SECTION 6. ENTERPRENEURSHIP

In this section we refer to the shock exchange indexes that monitor the course of the hi-tech companies listed in the ASE (special case-study at the end of the issue) and to special indexes that ensue upon analysis of the economic data of the enterprises of the observation sectors. The data comes from the ICAP database and refers to the most powerful companies in the observation sectors (with at least 10 employees and a turnover of at least 250 mil. GDR for 1999).

6.1. ENTERPRENEURSHIP

6.1.1. GREEK INNOVATION COMPANIES AND THEIR COURSE IN THE GREEK STOCK EXCHANGE MARKET (ASE) 1998-2000

In this module we present the course of the Greek innovation enterprises that have been listed on the ASE for the period between 1998-2000. Those indexes that illustrate their evolution have ensued from the ASE normalisation process, so as to be comparable to the respective ASE indexes as the case may be. The timeline for the indexes is the 2nd/1/1998 (baseline value 100). Detailed conclusions for the individual indexes, namely for information technology and hi-tech companies, telecommunications and mobile telephony companies and innovative financial companies are provided in paragraphs 6.1.2, 6.1.3 and 6.1.4 respectively.

At this point we should clarify that the index prices have no connection to the calculation of the general index. For the calculation of the indexes we take into account the change in the overall capitalisation and divide it by the change in the number of stocks. This way, the participation of all the companies is proportional in the formation of the indexes and the nominal increases in the indexes as a result of share capital increase can be avoided. Thus, we manage to truly depict the changes in price levels.

Finally, in annex 6.1.5 we provide a list of the companies that were used to produce the individual indexes as well as the general index (table 6.5), along with the figure of the ASE general index course and the course of the small, medium and large capitalisation companies general index, for the period between 1998-2000 with a baseline value of 100 (figure 6.1.5.a)

As general conclusions regarding the course of innovation companies in the Greek financial market, it is worth noting that:

A) They were influenced by the overall stock exchange climate.

B) Their course depends on their capitalisation and the object of their activities.

Upon examination of the companies based on their capitalisation, we observe (figure 6.1.1.a) that the small capitalisation companies display the biggest range of change. From the beginning of the 1998 until September of 1999 they followed a constantly rising course, to the point that their price became almost ten-fold. From 10/1999 until the end of 2000, the constantly downward course of the prices led on 12/00 to approximately the levels of the beginning of 1998. This, of course, does not mean that there were no capital losses, since it is a fact that, the majority of the stocks of companies in this category was introduced to the stock exchange market during the time when the level of the prices, and consequently the level of the introduction prices, was particularly high.

Chronologically, the course of the medium capitalisation companies index (figure 6.1.1.b) was similar to that of the small capitalisation companies, but with a smaller range of fluctuations and, consequently, smaller percentile medium-term losses. Of course, at the end of 2000, their price level came down to lower levels compared to the ones at the beginning of 1998.

Figure 6.1.1.a Course of small capitalisation innovative companies price index

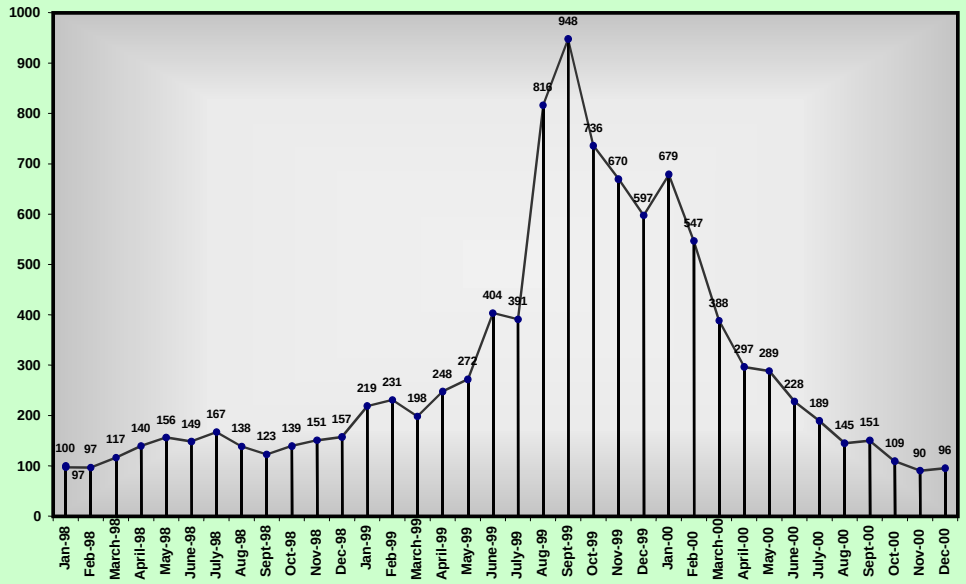
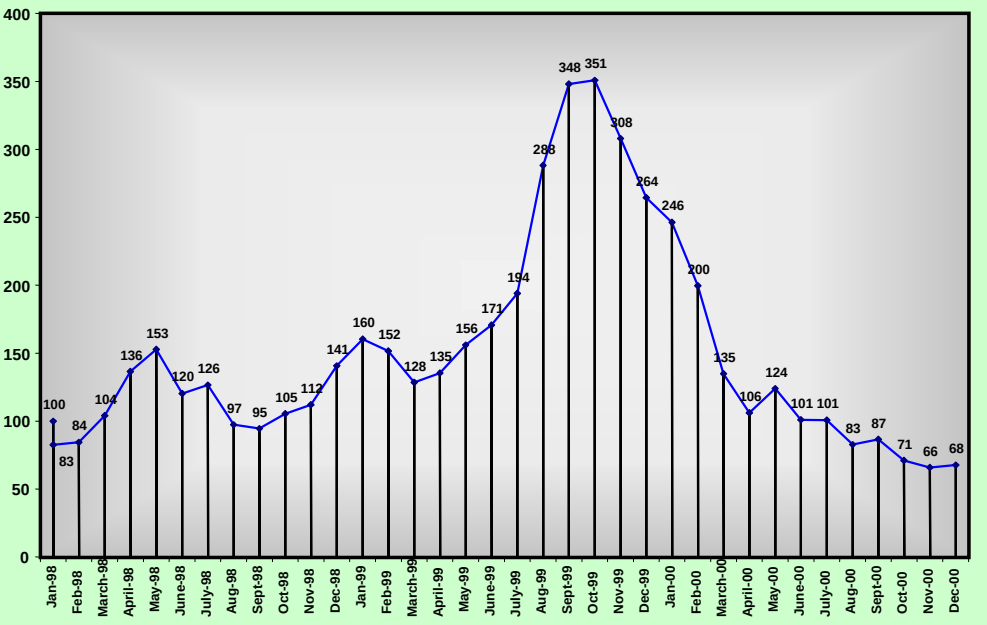
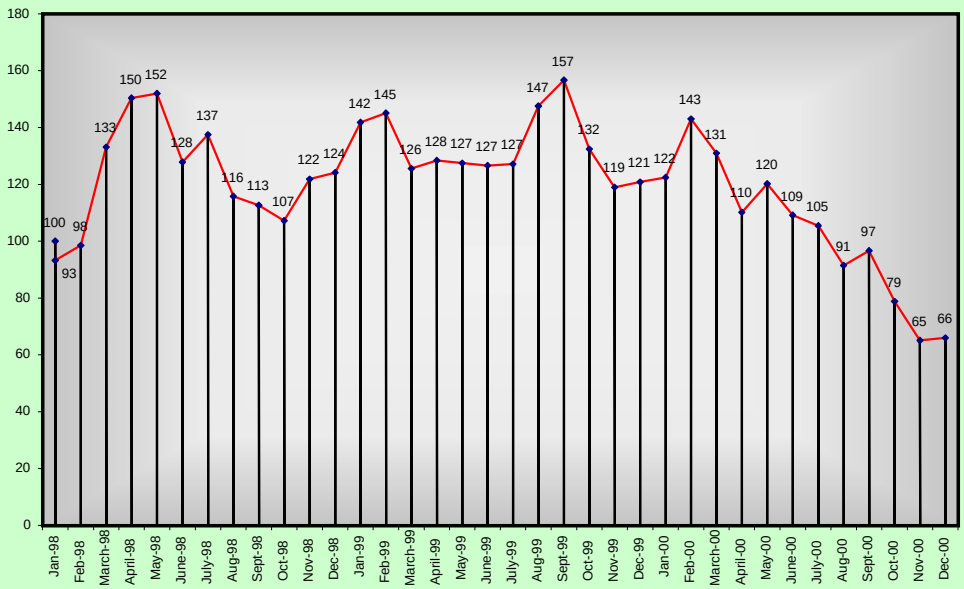


