

Baumol, William J.

Working Paper

Returns in Cost Diseased Markets with Psychic Benefits: Two Apparently Conflicting Models of Equilibrium

Discussion Papers Series, No. 07-16

Provided in Cooperation with:

Utrecht University School of Economics (U.S.E.), Utrecht University

Suggested Citation: Baumol, William J. (2007) : Returns in Cost Diseased Markets with Psychic Benefits: Two Apparently Conflicting Models of Equilibrium, Discussion Papers Series, No. 07-16, Utrecht University, Utrecht School of Economics, Tjalling C. Koopmans Research Institute, Utrecht

This Version is available at:

<https://hdl.handle.net/10419/322728>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Tjalling C. Koopmans Research Institute

Tjalling C. Koopmans



Universiteit Utrecht

**Utrecht School
of Economics**

**Tjalling C. Koopmans Research Institute
Utrecht School of Economics
Utrecht University**

Janskerkhof 12
3512 BL Utrecht
The Netherlands
telephone +31 30 253 9800
fax +31 30 253 7373
website www.koopmansinstitute.uu.nl

The Tjalling C. Koopmans Institute is the research institute and research school of Utrecht School of Economics. It was founded in 2003, and named after Professor Tjalling C. Koopmans, Dutch-born Nobel Prize laureate in economics of 1975.

In the discussion papers series the Koopmans Institute publishes results of ongoing research for early dissemination of research results, and to enhance discussion with colleagues.

Please send any comments and suggestions on the Koopmans institute, or this series to s.mook@econ.uu.nl

ontwerp voorblad: WRIK Utrecht

How to reach the authors

Please direct all correspondence to the first author.

Professor William J. Baumol, Academic Director
Berkley Center for Entrepreneurial Studies
Henry Kaufman Management Center
44 West Fourth Street, Suite 7-91
New York, NY 10012
United States
E-mail: william.baumol@nyu.edu

This paper can be downloaded at: <http://www.koopmansinstitute.uu.nl>

Utrecht School of Economics
Tjalling C. Koopmans Research Institute
Discussion Paper Series 07-16

Returns in Cost Diseased Markets with Psychic Benefits: Two Apparently Conflicting Models of Equilibrium

William J. Baumol^a

^aBerkley Center for Entrepreneurial Studies
Henry Kaufman Management Center

June 2007

Keywords: Baumol's Disease, Return on Investment in Art

JEL classification: G11, Z11

‘[S]uch things as pictures by the old masters, rare coins and other things cannot be “graded” at all: for each of them is unique, and has no direct equivalent or competitor...And therefore the price at which such a thing will be sold will depend very much on whether any rich person with a fancy for that particular thing happen to be present at its sale...The “equilibrium price” for such sales is very much a matter of accident;’ (Alfred Marshall, *Principles*, 1891 Vol 1 p.391n).

“The wages of labour vary with the ease or hardship, the cleanliness or dirtiness, the honourableness or dishonourableness of the employment.... The exorbitant rewards of players, opera-singers and opera-dances, &c. are founded upon these two principles: the rarity and beauty of the talents, and the discredit of employing them in this manner” (Adam Smith, *Wealth of Nations*, Book I, Chap. X, Part I).

If two workers, A and B, in a competitive market, receive equivalent pay for equal work, but A is paid exclusively in dollars while B gets half euros and half dollars, A will be paid more dollars than B. (Baumol’s third tautology).

As the first of the preceding quotations indicates, Alfred Marshall at one point concluded that the prices of arts works are so heavily influenced by happenstance that no theoretical analysis can achieve any degree of generality. Here, not only will this implicitly be denied, but concrete theoretical work will be offered that does what he claimed, or at least suggested could not be carried out. The problem is that the discussion will offer not just one such pricing model, but two. Worse still, the models, at least at first glance, seem to be inconsistent and seem to have implications with the first

apparently the reverse of the other. By the end of the discussion all of these problems will be resolved.

