

The Tourism Industry Life Cycle: Initial Evidence from the Swiss Hotel Industry

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April 15, 2004

Abstract

We test the stylized facts of the industry life cycle using data from the Swiss hotel industry. Time series concerning the number of firms in the industry and output in terms of overnight stays are used to show that the Swiss hotel industry exhibits some of the typical traits of the life cycle theory. It is found that this industry has had two growth phases and is currently in a declining phase. Lack of meaningful and complete price data limits the analysis. It is suggested that further research needs to be done to examine price, innovation and exit hazard over the life cycle.

Keywords : Life Cycle, Hotel Industry, Entry, Exit

JEL Classification : L10, L11

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1 Introduction

Empirical studies of numerous products and industries have shown that variables such as the price of the product, output, and the number of competitors in an industry are non-monotonic and follow a typical pattern over the life span of that industry (see for instance Gort & Klepper, 1982; Agarwal & Gort, 1996; Klepper, 1996). A number of theories and models have been developed in the past, to try to explain the evolution of a competitive industry. These studies have in common a number of stylized facts to describe this evolution.

The Swiss Hotel industry has been experiencing stagnation, even decline, for a period of over twenty years (Wachter, 1994). This can be measured both in terms of arrivals, overnight stays, and perhaps most importantly, the number of firms. Thus the number of hotels in Switzerland has declined by over 10% in the past decade.

The aim of this paper is to verify if the evolution of the Swiss hotel industry fits with the stylized facts of the industry life cycle. This serves two purposes. The first is to attempt to verify if life cycle theories may be used to analyze a service industry, such as the hotel industry. It is interesting to note that most papers to date have concentrated on manufacturing industries. One reason for this may be a lack of data concerning service sector industries, in particular data relating to output. The second purpose is to gain evidence to back the claim that the Swiss Hotel industry is in fact in a declining phase.

This paper is divided into four parts. The first part gives an overview of the stylized facts of the industry life cycle. The second part gives a brief historical overview of the Swiss hotel industry. The third part confronts data concerning the Swiss hotel industry with these stylized facts. The final part comments on the applicability of life cycle analysis to service industries, the problem of scale, and gives ideas for further research.

2 The Product Life Cycle

The idea of the product life cycle may be traced all the way back to Kuznets (1930) who studied the time series of output and prices for a number of products. His research suggested a product life cycle. Current work, has moved away from the product life cycle towards a theory of endogenous evolution, embedded in the industry life cycle. An important paper by

Michael Gort and Stephen Klepper (1982) generated a number of stylized facts for the industry life cycle. Later work has added a number of additional facts, but in this somewhat simplistic analysis, we will limit ourselves to examining the original stylized facts of Gort and Klepper. These facts are very well summarized in Jovanovic (1998), but before recalling these, let us examine briefly the various stages in the life cycle of an industry.

The evolution of a product in a competitive industry is said to go through a number of stages from invention and early development to decline and eventual death. The stages may be examined both in terms of sales and output (quantity) and in terms of the number of firms operating within the industry or providing the product. Another measure, of interest notably for the economic geographer, could be the number of workers in that industry. Over the past 20 years or so, scholars have been most keen on examining the number of firms and the net entry (which is defined as the number of firms entering the industry, minus the number of firms exiting the industry). If we examine the number of producers in any given industry, we may decompose the evolution of that industry into five distinct stages. This is illustrated in figure 1.