Figure 6.1.1.b Course of the medium capitalisation innovative companies price index



The large capitalisation companies (figure 6.1.c), compared to the other two categories, had a relative stock exchange balance; however, this does not mean that they did not display significant changes during the three-year period between 1998-2000, since they too were affected, to a large extent, by the overall climate that eventually led, at the end of 2000, the level of the prices very low, and in fact lower than the levels at the beginning of 1998.

Figure 6.1.1.c Course of the large capitalisation innovative companies price index



In figures 6.1.1.d and 6.1.1.e it is clear that, first of all, the innovative companies index was mainly affected by the course of the large capitalisation companies; the capitalisation percentage and the course of the telecommunications index also played an important role in that. Another characteristic is the big fluctuation range in the indexes based on capitalisation, as well as the chronologically similar course of those indexes.

Figure 6.1.1.d Course of innovative companies index

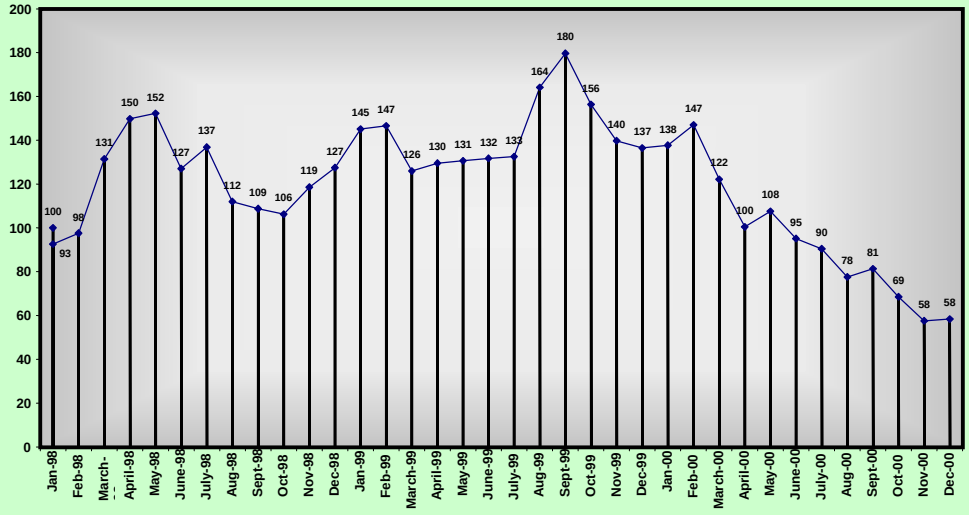
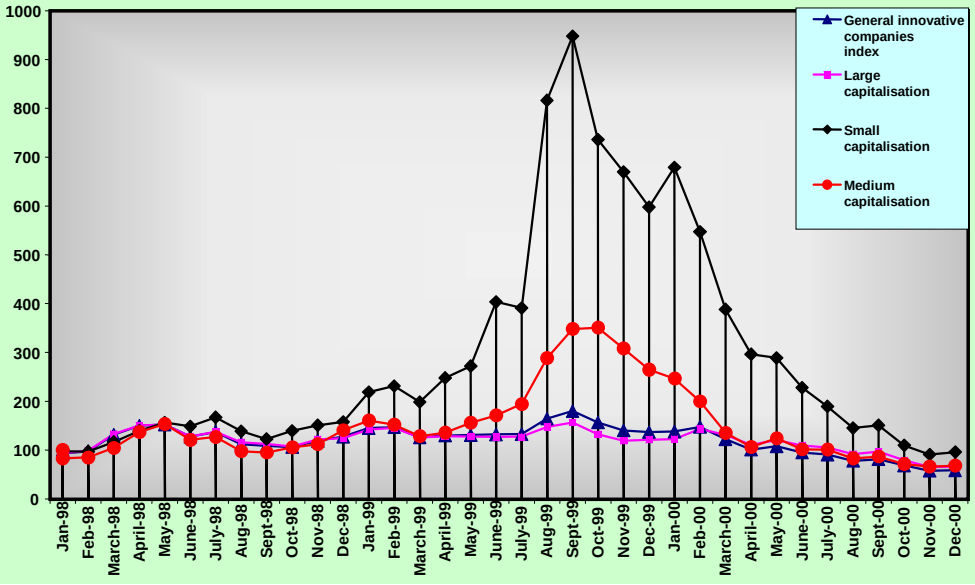


Figure 6.1.1.e Comparison between the individual innovative companies



6.1.2. THE COURSE OF THE INFORMATION TECHNOLOGIES AND HI-TECH COMPANIES IN THE GREEK STOCK EXCHANGE MARKET

The companies involved in the field of information technology and hi-tech have been the most important field of activity for the technologically advanced economies in recent years. They are the most innovative sector in the production process and their outcomes are applied either indirectly or directly in almost every production sector of the economy.

The high frequency of innovations is the result of the competition in the fields of modern technology. Many of the innovations are characterised by the transience of their application, due to the fact that within little time the applications introduced are considered to be obsolete. The products and services provided by the information technology and hi-tech companies are addressed to a particularly broad age target group and are applied in the field of modern education, the production sectors, telecommunications, modern medicine, but also in entertainment.

Given these facts, we realise that it is one of those sectors where there is no depreciation on the part of the buyers for the products and the services offered.

The applications of the results and the improvements they brought about in the production process constituted the basis for the planning of the "***new economy"*** aiming at the constant improvement of the production conditions in order to produce higher yields, without substantially increasing the variable cost of. In essence, an effort is being made to eliminate the comparative relationship between labour – outcome and to render this relationship proportional, minimising in addition the zero point levels in the production volume – profitability ratio. What is characteristic about this effort is that the fixed installation expenses – operational expenses ratio was reversed.