Recent sales not only of works of Picasso but even of Warhol have fetched prices that can justly be likened to king's ransoms. In contrast, a study of the prices at which a particular Titian was resold at auction over the decades indicates that, in financial terms it was a poor investment with rates of return well below that on financial securities. Thus, the one set of observations and others like it seem to imply that works of art tend to be profitable investments, while others, notably a number of oft cited studies by capable economists seem to indicate the opposite. These observations, in essence are the apparently conflicting implications of the two models. Here it will be shown, however, that these observations are not as inconsistent as they appear to be, if they are inconsistent at all. Moreover, these phenomena do lend themselves to systematic empirical observation, and there is reason to expect that they will persist at least for some substantial time in the future, much in the form they take today

To explain all this, the chapter offers an analysis of pricing and earnings of marketed works of art and some other items that may be enjoyed by consumers over substantial periods of time, and that yield special psychological utility to the consumer. Or, rather, it offers two analyses that, as already noted, seem to go in opposite directions. The first model, it will come as no surprise to the reader, is the cost disease. But the second is very different in character, and focuses on the demand side of the market, rather than its costs. The special feature of this second approach, then, is the financial consequence of the obvious fact that, in addition to a possible financial return on the investment, ownership of a work of art provides pleasure (psychic benefits) to its

purchaser. There is a substantial literature that has examined the financial returns to such investments on the basis of historical data, and a few comments on this literature will be offered presently. It will also be argued that the same analysis applies far more widely. Notably, although it is not generally recognized, the analysis also makes a significant contribution to the investigation of economic growth, its determinants, and policy for its encouragement.

1. The Cost Disease and Works of Art, Fruit of Handicraft Activity

Sculpture and painting, clearly are inherently handicraft products. And, for them, labor-saving innovation is relatively difficult. It is true that reproduction of such works has grown far easier and far more accurate in recent eras, and along with that, the power and speed of transmission, at least of the reproductions, has been spectacular. But, by and large, the work of the artist continues to be a handicraft effort, one that, like an invention, is inherently unstandardized and its product heterogeneous. This means, of course, that the artists' work must, in an innovative and growing economy, fall ever further behind the mean in *productivity* level, and rise steadily in (real) price further above the average (the economy's price level). That is, these products must clearly be prototypes of the products that are subject to the cost disease.

This would appear to make rises in the real future prices of investments in art inevitable, and thereby increase the attractiveness of such investment as a hedge against certain inflation. Generally speaking, the cost-disease argument then suggests that because the prices of such assets must rise more quickly than investments in such things as a factory's machinery, investment in the former must offer a higher payoff to the

investor. Thus, in addition to the pleasure and prestige that ownership of a fine work of art can provide, it must in addition offer a superior financial return. But that seems a bit curious, and in conflict with one of the main propositions offered by classical economics, that in a competitive market equilibrium all types of investment must offer the same rate of return, and that if there is a disequilibrium in which such equality does not prevail, investment will soon flow from the low payoff assets to those with the higher payoffs and that will raise the relative prices of the latter to the point where the rates of return are equalized. We will see next that the market appears to behave in accord with this last proposition, so that any superior financial investment in the arts tends to be eliminated, and even reduced below the return to other investments.

Psychic and Financial Returns to Investment in the Visual Arts

What, specifically does the classical proposition imply for the prices, their asset value and their return on investment in the artist's products? The answer is a story that has many times been investigated by very competent economists (see, e.g., Frey and Eichenberger 1995 for a review of some of the literature, and the third tautology cited at the head of this chapter). If ownership of a painting offers *psychic* rewards, then this model implies that the market cannot be in equilibrium without a lower *financial* reward for the investment in painting.

Consider two such investments—a type of bond and a set of beautiful paintings—with the same initial price, the same expected selling price ten years later and no other returns. Clearly, at their equal price, investors would flock to the paintings and shun the securities, for by our simplifying expository assumptions, the securities offer exactly the

same *financial* payoff as the paintings, *but the paintings provide a large supplementary bonus in aesthetic value*. The current market price of the bonds would thereby be driven down and the price of the paintings pushed upward, automatically raising the financial bond rate of return and reducing that on paintings.

Thus, paradoxically, we have the conclusion that the lower *financial* reward to investment in an item whose payoff is partly psychic will tend to raise the current price of that item. This shows clearly how psychic return can affect the relative price of assets. That is almost all there is to the story, except for one supplementary conclusion and several complications.

The supplementary observation is the implication of the model that in this field it provides a way to translate the aesthetic yield of a work of art to its owner into pecuniary terms. That is, it indicates a rate of exchange between these two payment media. For if the payment to investors is to be the same, then the shortfall in the financial return to investment in painting vis-à-vis that on stocks or bonds, with their limited aesthetic yield, must, in a perfect market equilibrium be equal in value to the holder of the aesthetic benefit the ownership provides.