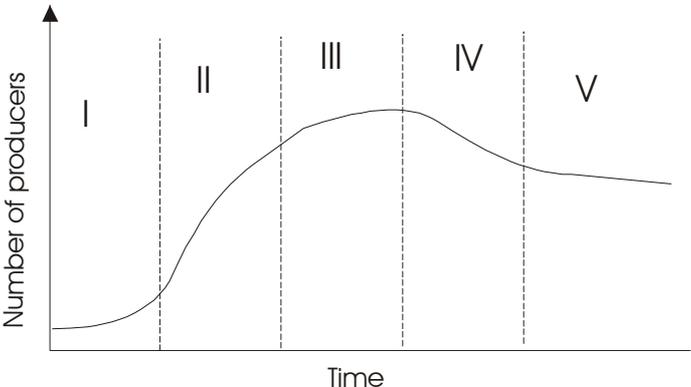


Figure 1. Stages of product life cycle

In stage I, following the invention of the product, a small number of producers exist within the industry. Stage II illustrates the time when the industry finds itself in a high growth phase. During this phase abnormal profits will tend to attract new firms into the industry and output will also exhibit high growth. Stage III is a period where the number of firms stabilizes before falling off again in stage IV. Stage V is one where net entry stabilizes until some fundamental disturbance hits the industry. It need not be assumed that any given product

must pass through each of the five stages during its lifetime. Indeed, empirical studies have shown that the duration of each of the stages is variable. The duration should logically depend on the specific competitive environment of the given market and the nature of the product or industry in question.

Jovanovic (1998) summarizes some of the stylized facts of the industry life cycle as being :

(i) sales and output grow at a rate declining with the product's age, and converging to zero.

(ii) product price declines steadily but at a slowing rate with the product's age.

(iii) after product birth, a rapid entry of new firms precedes a mass exit (often called a shakeout), followed by a stabilization.

(iv) innovation in general does not seem to decline with the age of the product but the importance of early inventions or innovations is greater than that of latter ones in the product's life.

(v) any given firm's exit hazard declines with its own age.

(vi) any given firm's exit hazard rises with the age of the industry.

The evolution of a competitive industry therefore seems to follow some clear path. Variations, sometimes important, may exist, but every industry goes through these clear stages. The life of the (narrowly defined) industry, or product, starts with a discrete event, namely the invention of the product and its introduction into the market. This last distinction is important. The product life cycle can only commence once the new product is marketed. An initial supplier is willing and able to supply the product to one or more customers. If the product meets some demand on the market, an industry is born. In as much as the industry takes off, the initial firm producing the product will benefit from abnormal profits due to its situation as a monopolist. If there are few or no barriers to entry, the abnormal profits of the producing firm will attract other firms to enter the market. These entrants in turn will contribute to develop the market for the product and will attempt to differentiate themselves through innovation. This innovation activity will lead to the creation of new profits, which again will attract more entrants. The price of the good will rapidly decrease, reflecting the movement from monopoly to oligopoly, to monopolistic competition and possibly to perfect competition.

The industry growth of sales and output will therefore initially be very high and rising. However, the rate of growth will quickly slow down (often within a few years) as the rate of entry becomes greater than the growth rate of profits. The effect of this is the so-called

"shake-out", where a number of the less efficient competitors will exit the industry. Eventually, the nature of innovations and of competition in the industry will change, in such a way that the growth rate of sales and output stabilize and will eventually converge to zero, or even negative growth. The price of the good will diminish more slowly towards the end of the growth of the industry and may even stabilize and increase as the market becomes a niche, and the number of competitors goes down.

An interesting phenomenon is that innovation activity will continue throughout the life of the product. Constant product improvement and productivity gains will characterize the industry, even if the nature of this innovation will change. The most drastic innovations occur in the beginning of the life of the product.

In terms of firm survival, it appears that firms which have been present in the industry for a long time are also those which have the highest probability of surviving in the industry. Newer entrants, on the other hand, appear to run a higher exit hazard. Perhaps this may be explained by the existence of economies of scale, or of advantages linked to experience. Customers may also be more locked-in than in the initial phases of the life cycle of the industry.

3 Early History of the Swiss Hotel Industry¹

The origins of tourism in Switzerland may be found as early as the eighteenth century. In the early years of that century it became fashionable for the Swiss upper class to send their young ones on a trip through their own country in order to experience their cultural heritage, gain perspective and perhaps toughen them. This was also the time when the English tradition of the Grand Tour was spreading and became a must for young educated men who wished to be considered gentlemen. The young men travelled anywhere between a few months and several years. During this time they toured the great sights of Europe and particularly Italy attracted many visitors. By the middle of the century, a majority of these visitors included Switzerland in their Grand Tour. Towards the 1760s, this travelling activity increased radically and mountain travelling in particular was largely dominated by the English.