The application of hi-tech products and services in the production process may have raised the installation and initial operation cost, however it lowered significantly the operational expenses in the production process; this fact made the enterprises that introduced hi-tech data into the production process more competitive, because they substantially decreased the production cost per unit of produced item.

In essence, the introduction of state-of-the-art technologies in the Greek economy began in the previous decade and continues in particularly rapid rates. The result of this fact was a significant raise in the number of the companies active in this sector. Of course, there are companies that mainly trade and use information technology and hi-tech applications and very few that are involved in research and products manufacture.

Many of these companies were gradually introduced to the Greek money market, especially after 1999. During the three-year period between 1998 - 2000, their course depended on many factors.

The technologically "***late"*** Greek economy gave impetus to those companies to intensify their activities and to have a generally upward course, precisely due to the opportunities in a new and unsaturated market for this sector.

Another element that, initially, had a positive effect on the sector was the very good climate at an international level.

Finally, the great expectations for the future of the economy, which were based on the broad application of hi-tech, gave this sector the ability to evolve, and enormously increased the turnover and stock exchange value of the companies composing this sector.

By examining the course of this sector in the Greek stock exchange market we realise that, in general, it followed the overall climate that prevailed throughout the 3-year period, however, this does not mean that some of the companies of this sector were depreciated by the investing public. Upon observation of their course, and before drawing more general conclusions, we first realise that there are three categories of companies, the course of which in the stock exchange market and their medium-term results depended on the date of their introduction.

1st Category.(Companies introduced in 1998 and prior to that).

For the companies that were introduced to the stock exchange market prior to 1998, their results during the three years between 1998-2000 were generally positive. This of course stands for those investors that placed their money in companies of this sector up until the beginning of 1999. Those who had invested in those companies in the beginning of 1998, saw a large increase of their initially invested capital at the end of 2000. Of course, in the meantime, their initial capital increased up to six times. Those who invested in those companies up to the middle of 1999 were able to ensure their capital, always compared to the end of 2000, whereas those who invested after the middle of 1999 lost large part of their initially invested capital, which for the category of the companies under examination did not exceed 50%.

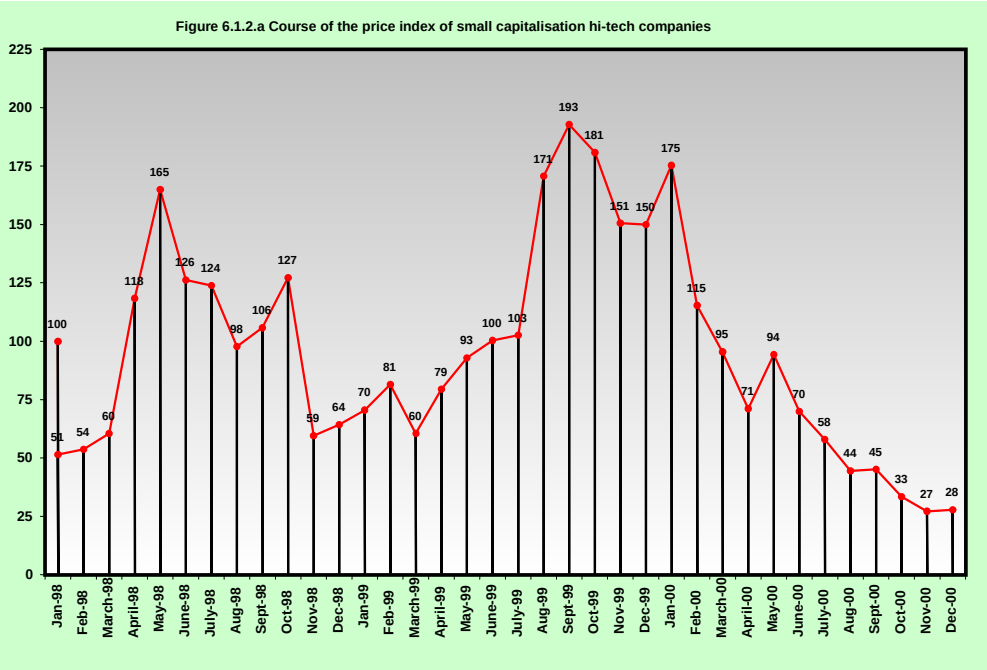
2nd Category.(Companies introduced in 1999).

For the companies that were introduced in the stock exchange market in 1999, their result during the 2-year period between 1998-2000 could be characterised as being negative, although in some cases and compared to the results at the end of 2000 it remained unchanged. Those who had invested in those companies at the beginning of 1999, had at the end of 2000 virtually the same capital. Those who had invested in companies of this category after the middle of 1999, by the end of 2000, lost a percentage of their initially invested capital that in some cases amounted to 75%.

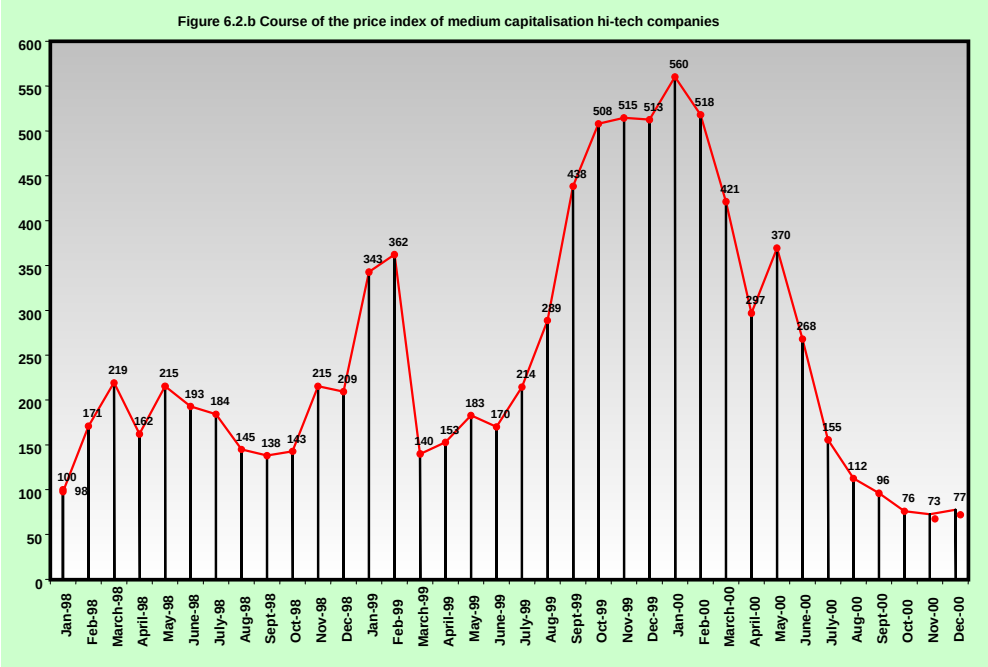
3rd Category.(Companies introduced in 2000).

