harashima (2013[3]) is employed, as it circumvents the well-known issue of "scale effects," wherein the growth rate artificially increases in proportion to population growth. Within this model, output Y_t represents the sum of consumption C_t, capital accumulation K_t, and technological advancement A_t in period *t*, expressed as:

$$\dot{k}_t = y_t - c_t - \frac{v\dot{A}_t}{L_t},$$

where $y_t = \frac{Y_t}{L_t}$, $c_t = \frac{C_t}{L_t}$, $k_t = \frac{K_t}{L_t}$, and L_t is labor input in period *t*; *v* (> 0) is a constant; and the unit of K_t and v^{-1} of the unit of A_t are equivalent. The production function is the same as that in Section 2.3, i.e., eq. (7).

For any period,

[3] Harashima (2013) is also available in Japanese as Harashima (2019).

$m = \frac{M_t}{L_t}$, holds and $\frac{\partial y_t}{\partial k_t} = \frac{\varpi}{m\nu}\frac{\partial y_t}{\partial A_t}$ (11)

is always kept,

where M_t is the number of firms which are assumed to be identical in period *t*, and *m* (> 0) and $\varpi(>1)$ are constants. Equation (11) indicates that the marginal products of capital and technology are always kept equal through arbitrage in markets.

2.4.2 Balanced growth path

Suppose that L_t is sufficiently large and constant and that the representative household behaves by solving the following optimization problem:

$$Max\ E\int_0^{\infty}\left[u_{pr}(c_{pr,t}) + u_{pl}(c_{pl,t})\right]\exp(-\theta t)\,dt$$

subject to:

$$\dot{k}_t = \left[\left(\frac{\varpi\alpha}{m\nu}\right)^{\alpha}(1-\alpha)^{-\alpha}k_t - c_{pr,t} - c_{pl,t}\right].$$

By the optimality conditions of the optimization problem (Harashima, 2013),

$$\frac{\dot{c}_{pr,t}}{c_{pr,t}} = {\varepsilon_{pr}}^{-1}\left[\left(\frac{\varpi\alpha}{m\nu}\right)^{\alpha}(1-\alpha)^{-\alpha} - \theta\right] \quad (12)$$

and

$$\frac{\dot{c}_{pl,t}}{c_{pl,t}} = {\varepsilon_{pl}}^{-1}\left[\left(\frac{\varpi\alpha}{m\nu}\right)^{\alpha}(1-\alpha)^{-\alpha} - \theta\right]. \quad (13)$$

Equations (12) and (13) indicate that because $\varepsilon_{pr} > \varepsilon_{pl} > 0$,

$$\frac{\dot{c}_{pr,t}}{c_{pr,t}} < \frac{\dot{c}_{pl,t}}{c_{pl,t}},$$

that is, play goods ($c_{pl,t}$) grow at a higher rate than practical goods ($c_{pr,t}$), and as the economy grows, the ratio of practical goods ($c_{pr,t}$) to play goods ($c_{pl,t}$) eventually approaches zero, and the economy approaches a balanced growth path on which the growth rate is:

$$\frac{\dot{c}_{pl,t}}{c_{pl,t}} = \frac{\dot{c}_t}{c_t} = \frac{\dot{k}_t}{k_t} = \frac{\dot{y}_t}{y_t} = \frac{\dot{A}_t}{A_t}, \qquad \textit{where}\ \ c_t = c_{pr,t} + c_{pl,t}.$$

3. Economic Impacts of Sense of Play

3.1. Play-Oriented Economies

Inequality (6) and equations (9), (10), (12), and (13) commonly indicate that as an economy grows and develops, the ratio of consumption of play goods to that for practical goods (i.e., $\frac{c_{pl,t}}{c_{pr,t}}$) increases. The initial ratio (i.e., $\frac{c_{pl,0}}{c_{pr,0}}$) is determined empirically, but it is highly likely that in the early stages of economic development (periods of very low levels of production or very primitive economies), consumption will consist mostly of practical goods that are needed to survive in harsh economic environments, and few play goods will be consumed.

However, as an economy grows and develops, people can allocate some resources to things unrelated to survival, i.e., play. Hence, values that are not related to survival and practical usefulness will increase as the economy grows and develops, and people will spend more time and resources on play and will work less. Recreation will become an important part of life, and rich people, in particular, may spend larger amounts of money

on play goods than do less rich people, e.g., collecting expensive works of art. As the economy develops, the ratio $\frac{c_{pl,t}}{c_{pr,t}}$ will eventually exceed unity, but even after that, it will continue to increase. This phenomenon may be interpreted as a phase change and an evolution toward a play-oriented economy.