¹ The main source of historical information for this chapter is Bernard (1978)

During the later part of the eighteenth century, a number of prominent French, German and English writers and poets visited Switzerland and wrote important works praising the country and its mountains at the height of romantic writing. The peaks were as yet, though, mainly admired from a distance, standing majestically over Lake Geneva or at some distance from Zürich. With the nineteenth century came a renewed interest in the mountains as climbers converged on the Alps in a bid to beat each other to the summits. The inhabitants of the Alps were by no means well off. In fact, during the first half of the nineteenth century many villages saw their younger ones abandon the traditional farming to go to the cities or even overseas for better jobs. In 1800 about two-thirds of the working population were active in the primary sector, with only 26.3% in the secondary and 7.9% in the tertiary sectors (Zünd 1969). Even in the 1860s, the Canton of Valais had no more than 480 industrial workers², synonymous with a lack of industrial development in a mountainous region dominated by the traditional way of life³. The Alps were in many ways dying at the middle of the nineteenth century. The growth of tourism would, however, soon counter this trend.

Inns had existed since at least the middle ages in Switzerland. The status of inn-keepers appears to have been good and evidence shows that already in the early eighteenth century staying in Switzerland was considered expensive. The quality of the Swiss inns was also noted as being superior. Thermal baths were developed quite early and low-lying places like Interlaken and Luzern saw the opening of many pensions in the early nineteenth century. Sizeable inns which could be called the first hotels were operating profitably in cities like Zürich by this time. The first half of the eighteenth century also saw the creation of railways across Europe. This was a necessary step, needed for mass tourism to be even remotely possible. Before the railways, travelling to Switzerland from England and even from Germany, France or Italy was an uncomfortable, slow and expensive process. In fact the transportation costs by far outweighed the actual cost of staying in Switzerland. But this new technology would soon revolutionize travel in Europe and, most importantly, allow the middle class to travel.

The early stages of the hotel industry in Switzerland, and in particular the development of tourism in the Alps, were characterized by the kind of entrepreneurial spirit which one now, erroneously, often only associates with high-tech industries. There were real pioneers of

² Bernard (1978)

³ In fact, even today Valais has relatively little industry.

tourism, such as Johannes Flugi and the Badrutt family of St. Moritz, Alexander Seiler of Zermatt, or the Durrer family. These were men who had a vision for the development of their respective villages. They were motivated by the pursuit of profit and did not hesitate to invest everything they owned in the building of the first grand hotels of Switzerland. They knew that they could attract the upper-class English, who had a high willingness to pay, but also expected high standards. Therefore, the Swiss hotels were very early on built as palaces, filled with antiques purchased in France and Italy, catering for the rich and famous. Royalty and political heads streamed to the mountains to enjoy the majestic scenery and the luxuries offered to them. Growth only attracted further investments and the building of new hotels, as well as the expansion of existing ones. Between 1886 and 1895 (less than a decade), the number of visitors to Davos, for instance, doubled, reaching 13'220 visitors.

During these booming years, tourism was able to put a stop to the exodus of previous decades. Labour was attracted back to the mountains. The population of Davos increased as a direct result of the development of tourism and the creation of hotels (as shown in the following table⁴).