The companies that were introduced in the stock exchange market in 2000 displayed a constantly downward course and those who invested in them, within a very brief period (6 to 8 months) lost a significant percentage of their capital that in some cases reached or even exceeded 60%. In an effort to follow the individual course of the stock exchange market companies, we shall divide them in small, medium and large capitalisation companies.

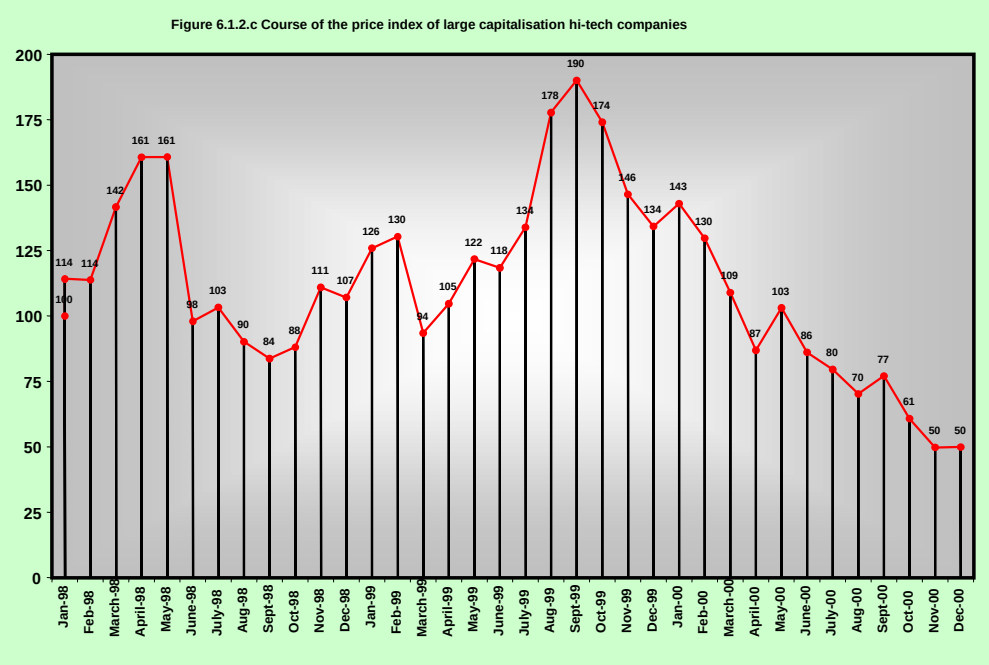
In figure 6.1.2.a we present the course of the small capitalisation companies. We observe intense fluctuations in the meantime, which led the price levels to two very good periods, 4/98-10/98 and 7/99-1/00 where they showed an increase of up to 93%. In the period between 11/98-6/99 the price levels were relatively low, but indicated a tendency of medium-term balance. From the 2/00 we observe a constantly downward course that after the 8/00 led the prices to the lowest level ever, reaching on the 11/00 the absolute lowest point ever, where they remained up to the end of 2000.



In figure 6.1.2.b we present the course of the medium capitalisation companies. The fluctuations in these companies were of an extremely big range. With the exception of the period between 9/00-12/00, when the price levels fell below the levels at the beginning of 1998, for the rest of the period the prices moved positively with a fluctuation range that rose at levels over 500% in the period 10/99-2/00. It is self-evident that in the same periode the big range of the fluctuations led to the lack of stock exchange balance, since the short-term changes in the price levels were so intense that we cannot talk about a specific tendency, but about temporary and spasmodic speculative moves.

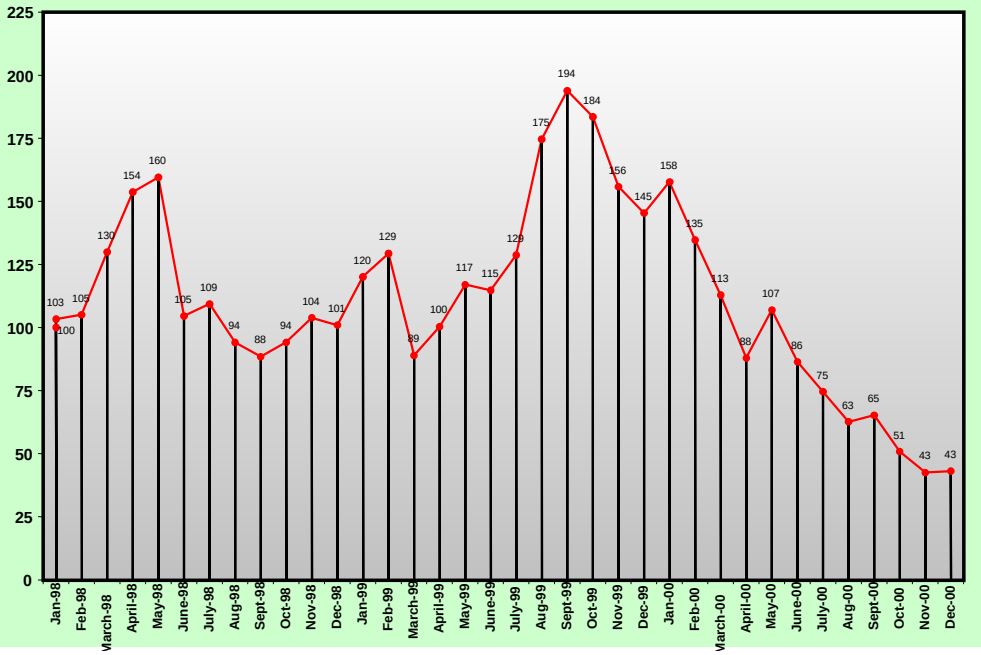


In figure 6.1.2.c we present the course of large capitalisation companies. The course of the price levels is almost similar to that of the small capitalisation companies as regards the fluctuation range and the time limit within which these fluctuations occurred.



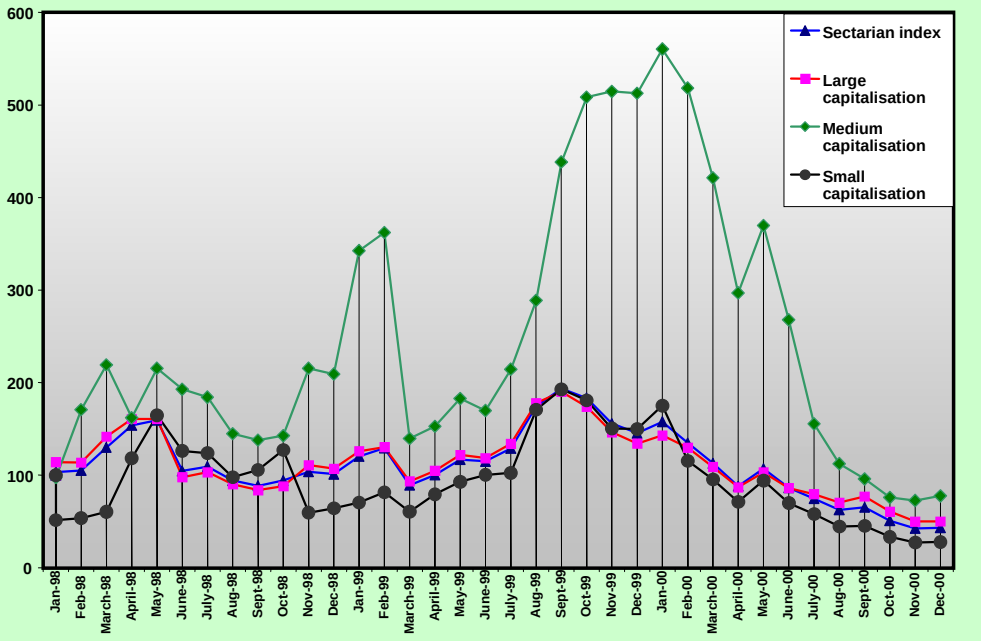
In figure 6.1.2.d we present the course of the sector of information technology and hi-tech companies. As we see from the figure, the course of the sectarian index is, on average, similar both in time and in range to the course of the small and large capitalisation indexes.