Of course, it must be borne in mind that the imperfections of the markets in question, the riskiness of the assets, the transaction costs of their purchase and sale, and the special costs and other pertinent attributes of the auction process from which many of the data of studies of this subject are derived, will act as a *caveat* in interpretation of the preceding analysis. Add to this the many cases in which the work of new schools of art, for example, that of the impressionists, is at first (often mockingly) rejected by the buying public, while sometime later it becomes the darling of purchasers. These complications

do permit strikingly exceptional instances in which it is the works of art that yield the substantially higher returns.

Yet the analysis nevertheless brings us well beyond Alfred Marshall's hesitant conclusions about the valuation of works of art and the hesitation toward which we are impelled by recognition that the quality of an artwork is a *fundamentally subjective matter*, critics' determined contrary position notwithstanding. Here, as elsewhere, the market gives us some surprising evidence. The behavior of the market offers us a yardstick which does not to any degree reduce the role of the subjective element, but enables us to measure it, perhaps with little precision, but to a degree that might well have been considered unachievable.

The Psychic Returns Analysis and Other Economic Activities

The story just summarized is not only relevant for the visual arts. To show this, we may begin with its very obvious application to the other arts. Most notably, it underlies the romantic tale of the starving artist. Not that this is a fairy tale. On the contrary, in a number of artistic occupations, remuneration is far below the levels that prevail in employments with comparable requirements in terms of education and outlay of effort. And a major element in the explanation is surely the psychological reward that creativity offers to the artist, which offsets the low earnings that the typical artists can expect as they devote their lives to their works. This is surely implicit in the quotation from the *Wealth of Nations* offered at the head of this chapter.

Most clearly the analysis applies to dance, where careers are inherently brief, injuries are frequent, training requirements are exacting, the work is exhausting, and

wages are probably the lowest among the underpaid artistic occupations (see, e.g., Baumol, Jeffrey and Throsby 2004). Surely, dancers continue to flock to the field and battle for a position that will demand all their attention and energy, because the psychic rewards that accrue to them make up for the deficiency in their financial returns.

Beyond the Arts: Entrepreneurship and Growth

There is also an application of the analysis that is less widely recognized and further from our main concern here. The discussion will show next that the model also sheds light on the activities of the economy's inventors and the entrepreneurs who take their innovations to market. Here we are apt to be misled by the prosperity of the superstars among them: Bill Gates, Warren Buffett, Thomas Edison, Henry Ford, etc., etc. But this is not a unique feature of the arts; a moment's thought reminds us that the arts, too, have their superstars, many of whom are far from poverty.

The surprising evidence indicates, however, that the expectable economic profits of the representative entrepreneur in reality are apparently also distinctly below the applicable norm. That is, independent entrepreneurs and scientists earn far less than similarly educated and experienced employees of large firms. Here are two examples of (the many) studies that have provided such evidence:

- Freeman (1978) and Benz and Frey (2004) show that the average earnings of self-employed individuals are significantly lower than those of employees with similar qualifications.
- Astebro (2003) reports on the basis of a sample of 1,091 inventions that, "The average IRR [internal rate of return] on a portfolio investment in

these inventions is lower than the long-run return on high-risk securities.... only between 7-9 percent reach the market. Of the 75 inventions that did, six received returns above 1400 percent, 60 percent obtained negative returns and the median was negative” (p. 226).

At least part of the explanation is arguably that the activities of inventors and their entrepreneur partners provide both monetary compensation and psychic compensation. These activities offer distinct psychic rewards, including the *prospects* of wealth and fame, which are something of value even if they never materialize. They are, indeed, the stuff that dreams are made of. And biographies of the great inventors and entrepreneurs also bring out the excitement of their work and the dedication it elicits. So, while the representative entrepreneur may indeed be underpaid in terms of financial reward alone, his *total* payoff may be closer to what economic analysis leads us to expect.

This means that the bulk of the huge economic benefits to society that have been contributed by invention since the industrial revolution must have gone to others than those who participated in the innovation process. And here the best numbers that are available are indeed striking). The recent calculations of Nordhaus (2004) show how little of the rewards go to the innovator: “Using data from the U.S. non-farm business section, I estimate that innovators are able to capture about 2.2 percent of the total surplus from innovation. This number results from a low rate of initial appropriability (estimated to be around 7 percent) along with a high rate of depreciation of Schumpeterian profits (judged to be around 20 percent per year)....the rate of profit on the replacement cost of capital over the 1948-2001 period is estimated to be 0.19 percent per year” (p. 34).