Year	Population of Davos
1838	1803
1850	1680
1860	1705
1870	2002
1880	2865
1888	3891
1900	8089
1910	9905

Innovation in this new-born hotel industry was very common in the early years. In fact, most of the services that modern tourists take for granted were invented or adapted to tourism in these years. Spas were opened and existing ones improved; Sanatoriums drew wealthy guests suffering from tuberculosis to the soothing air of the Alps; Water closets were imported and installed at great expense; Various summer sports were developed (including fishing, hunting, rowing and swimming in mountain lakes, lawn tennis, croquet and lawn bowling), and most importantly, winter sports were developed to create a second season and thereby greatly

⁴ Source : Bernard (1978)

increase returns on investment. Another important innovation in the over-all travel and tourism industries was the quasi-invention of the Tour Operator by Thomas Cook. He had started to run prohibition tours in England in the 1840s, before launching into continental travel tours in 1855. This was hugely successful and it was not long before the scheme was copied by competitors.

Further tourism and hotel-related innovations of the mid to late nineteenth century include the gourmet hotel restaurant; Funicular railways; The introduction of increasingly varied entertainment for guests such as concerts, billiard and games rooms, libraries full of books and gambling⁵; Increasingly elaborate gardens for guests to stroll in etc. But perhaps the greatest innovations were those related to winter sports. English tourists themselves introduced skating, as an alternative occupation to simply walking and sleigh-riding. Sledding was also introduced by the tourists themselves. Toboggan runs were built (among them the famous Cresta Run). Later came curling and ice-hockey. Skiing was introduced rather late in the Alps, having existed long before in Norway. Skiing timidly took off during the 1890s but only truly caught on two decades later. By 1912, car rental was becoming a common thing⁶.

4 A Life Cycle Analysis of the Swiss Hotel Industry

Based on official data from the Federal Swiss Office of Statistics we compiled a time series of yearly data for the number of hotel and spa establishments in Switzerland. From this we were able to establish a series of the net entries defined as:

$$\text{Net entry} = (\text{Number of firms entering the industry}) - (\text{Number of firms leaving industry})$$

Another time series was established with the number of over-night stays. The total number of nights spent in a Swiss hotel per year can be considered the yearly output of that industry. In addition to this one could examine capacity, given by the number of available rooms or beds. It could be that excess capacity is non-monotonic over the life cycle. However, since we are mainly interested here in output, not capacity, we will not examine the latter. In addition to the output data, we compiled data on prices from the Swiss Consumer Price Index.

⁵ Although most forms of gambling were prohibited by law, some were tacitly accepted

⁶ Source: Tissot (2000)

It must at this point be noted that we found it extremely difficult to find national data going sufficiently far back to take into account the entire life cycle of the hotel industry. A complete analysis would require data from at least the early nineteenth century onwards. Published yearly data from the Federal Office of Statistics goes back to 1934 only. Price data only goes back to 1977. The analysis is therefore somewhat limited by the availability of reliable data. Figure 2 illustrates the evolution of output and the number of hotel establishments from 1934 to 2001.