Figure 6.1.2.d Hi-tech ectarian index



In figure 6.1.2.e we present a comparison of the range of changes of the individual indexes. It is worth underlining the differentiated course as to the range of the medium capitalisation companies that throughout the 3-year period between 1998-2000 moved above the price levels of the sectarian index. The remaining indexes, with a small differentiation range, moved along the levels of the sectarian index only to end up to the lowest sectarian levels as far as the small capitalisation companies index is concerned and to approximately the sectarian index levels as far as the large capitalisation companies index. Another point we should note is that the sectarian index was influenced more by the small and large capitalisation companies, and this is the reason why it ranges at the same marginal levels, and very little by the medium capitalisation companies, since their significantly increased range was not depicted on its course.

Figure 6.1.2.e Comparison between the individual indexes of hi-tech companies



6.1.3. THE COURSE OF THE TELECOMMUNICATIONS AND MOBILE TELEPHONY COMPANIES IN THE GREEK STOCK EXCHANGE MARKET

During the 3-year period between 1998 – 2000, the telecommunications and mobile telephony companies were influenced by two facts.

A) By the course of the Greek stock exchange market, and
B) by the anticipation of the introduction of the third generation mobile phones.

Of course at the times of intense fluctuations in the Greek stock exchange, only 3 companies of the sector were listed and trading. During that time, the OTE (Greek Telecommunications Organisation) and PANAFON companies were not significantly influenced, nor were they influenced to the same extent as the companies of other sectors, due to their large capitalisation and their concrete ownership status. These reasons, therefore, prevented the speculative trends and maintained the stock exchange value of those companies within normal levels without sharp fluctuations. Of course, the basic reason for the lack of sharp fluctuations in this sector was the expectation of the involvement of the third generation mobile phones companies in the market, which appeared to be the start for a more dynamic and prosperous course of the companies in this sector.

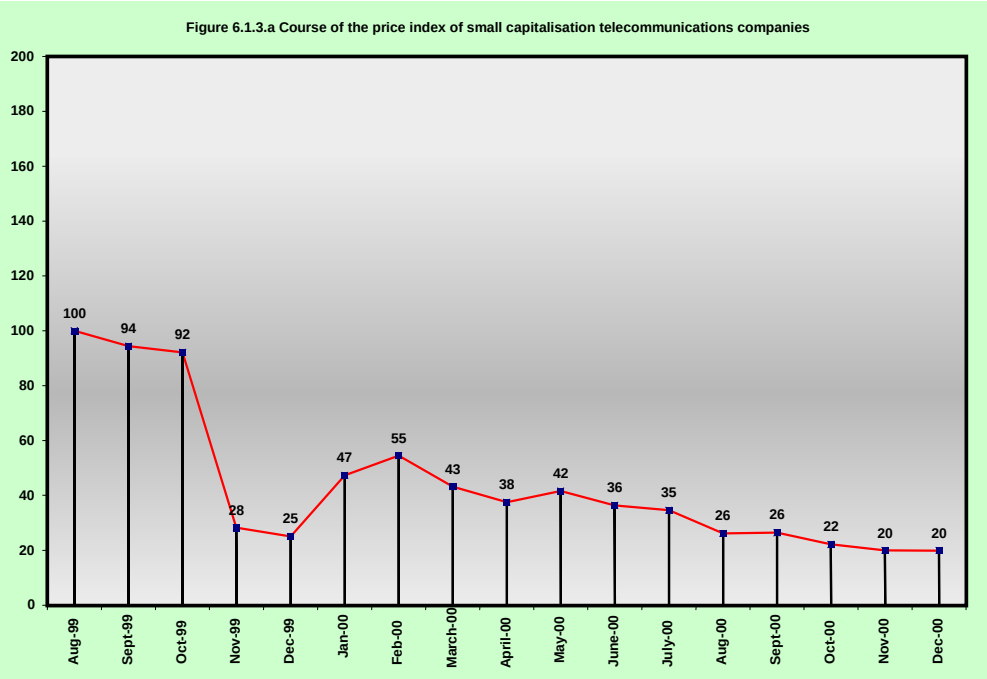
Throughout the year 2000 the rest of the companies of this sector were introduced in the stock exchange market. From all these companies, with the exception of COSMOTE – the company that within a short period of thime managed to acquire a large share in the mobile phones market – the rest became the object of intense speculative action, due to business stagnation, small capitalisation and an unfavorable climate in the stock exchange market; thus, within a small period of time they lost a significant part of their capitalisation and those who had invested in them incurred substantial losses.

At this point, it is worth noting that during the 3-year period between 1998-2000, the Greek mobile telephony market was the fastest developing market in Europe. Therefore, the introduction of companies in the stock exchange created a climate of euphoria and expectations of quick profits to investors. The collapse came with the realisation that the introduction of third generation mobiles in the market would require enormous amount of money and that it was not certain whether this move would render the companies viable and profitable.

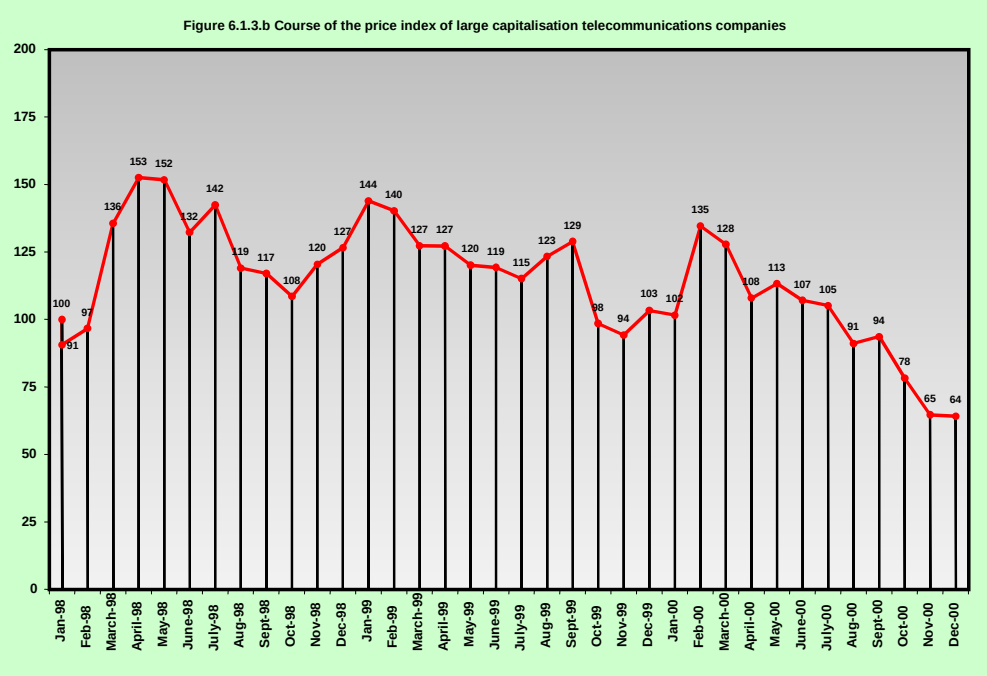
In the conclusions regarding the sector of telecommunications and mobile telephony we should underline the relevant stability displayed by the Leaders, which was the result of the way the investors' shares were distributed. The "small" sector companies, where we substantially note the biggest changes in their stock exchange value, follow the changes of the Leaders, but the increase and decrease percentages move as the case may be on much higher levels, a phenomenon characterising their medium-term instability.