Outsourcing of Breakthroughs: Low Cost of Entrepreneurs' Psychic Benefits

The relatively low pay of the entrepreneurs as a group, in turn has an additional important implication for analysis of economic growth. This is another reasonably well documented phenomenon: There is a disproportionate allocation of breakthrough innovation activity to the independent inventors and entrepreneurs, while the corporate giants, which provide by far most of the research and development funding, specialize in gradual incremental improvement in the breakthroughs that they obtain from the small entrepreneurial suppliers. The underlying mechanism is the fact that, while psychic benefits are a very tangible reward to the entrepreneur innovation supplier, they are generally *costless to the innovation buyer*. There is also evidence that the engineers, scientists and entrepreneurial personnel who work as employees of large enterprises receive higher *financial* compensation than their self-employed counterparts, presumably because the job-related psychic rewards for these large-enterprise employees are lower, and that makes outsourcing of the search for radical innovations the profitable course for the big firms.

So an innovative entrepreneur who, on average, receives great pleasure but meager financial rewards from the activity will tend to be a more economical provider of breakthrough innovation to the economy than the large firm that purchases those innovations. This means that the low-cost psychic reward component of the independent innovator's compensation will make it more economical for the large firm, in considering its make-or-buy options, to acquire its breakthroughs more generally from others, rather than seeking to provide them in-house.

Interim Conclusion: Returns to Investment in Paintings and other Visual Art Works

As already indicated, there are many studies that have traced the returns to investment in paintings, drawings, prints and other related products of artistic activity (see, e.g., Frey, and Eichenberger 1995, and Baumol 1986). Generally, the procedure in these studies is (to construct an imaginary example) to compare the recorded price of a Reubens sold in 1763 with the price at which that very same painting was sold 74 years later. A number of these investigations have found periods during which prices in these markets have risen rapidly and so investment returns to their purchasers have been substantial. But almost all of the studies show that over longer period and for the markets as a whole, the earnings have been significantly lower than returns on financial instruments. And that is exactly what our analysis leads us to expect.

Complication: the Cost Disease and the Arts Once More

But as already indicated above, things are not as straightforward as this summary would seem to indicate. We have already suggested that the preceding conclusion interacts with the cost disease of the handicraft services. For the visual arts provide outputs that entail substantial and not easily reduced inputs of human labor, and so are characterized by persistently rising real cost and prices, that is, prices that rise, year after year at a pace faster than that of the economy's overall price level.

It is clear that activities such as painting and sculpture are prototypes of handicraft production. It follows that there is reason to expect their prices to rise more rapidly than the norm for the economy as a whole, and to do so persistently. This would appear to be

in direct conflict with the earlier argument of this article, for rapid price rise seems to make for higher returns to investment in the products of artistic endeavor. How can the two analyses summarized in this chapter be reconciled? Both would appear to result in unequivocal and very different behavioral rules, not amenable to compromise.

Reconciliation: A Three-Period Illustration

One seems to predict high returns to investment, the other calls for them to be low. One possible avenue of reconciliation entails the relative compensation of the artist. Steadily falling remuneration in real terms, as compared to the earnings of the economy's labor force as a whole, can obviously offset the cost disease, and keep the *monetary* rate of return to investment in art and the rate of increase in its money prices below the economy's norm. This is only a conjecture, however, and the empirical evidence is not yet in. It is a subject that evidently merits study.

But a moment's thought confirms that the cost disease does not inherently have to raise the rate of return on investment in assets whose real prices are condemned to persistent real increase. The logic of the earlier argument remains intact. All it requires is that the attributes of the products created in different periods vary from one period to another, so that later and earlier products are imperfect substitutes for one another. To illustrate the workings of the solution, a rather unrealistic but easily followed example will be used to explain this answer.

Imagine an art market in which all paintings were produced in one of three periods; call them "Ancient," "Renaissance" and "Modern." Suppose, moreover, that any

two paintings produced in the same period are considered perfect substitutes and, therefore, equally valuable. Then, in equilibrium, we will find the following:

1. An Ancient painting will have been priced during the Renaissance and then priced today to yield to the heirs of their initial (ancient purchasers) less than the rate of return on a financial security, the shortfall being equal to the market valuation of the psychic benefits yielded by ownership of such a painting.
2. The real first-sale price of a Renaissance painting will exceed the initial price of a *different but comparable* Ancient painting by an amount dictated by the cost disease, and the initial-sale Price of a Modern painting will be higher still, but also set in accord with the dictate of the cost-disease.
3. If, say, the modern market is out of equilibrium and modern price of Ancient works is below the level that yields the expected return given by (equilibrium condition 1), just above, then investment demand for Ancient paintings will rise and drive the price up to the level 1) requires.
4. If the initial price of a Modern painting today is, for example, above the equilibrium level required by equilibrium condition 2), then the volume of Modern paintings reaching the market will increase and drive the price to its equilibrium level.