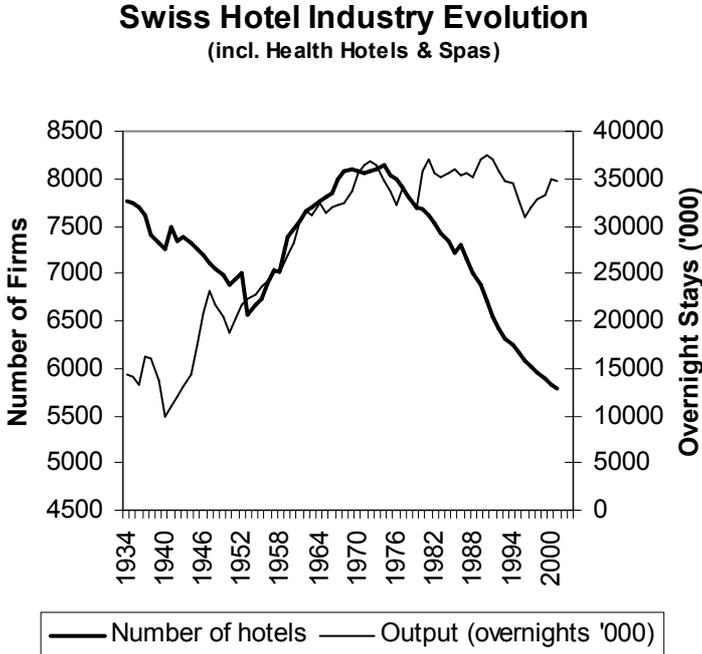


Figure 2: Evolution of the Number of Firms and Output

In addition to the data in Figure 2, one can note that based on earlier surveys by the Federal Office of Statistics, the number of hotels in 1880 was 1002, in 1894 was 1708 and in 1912 was 3585⁷. Figure 3 includes these figures and extrapolates on these for the remaining years.

⁷ Source : Statistisches Jahrbuch der Schweiz (Zünd (1969) gives different figures which are much higher)

Swiss Hotel Industry Evolution (incl. Health Hotels & Spas)

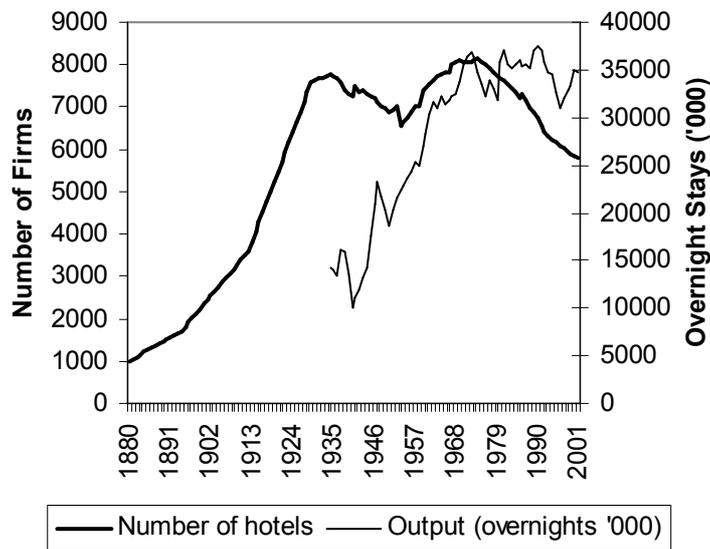


Figure 3: Long Term Evolution of the Number of Firms and Output

From what we know then, we can reasonably deduce that the number of firms active in the hotel industry was at a maximum at some point in the period 1929-1934 and a second time in 1974. Figure 4 shows the net entry in the period 1934-2001.

Net Yearly Entry

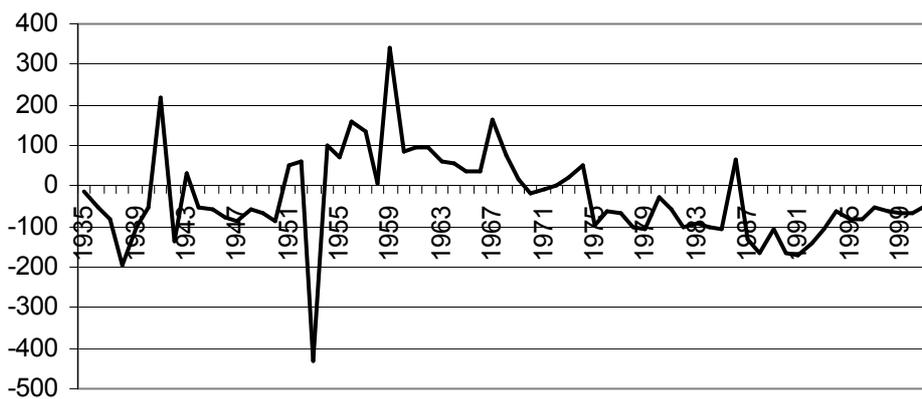


Figure 4: Net New Firm Entry Into the Hotel Industry

We can now compare the data with the stylized facts of the industry life cycle. In fact we find that the data we have fits the theory quite well.