Nevertheless and at the final analysis, we may say that this sector has been one of the most stable ones, in stock exchange terms, in the Greek economy. In this category of companies, it is worth studying mainly the course of the large capitalisation companies, since the small capitalisation companies were introduced into the stock exchange market after August 1999. In figure 6.1.3.a we illustrate the

course of the price index for the small capitalisation companies, where we see the constantly downward tendency that led to capital losses to the tune of 80% in the period between 8/99-12/00.

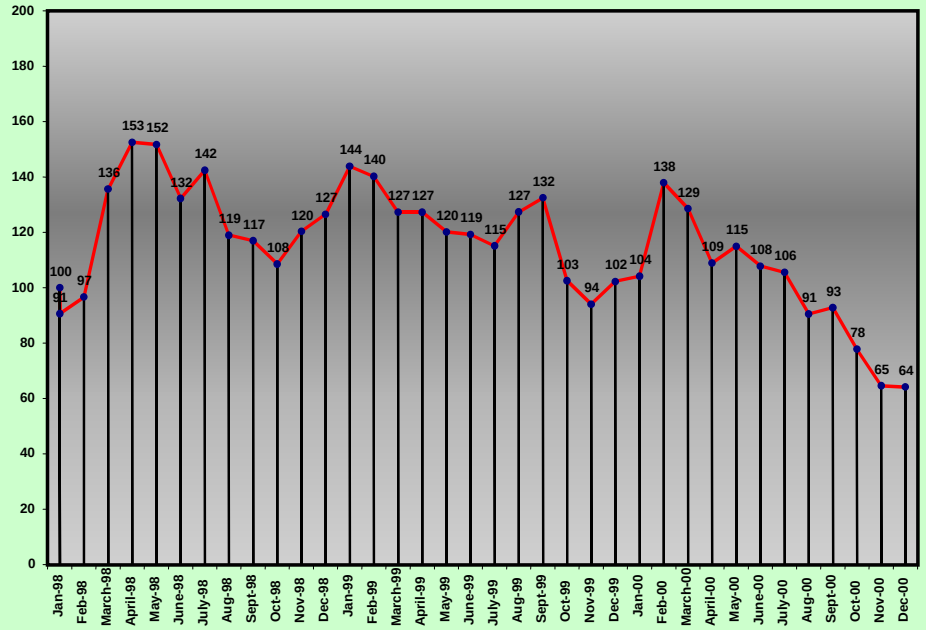


In figure 6.1.3.b we record the course of the price index of large capitalisation companies. Despite the fluctuations, this index does not have the range of the changes of the other innovation sectors. However, the most important feature is that after the 8/00 the constant drop of the prices led the prices of the end of 2000 to levels lower than those of the beginning of 1998.



The course of the sectarian index (figure 6.1.3.c) is similar to the large capitalisation index. This is due both to the period of introduction of the small capitalisation companies and to the almost infinitesimal percentage of their contribution to the formulation of the sectarian index.

Figure 6.1.3.c Course of the telecommunications sector index



6.1.4. THE COURSE OF INNOVATIVE FINANCIAL COMPANIES IN THE GREEK STOCK EXCHANGE MARKET

The companies that are active in the field of innovative financial services and their course in the three-year period between 1998-2000 reflect the Greek stock exchange market. This broad sector consists of small, medium and large capitalisation companies in a ratio that reflects the composition of the stock exchange market. In this sector we find the so-called Leaders, which are mainly the affiliated companies of large financial institutions, as well as the "followers", that is to say relatively small size companies that follow the events and are configured by the course of the leaders.

In the 3-year period between 1998 – 2000, the companies in this sector of the Greek economy generally followed the course of the stock exchange market. At this point, and before proceding to overall conclusions, it is worth examining each year separately in order to see what really affects the sector and its course on the Stock Exchange.

Therefore, for 1998 we could say that it was the year when the role of this company was highlighted with the introduction of a broad spectrum of portfolio investments, which were of intense economic interest and were particularly attractive due to the medium-term yields that they seemed to produce. It is important to underline the fact that the course of those companies was judged mainly through the result of these investments and not through the medium-term results of the companies themselves.

We could characterise 1998 as the start of a co-ordinated effort of the Greek economy for integration in the EMU. So, the good results of the Greek economy and its perspective integration in the EMU created a particularly positive climate for this sector, which partly reflected the expectations of the investors for a good course of the Greek economy.

1999 is characterised by an extreme upward course of those companies in the stock exchange market, to the point that many of them multiplied their stock exchange value five-fold. The reasons that led to this phenomenon are no different than the reasons we mentioned for 1998. In addition, we stress the fact that the drastic decrease of interest rates in the banking market rendered the investment in bank deposits non cost-effective, therefore many people turned to the purchase of stocks. This, in combination with the extremely favorable climate in the stock exchange market led to an exaggeration of the stock exchange value of the sector companies. During this period the investors believed the entry of Greece in the EMU to be a foregone conclusion and this was rapidly absorbed by the stock exchange market.

The first ten months of 1999 are indicative of the situation, when the stock exchange profits came mainly from the constant investment of capitals and the non-liquidation of profits gained by stocks in those companies. But even in the case of liquidation, the demand was so high that it covered the offer of those securities. During the two-month period between 10-11/1999 we see a reversal of the stock exchange market, which stroke a blow – as was only natural – to the companies of

the financial sector as well. As a result, many companies lost a significant part of their stock exchange value, which in many cases counterbalanced the profits gained during the previous ten months and brought stock exchange prices back to the levels of 1998. The non-orchestrated effort to liquidate the profits from the previous period within a short period of time mainly harmed those who, between April – September 1999, had invested in stocks of this sector and in companies with no support base and not only did not make a profit, but also lost significant part of their investment capital, which in many cases reached 2/3 of the vested capital.

With the exception of the two month period between April – May when a tendency to reverse the negative climate became obvious, the year 2000 was the worst stock exchange period in the past 15 years. The continues liquidations of those companies' securities led to a further drop of the stock exchange value of their stocks and many of them were led to price levels below those at the beginning of 1998. For those who made an investment in the middle of 1999 and did not procede to liquidations awaiting for a reversal of the climate that meant a loss of even 80% of their initially invested capital. Although Greece entered the EMU in 2000 and the risks for the balance and the course of the economy were eliminated, this did not translate into a good or even smooth course of the stock exchange market.