It should be emphasized that these conclusions reconcile the apparently contradictory observations with which this paper began. They assert that rapidly rising prices of work of are pertain to *different* works, with the initial real prices of different paintings tending to grow higher with the passage of time. But the price of one particular and representative painting tends to rise slowly, yielding a low monetary return on investment.¹ Together, the two branches of the model, the cost-disease section and the psychic returns segment constitute an internally consistent explanation of primary features of the pricing process in the art market. That, then, is the end of the story, and encompasses a more complex and unified model that includes both the influence of the psychic returns and the cost disease phenomenon. In short, it constitutes a fuller representation of equilibrium in the art markets that seems to have been available previously and that Marshall considered unachievable.

References

Baumol, William J. 1986. Unnatural Value: Or Art Investment as Floating Crap Game. *American Economic Review* 68 (2):142-148.

_____, Joan Jeffri, and David Throsby. 2004. *Making Changes: Facilitating the Transition of Dancers to Post-Performance Careers*. The aDvANCE Project Research Report. New York: Research Center for Arts and Culture, Teachers College, Columbia University.

¹ But with compounding even a comparatively low rate of return can add up to a handsome reward. Keynes (1930) provides a dramatic illustration: "...the power of compound interest over two hundred years is such as to stagger the imagination.... I trace the beginnings of British foreign investment to the treasure which Drake stole from Spain in 1580. In that year he returned to England bringing with him the prodigious spoils of the *Golden Hind*. Queen Elizabeth was a considerable shareholder in the syndicate which had financed the expedition. Out of her share she paid off the whole of England's foreign debt, balanced her Budget, and found herself with about £40,000 in hand. ...Now it happens that £40,000 accumulating at 3f(sic) per cent compound interest approximately corresponds to the actual volume of England's foreign investments at various dates, and would actually amount to-day to the total of £4,000,000,000 which I have already quoted as being what our foreign investments now are. Thus, every £1 which Drake brought home in 1580 has now become £100,000. Such is the power of compound interest." (p. 2).

- Burton, Benjamin J., and Joyce P. Jacobsen. 1999. Measuring Returns on Investment in Collectibles. *Journal of Economic Perspectives* 13 (4):193-212.
- Freeman, Richard B. 1978. Job Satisfaction as an Economic Variable. *American Economic Review* 68 (2):135-141.
- Frey, Bruno S., and Matthias Benz. 2003. *Being Independent is a Great Thing: Subjective Evaluation of Self-Employment and Hierarchy*. University of Zurich, Institute for Empirical Research in Economics Working Paper No. 135 (May).
- _____, and Reiner Eichenberger. 1995. On the Return of Art Investment Return Analysis. *Journal of Cultural Economics* 19:207-220.
- Friedman, Milton, and Simon Kuznets. 1945. *Income from Independent Professional Practice*. New York: National Bureau of Economic Research.
- Hamilton, Barton H. 2000. Does Entrepreneurship Pay? An Empirical Analysis of the Returns to Self-Employment. *Journal of Political Economy* 108 (3): 604-631.
- Katz, Eliakam, and Moshe Syrquin. 1982. The Failure of Psychic Income as a Source of Market Failure. *Journal of Post-Keynesian Economics* 4 (4):623-627.
- Keynes, John Maynard. 1930. Economic Possibilities for Our Grandchildren. In *Essays in Persuasion*. London: Macmillan.
- Nordhaus, William D. 2004. "Schumpeterian Profits in the American Economy: Theory and Measurement." Cambridge, MA: National Bureau of Economic Research, Working Paper 10433.
- Sagot-Duvauroux, Dominique. 2003. Art Prices. In Ruth Towse (ed.). *A Handbook of Cultural Economics*. Cheltenham, UK: Edward Elgar: 57-63.
- Thurow, Lester C. 1978. Psychic Income: Useful or Useless?" *American Economic Review* 68 (2):142-148.
- _____. 1980-81. Psychic Income: A Market Failure. *Journal of Post-Keynesian Economics* 3 (2):183-193.
- Withers, Glenn A. 1985. Artists' Subsidy of the Arts. *Australian Economic Papers* 24: 290-295.