A play-oriented economy may be roughly defined as an economy in which the ratio $\frac{c_{pl,t}}{c_{pr,t}}$ is considerably high, although it is difficult to specify the exact threshold value of $\frac{c_{pl,t}}{c_{pr,t}}$ between play-oriented and non-play-oriented economies. Nevertheless, a play-oriented economy may be described as one in which people mostly work to play rather than to survive.

3.2. Marketing

Product design and appearance

The appearance and design of play goods are important because consumers obtain utility from a sense of play when they "consume" the design and appearance of products and retail stores. For example, window shopping is an activity where a sense of play is obtained from just observing stylish products.

Of course, consumers also consider practical usefulness, and the marginal utility obtained from play goods decreases as their quantity increases, as described by equation (3). Hence, for a firm to maximize its profit for a product, there needs to be an optimal ratio of playful qualities to practical qualities incorporated in the product. In marketing, it is important to know the optimal ratio for each product as well as what kind of design and appearance most effectively generates a sense of play.

Interiors and exteriors of retail stores

Most retail stores spend considerable sums decorating their interiors and exteriors because many consumers are attracted not only to product design and appearance but also to the exterior and interior of retail stores. So it is highly likely that consumers experience the interiors and exteriors of retail stores as a kind of play good, i.e., play goods are not only incorporated in products but also in the appearance of retail stores. Therefore, in marketing, it is important to optimize the quantity of playful features incorporated in the interiors and exteriors of retail stores since even attractive products will not sell as well as they could if the stores also were attractive. Furthermore, just as for products, the optimal ratio between practical features and playful features will also exist for the playful features that are incorporated in the interior and exterior of a retail store. Hence, it is important to know this ratio in marketing as well as what kinds of interiors and exteriors most effectively generate a sense of play.

Sale events

There are many sale events, e.g., Memorial Day, Independence Day, Black Friday, Cyber Monday, and Christmas, and many other sale events held in shopping centers and malls throughout the year. Although the prices of some products sold in sale events may be lower than usual, of course retailers will not hold sale events to lose money. They will hold sale events to increase sales and profits by attracting customers; however, from the customers' perspective, goods priced below cost may be defective or remainders. Therefore, sale events will have no practical usefulness for consumers, meaning that consumers are likely attracted to them and feel a sense of play from them because the sale events themselves include playful features.

In marketing, it is important to optimize the quantity of playful features incorporated in sale events. As with the appearance of products and retail stores, an optimal ratio between practical goods and play goods will also exist for each sale event. Therefore, it is important to know this ratio in marketing as well as what kinds of sale events most effectively generate a sense of play.

Luxury goods and works of art

Luxury goods are mostly bought by rich people. This means that considering inequality (6) and equations (9), (10), (12), and (13), it is highly likely that the ratio $\frac{c_{pl,t}}{c_{pr,t}}$ for luxury goods is far larger than that for non-luxury goods. Indeed, it seems that most luxury goods are highly decorated and often have attached to them practically useless materials like jewels.

Rich people often collect works of art, particularly expensive ones. There may be many reasons for this, but it seems likely that such works stimulate a sense of play that generates utility. Therefore, rich people are more attracted to art than the less rich because the equilibrium ratio of $\frac{c_{pl,t}}{c_{pr,t}}$ increases as people become richer (section 3.1). In particular, the ratio $\frac{c_{pl,t}}{c_{pr,t}}$ for expensive works of art will be very high compared with ordinary products; so it makes sense that rich people are more likely to purchase them. Therefore, marketing for rich people must be tailored to each individual because the degree of wealth and the optimal ratio $\frac{c_{pl,t}}{c_{pr,t}}$ vary greatly among rich consumers.