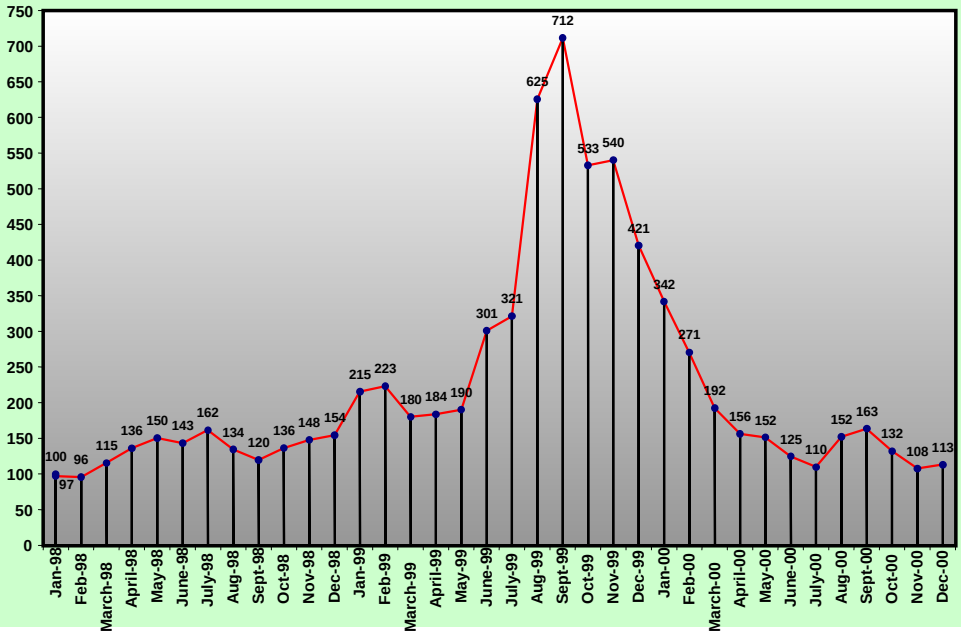
In our conclusions regarding the sector of the companies that are active in the field of innovative financial services, it is worth underlining the range of their stock exchange prices. Some sector leaders, despite the sharp fluctuations, were medium-term able to maintain some profit. Of course, this will be also judged by their course in 2001, which however did not begin with the best omens. The 'followers' were badly damaged and their capitalisation was significantly shrank, creating a stock exchange dead-end for those who had made an investment in them.

What became obvious, both by the course of the Greek stock exchange and by the stock exchange results of this sector, was that they were based on expectations that are linked to the long-term course of the Greek economy, but are quickly discounted and the absorption of those results is more the outcome of speculation rather than expectations. The EMU was in essence the only economic challenge for the Greek economy, but its accomplishment along with the lack of constant medium- and long-term objectives, briefly affected the stock exchange environment and essentially dispersed the market perspectives, to the point that the big negative changes it begat brought along social problems as well, since many people lost significant amounts of money and the financial situation and purchase ability of a large part of the population deteriorated. It is particularly important to divide the companies in this sector too into three categories, based on their capitalisation, in order to be able to monitor their relatively differentiated course in the stock exchange market.

In figure 6.1.4.a we illustrate the course of the index of the sector small capitalisation companies. We observe that from the beginning of 1998 until May of 1999 we record a steadily upward trend that almost doubled the prices. Then follows a period of four months, 6/99-9/99, when the prices followed a significant upward course to reach record levels in September 1999, which compared to the levels at the beginning of 1998 displayed a seven-fold increase. From the 10/99 there is a

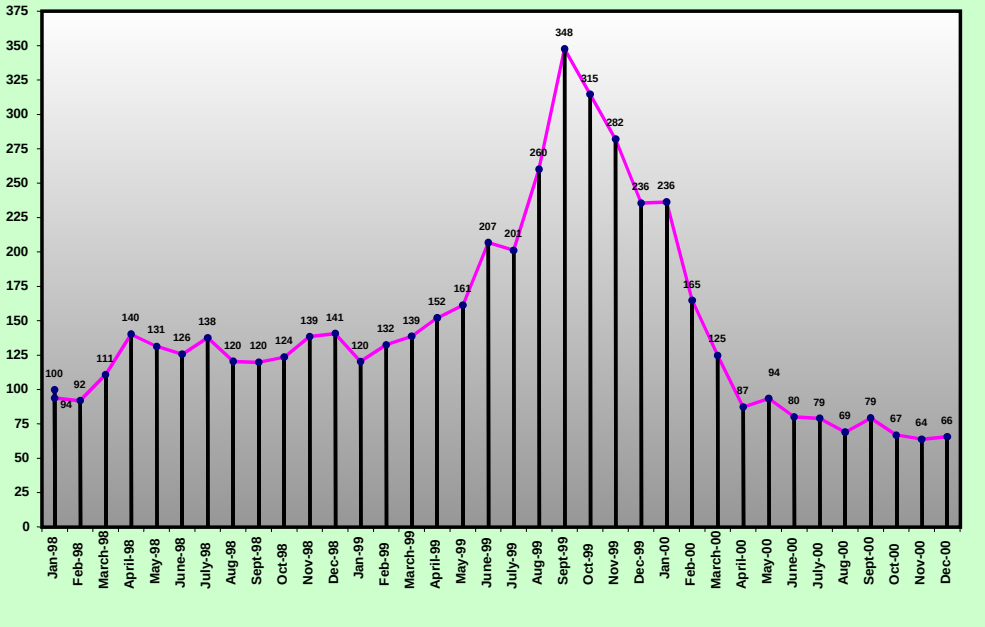
constantly downward course, which in 12/00 brought the prices back to levels a little higher than those at the beginning of 1998. In practice, this means that all those who placed their money in companies of this particular category after the 3/98 suffered losses. Of course, the rate of the losses differs according to the period the investment was made. Those who invested between the 6/99-10/99 incurred the greatest losses. These losses range up to 80% of the invested capital.