Historical sources indicate clearly that the hotel industry took off in the second half of the nineteenth century. We can say that phase I of the life cycle took place in the years prior to 1880. During this period, the first major hotels were built, and the winter season was invented. The period 1880 – 1930 saw impressive growth. Following this initial growth, it appears that demand growth started slowing down a first time around 1910, already before the First World War. Prices likewise may have started to fall. To quote Bernard (1978):

“For the whole of Switzerland, a diminution of both the total number of hotel guests and the income earned by hotels begins in 1908, if one considers the summer season only, in 1911 if one takes the whole year. In retrospect it can be seen that, for approximately two decades, the number of hotel beds had been expanding at a considerably higher rate than the corresponding increase in the number of tourists. While, at the beginning of this cycle, large numbers of travellers were competing for an insufficient number of beds, by the end of it the shortage had not only be made up but been replaced by a surplus of offerings.”⁸

It would appear then that a first slow-down of demand affected the industry in the decade following 1910⁹. During this decade, the First World War in particular would have seriously affected the tourism industry. Due to a lack of data, we are however not able to evaluate the exact extent of this slow-down. What we do know, is that it did not affect the long term growth in the number of firms, or in output. In fact, ignoring these short term fluctuations, we can say that the growth phase, phase II, of the Swiss hotel industry, lasted all the way to the early 1930s. This was when, for the first time, a significant number of firms exited the industry. In fact, between 1933 and 1953, net exit exceeded 15% of hotels. One may be surprised that this figure was not higher. The period leading up to and including the Second World War, was obviously a special period which greatly influenced mobility in general, and tourism activities in particular. The Swiss hotel industry suffered the consequences of this. It is interesting to note, however, that the loss of foreign tourists was partially offset by an increase in domestic tourism. As is often the case, strong home demand can be a very good cushion against foreign demand fluctuations. Another important factor was that the international travel industry was still growing after the Second World War. Major innovations

⁸ Bernard (1978), p. 174

⁹ In fact this is not entirely true, since the economic slump of the period around 1873 had already affected tourism for a few seasons.

were still being made in travel. The commercial jet, for example, was only introduced in the late 1950s.

The growth of international tourism may very well be the best explanation for the second take-off of the Swiss hotel industry following the Second World War. Yet, the market was already a mature one, with a large number of competitors. The number of hotels grew steadily again for almost 20 years, before levelling off. Output, in terms of overnight stays, also reached its peak around 1972. Since then, the industry has experienced thirty years of stagnation. Quite logically, the number of firms would diminish from here, going from a peak of 8145 firms in 1974 to 5777 firms in 2001, a 30% drop. Over the thirty years since the industry peaked, a clear concentration has taken place, leaving fewer competitors fighting over a stagnant market. We would therefore argue that the industry is now experiencing the fourth phase of the industry life cycle.