Optimal marketing for sense of play

Let us apply the static model in Section 2.2, equation (5):

$$c_{pl,t} = c_{pr}^{\frac{\varepsilon_{pr}}{\varepsilon_{pl}}} \left(\frac{p_{pr}}{p_{pl}}\right)^{\frac{1}{\varepsilon_{pl}}} .$$

Hence, the total consumption of the representative household (C) is:

$$C = c_{pr} + c_{pl,t} = c_{pr} + c_{pr}^{\frac{\varepsilon_{pr}}{\varepsilon_{pl}}} \left(\frac{p_{pr}}{p_{pl}}\right)^{\frac{1}{\varepsilon_{pl}}} ,$$

and

$$\frac{c_{pl,t}}{C} = \left[1 + c_{pr}^{1-\frac{\varepsilon_{pr}}{\varepsilon_{pl}}} \left(\frac{p_{pr}}{p_{pl}}\right)^{\frac{1}{\varepsilon_{pl}}}\right]^{-1} \quad (14)$$

Equation (14) indicates the optimal share of $c_{pl,t}$ in products, retail stores, and sale events at which merchants' profits are maximized on average. Hence, because of arbitrage in markets, most retail stores will decorate their stores and products and engage in events at this level on average. Conversely, if a retail store does not decorate its store and products and hold sale events, it cannot maximize profits. Therefore, it will be marginalized in markets because many consumers will not feel a sufficient sense of play, resulting in few purchases.

Because $\varepsilon_{pr} > \varepsilon_{pl} > 0$ and thereby $1 - \frac{\varepsilon_{pr}}{\varepsilon_{pl}} < 0$, by equation (14),

$$\lim_{c_{pr}\to\infty} \frac{c_{pl,t}}{C} = 1 \quad (15)$$

Equation (15) indicates that as an economy grows in the sense that c_{pr} increases, the optimal share of $c_{pl,t}$ increases and eventually approaches unity, i.e., almost all consumption is allocated to $c_{pl,t}$. Products are then mostly purchased to satisfy a sense of play with practical usefulness only having a small share and most products will be heavily decorated and sophisticatedly designed.

3.3. Bias in Purchasing Power Parity

PPP is based on the prices of goods and services included in the same basket of goods and services in different countries that use different currencies (World Bank, 2015). Crucially, PPP depends on the assumption that the goods and services are the same in terms of quality and quantity in all the countries concerned. However, the difference between practical goods and play goods is not considered in PPP. Therefore, if the practical usefulness of a good or service is identical in two countries, it is treated as the same even if the ratios of playful features incorporated in it differ.

An important characteristic of PPP is that the disparity of per capita GDPs between developed and developing countries diminishes remarkably when PPP is used as the denominator instead of actual currency exchange rates. The reason for this is often explained by the difference in wages for non-tradable goods and services between developed and developing countries. Nevertheless, it also seems to be true that the equilibrium ratios of $\frac{c_{pl,t}}{c_{pr,t}}$ differ between developed and developing countries. It seems highly likely that the ratio is higher in developed countries because they are richer. It is highly likely that the ratio is higher in developed countries because they are richer, so prices will be higher there. As a result, the price will be higher in the developed country. Therefore, the assumption that goods and services in developed and developing countries are the same is highly likely to be wrong, and there is a very high probability that PPP is biased since the value of products in developing countries is very likely lower than estimated.

Conclusion

This study investigates why consumers often prefer attractively designed and decorated products, even when such items offer no additional functional benefits compared to their simpler counterparts and are priced higher. It is proposed that consumers derive utility from aesthetic features in addition to practical usefulness. Since these aesthetic elements lack direct functional value, the associated utility is likely linked to the concept of *play* rather than *work*. In this context, *play* encompasses non-essential activities and feelings such as recreation, diversion, playfulness, and entertainment, whereas *work* denotes actions that are functionally necessary for survival or productivity.

To explore this phenomenon, a theoretical model of a "sense of play" was developed in which consumers gain utility from attractive product designs and decorations alongside utilitarian value. The utility function for the sense of play was formally defined and applied to examine market equilibriums, steady-state behavior, and balanced growth paths. The analysis revealed that as economies grow and develop, the relative importance of the sense of play increases in comparison to the practical usefulness of products. Consequently, product design tends to become more elaborate and aesthetically appealing.

The findings underscore the significance of the sense of play in consumer behavior and marketing strategy. Decisions regarding the level of product design and decoration should be informed by consumers' preferences related to play. This principle also extends to the visual presentation of retail environments and promotional events. The study further suggests that luxury goods are typically more elaborately designed and decorated than non-luxury items, a phenomenon that can be at least partially attributed to the utility derived from a sense of play.

Moreover, the study highlights a broader economic implication: the influence of play on consumer preferences may introduce distortions in purchasing power parity (PPP) estimates. Specifically, prices in more developed economies may reflect the premium placed on play-related attributes rather than differences in functional utility, potentially biasing cross-country comparisons.

Credit Authorship Contribution Statement

Taiji Harashima was solely responsible for the conception and design of the study, development of the theoretical model, data interpretation, and manuscript preparation. The author also conducted the analysis, wrote the paper, and approved the final version for publication.

Conflict of Interest Statement

The author declares that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Caillois, R. (1958) *Les jeux et les hommes*, Paris, Gallimard, Folio Essais (*Man, Play and Games*, The Free Press, 1961). https://voidnetwork.gr/wp-content/uploads/2016/09/Man-Play-and-Games-by-Roger-Caillois.pdf

Harashima, T. (2013). An Asymptotically Non-Scale Endogenous Growth Model, *MPRA* (*The Munich Personal RePEc Archive*) *Paper* No. 44393. https://mpra.ub.uni-muenchen.de/44393/1/MPRA_paper_44393.pdf

Harashima, T. (2016). Ranking Value and Preference: A Model of Superstardom, *MPRA* (*The Munich Personal RePEc Archive*) *Paper* No. 74626. https://mpra.ub.uni-muenchen.de/74626/1/MPRA_paper_74626.pdf

Harashima, T. (2017). The Mechanism behind Product Differentiation: An Economic Model. *Journal of Advanced Research in Management,* Volume VIII, 2(16), 95-111. https://doi.org/10.14505//jarm.v8.2(16).01

Harashima, T. (2018a). "Do Households Actually Generate Rational Expectations? "Invisible Hand" for Steady State," *MPRA* (*The Munich Personal RePEc Archive*) *Paper* No. 88822. https://mpra.ub.uni-muenchen.de/88822/1/MPRA_paper_88822.pdf

Harashima, T. (2018b). Ranking Value and Preference: A Model of Superstardom, in Japanese, *Journal of Kanazawa Seiryo University*, Volume 52, No.1, 27-40. https://mpra.ub.uni-muenchen.de/74626/1/MPRA_paper_74626.pdf

Harashima, T. (2018c). Superstars in Team Sports: An Economic Model, *MPRA* (*The Munich Personal RePEc Archive*) *Paper* No. 86360. https://mpra.ub.uni-muenchen.de/86360/1/MPRA_paper_86360.pdf

Harashima, T. (2018d). Why Is Executive Compensation So High? A Model of Executive Compensation. *Journal of Advanced Research in Management,* Volume IX, 2(18), 59-68. https://doi.org/10.14505//jarm.v9.2(18).03

Harashima, T. (2019). An Asymptotically Non-Scale Endogenous Growth Model, in Japanese. *Journal of Kanazawa Seiryo University*, Volume 52, No.2, 71-86. https://mpra.ub.uni-muenchen.de/44393/1/MPRA_paper_44393.pdf

Harashima, T. (2021a). Consequence of Heterogeneous Economic Rents under the MDC-based Procedure. *Journal of Applied Economic Sciences*, Volume XVI, 2(72), 185-190. https://doi.org/10.57017/jaes.v16.2(72).04

Harashima, T. (2021b). Superstars in Team Sports: An Economic Model," in Japanese. *Journal of Kanazawa Seiryo University*, Volume 55, No.1, 39-51. https://mpra.ub.uni-muenchen.de/86360/1/MPRA_paper_86360.pdf

Harashima, T. (2022). A Theory of Inflation: The Law of Motion for Inflation under the MDC-based Procedure, MPRA (Munich Personal RePEc Archive) Paper No. 113161. https://mpra.ub.uni-muenchen.de/113161/4/MPRA_paper_113161.pdf

Huizinga, J. (1938). Homo Ludens: Proeve Ener Bepaling Van Het Spelelement der Cultuur. Groningen, Wolters-Noordhoff cop. 1985. Original Dutch edition (Homo Ludens: A Study of the Play-Element in Culture, Boston, Beacon Press, 1955). https://merton.bellarmine.edu/files/original/b0899cfad820ab8ad7033952b7a022ba1d7cab9d.pdf

World Bank (2015). Purchasing Power Parities and the Real Size of World Economies, *A Comprehensive Report of the 2011 International Comparison Program*, The World Bank, Washington DC. https://doi.org/10.1596/978-1-4648-0329-1