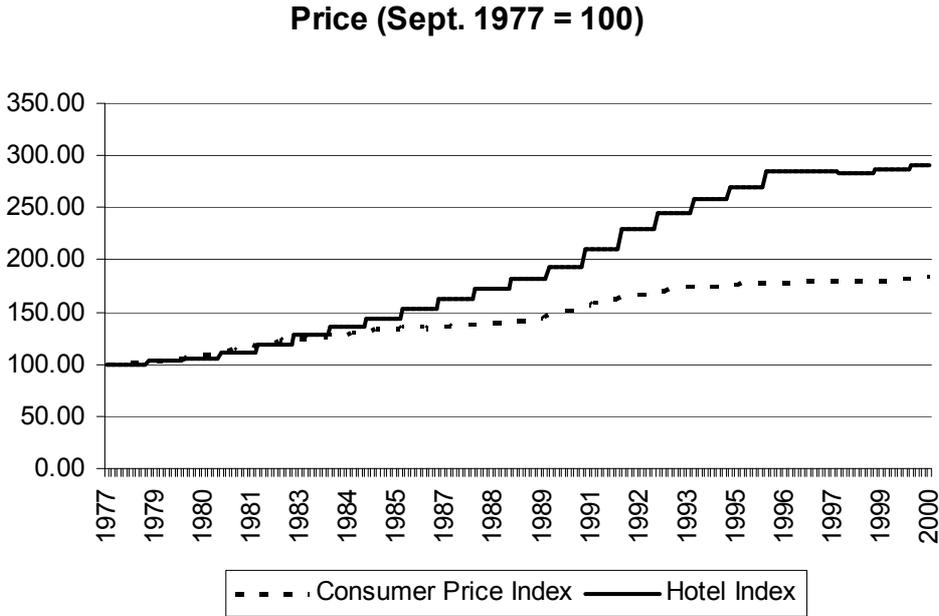


Figure 5: Evolution of the Price of a Hotel Room

A final variable which we need to examine is price. It is very difficult to find satisfactory statistics on the price of hotel rooms, going sufficiently far back in time and which can meaningfully be compared across time. The best we could do was to settle for the data of the Federal Office of Statistics contained in the calculation of the Consumer Price Index (CPI). This data, however, only contains a measure of the price of hotel rooms from 1977 onwards. Figure 5 shows the evolution of the price of a hotel room compared to the evolution of prices

in general. What we see is that the price of a hotel room in Switzerland appears to have grown in real terms. This could be in line with what we could expect, as long as prices were falling in previous phases. With data going back only a quarter of a century, we are missing a full century's worth of data. We therefore have no clear picture of how prices evolved throughout the life cycle of the Swiss hotel industry. The quality of the underlying data may also be questionable.

5 A Summary of Our Findings

Comparing the evolution of the Swiss hotel industry with the stylized facts of industry evolution (as outlined in earlier parts of this paper) yields interesting results. The available data seems to fit reasonably well with the theory. The evolution of the number of firms has a “double-hump”, having twice peaked at around 8000 firms. The reasons for this phenomenon are likely to be the combined effect of the tourism slump brought about by the Second World War, which brought about a first shake-out, as well as the high growth in international travel and tourism in the post- World War Two era. Aside from this period of stagnation, the number of firms appears to have reached a maximum around the early 1970s, at which point output ceased to grow. Following this period, a second and more pronounced shake-out has taken place and continues to take place. Recent data would confirm that the number of hotels in Switzerland is still declining. Preliminary 2002 data shows the number of hotels to be at 5701 and overnights (output) to be at 32'993'369. This means a drop of almost 5% in output. One reason for this high decrease in output was of the course the events linked to the September 11th 2001 terrorist attack in New York. Coupled with the effects of concentration of ownership and the increase in marketing franchises and hotel chains, the overall picture is one of a very clear pattern of market concentration. The evolution of the number of firms therefore fits that predicted in Figure 1 fairly well. This corresponds to stylized fact (iii).

Output growth appears as having fluctuated markedly through the period for which we have detailed data, but with a clear growth trend. We can say that output has exhibited high growth for a period, after which the growth rate has declined and converged to zero. We do not have data for the total sales value, and therefore can only partially confirm that the data fits stylized fact (i). We have not been able to confirm stylized fact (ii), concerning price evolution, due to a lack of data. We do strongly suspect, based on historical evidence, that the main inventions and innovations linked to the hotel industry took place at a quite early period. Evidence also

suggests that innovation continues today. Examples are the recent fitting of high-speed internet connections in most high and middle class hotels. The aim of this paper has not been a thorough investigation of innovative activity in the hotel industry, and we can therefore only put forward very limited evidence to prove stylized fact (iv). Finally, we have voluntarily omitted verifying stylized facts (v) and (vi).

6 Conclusions

In this paper we have attempted to verify the theory of the product or industry life cycle, using the example of the Swiss hotel industry. Official published data from the Federal Office of Statistics was used to construct time series of the number of hotels, output and price. The data was then confronted with the stylized facts of the product life cycle.

We found that the theory could well explain the evolution of the Swiss hotel industry. We were able to verify this for the evolution of the number of firms, as well as the output. We produced only very limited evidence concerning innovative activities. It would appear from this evidence that innovation occurs throughout the life of a product, but the most important and radical innovations occur earlier rather than later.

Whereas the findings have gone some way in shedding light on the applicability of life cycle analysis in the hotel industry, some questions remain unanswered. These may be the object of further research.

Firstly there is the question of industry concentration, and what we should be measuring when we look at the number of firms. We have used the number of hotels in our analysis. The real industry concentration may in fact be greater than we measure using this unit. Although most hotels are independently owned and operated, many are also jointly owned, some even belonging to industry conglomerates. The Accor Group, for example, operates 26 hotels in Switzerland today. Franchises and marketing-based co-operations are further examples of concentration. The Golden Tulip chain today operates 270 hotels and Best Western 65 hotels. The real competitive picture then may well be quite different than the one we get by looking only at the number of establishments. Based on figures available from the Swiss Hotel Association¹⁰, over 1200 Swiss hotels are members of 33 groups active in Switzerland. These

¹⁰ http://hotels.swisshotels.ch/sites/hotelgruppen_start.asp, february 25th 2004

include integrated groups, franchising and marketing co-operations. Getting detailed, historic information about ownership and partnerships within the hotel industry would, however, be very difficult, if not impossible, on a national basis.

A second open question is that of sales and prices. Further research needs to be done in order to establish time series on the sales within the industry, as well as the average room prices. In order to make a meaningful life cycle analysis, this data must extend back to 1880 at least.

A third possible avenue of research is exit hazard with respect to the age of the firm. Quantifying exit hazard over the life cycle of the hotel industry requires detailed data of the number of firms entering and exiting the industry as well as their age at exit. We did not locate such data for all of Switzerland. It should, however, be possible to conduct a meaningful survey in order to estimate the hazard. This survey could also be used to get more detailed information about innovative activities over the life cycle of the hotel industry.

Finally, we wish to make a comment concerning the scale which one uses to examine the life cycle. There has been some argument amongst scholars as to what scale can meaningfully be used to examine an industry. This is perhaps more important in a service industry than in manufacturing. We have simply used the nation as a scale for our analysis. We could have alternatively used the resort, or city. We could also have used some form of industry cluster. In the case where a country is sufficiently large that there are clearly identifiable and individual resorts or clusters, which are thought to have different life cycles, then the scale used ought to be the resort or cluster. Switzerland being a small country with a fairly uniform product to offer the tourist, we believe that using a different scale would not change our results very much.

References

Agarwal, R. & Gort, M., "The Evolution of Markets and Entry, Exit and Survival of Firms", *Review of Economical Statistics*, (August 1996), 489-498.

Bernard, Paul P., "Rush to the Alps: The Evolution of Vacationing in Switzerland", Columbia University Press, New York, 1978.

Gort M. & Klepper S., "Time Paths in the Diffusion of Product Innovations", *The Economic Journal*, Vol. 92, No. 367 (Sep., 1982), 630-653.

Jovanovic B., "Michael Gort's Contribution to Economics", *Review of Economic Dynamics*, vol. 1, (1998), 327-337.

Klepper, S., "Entry, Exit, Growth and Innovation Over the Product Life Cycle", *The American Economic Review*, Vol. 86, No. 3, (June 1996), 562-583.

Kuznets S., "Secular Movements in Production and Prices", Houghton Mifflin, Riverside Press, Boston, 1930. Reprinted by Augustus M. Kelley, 1967.

Tissot, L., "Naissance d'une industrie touristique: Les Anglais et la Suisse au XIXe siècle", Editions Payot, Lausanne, 2000.

Wachter, D. & Elsasser, H., "Current problems of tourism in Switzerland", *European Planning Studies*, vol. 2, Issue 2, (1994), 246.

Zünd, R., "Die Entwicklung des Fremdenverkehrs des Schweiz im allgemeinen wirtschaftlichen Wachstum", Winterthur, 1969.