Figure 6.1.4.a Course of the price index of small capitalisation innovative financial companies



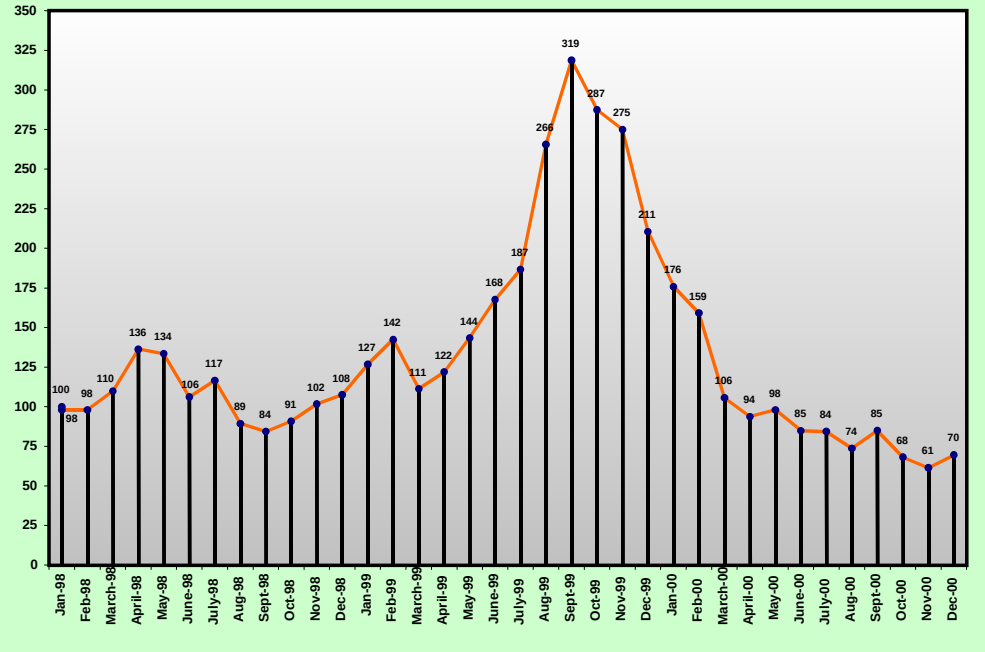
In figure 6.1.4.b we illustrate the course of the index of the sector medium capitalisation companies. The course of the price index is almost similar to that of the small capitalisation index, but the fluctuation range is much smaller and the price levels after the 3/00 are lower than those at the beginning of 1998.

Figure 6.1.4.b Course of the price index of medium capitalisation innovative financial companies



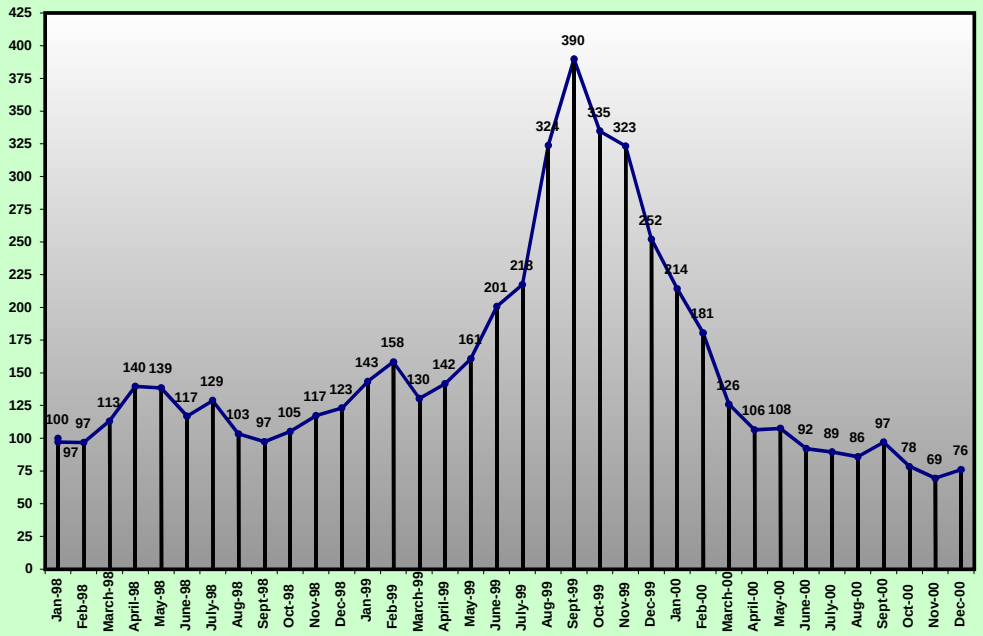
In figure 6.1.4.c we have recorded the course of the index of the sector large capitalisation companies. The course of the index is almost similar, both as to the fluctuation range and to the price levels, to that of the medium capitalisation companies. In this category, too, the prices after the 3/00 fluctuate at levels lower than those at the beginning of 1998.

Figure 6.1.4.c Course of the price index of large capitalisation innovative financial companies



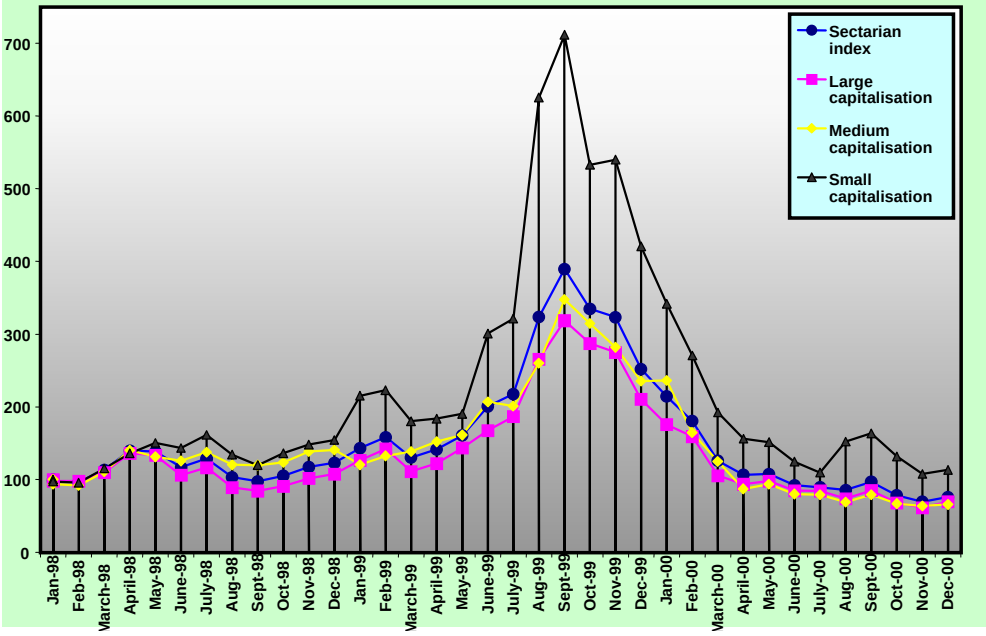
In figure 6.1.4.d we have recorded the course of the sectarian index of innovative financial companies. The course of the sectarian index reflects the influence from the previous three categories and follows their course.

Figure 6.1.4.d Course of the price index of the sector of innovative financial companies



In figure 6.1.4.e we see clearly that the sectarian index is affected more by the large and medium capitalisation companies and ranges at somewhat higher levels than the average ones of those two. One can clearly see that the course of all the indexes in time follows the same fluctuation sign – with a different, however, range for the small capitalisation companies. In this figure we illustrate mainly the investment risk of the sector's small capitalisation companies, which can by no means constitute a reliable field of investment activity, and this is shown by the range of the changes in the price levels.

Figure 6.1.4.e Comparison between the individual indexes of innovative financial companies



6.1.5. ANNEX

6.1.5.1 ASE GENERAL INDEX

Figures 6.1.5.a and 6.1.5.b present the course of the general index of the Athens Stock Exchange for the period between 1/1/1998 and 31/12/1999.

Figure 6.1.5.a Course of the ASE general price index

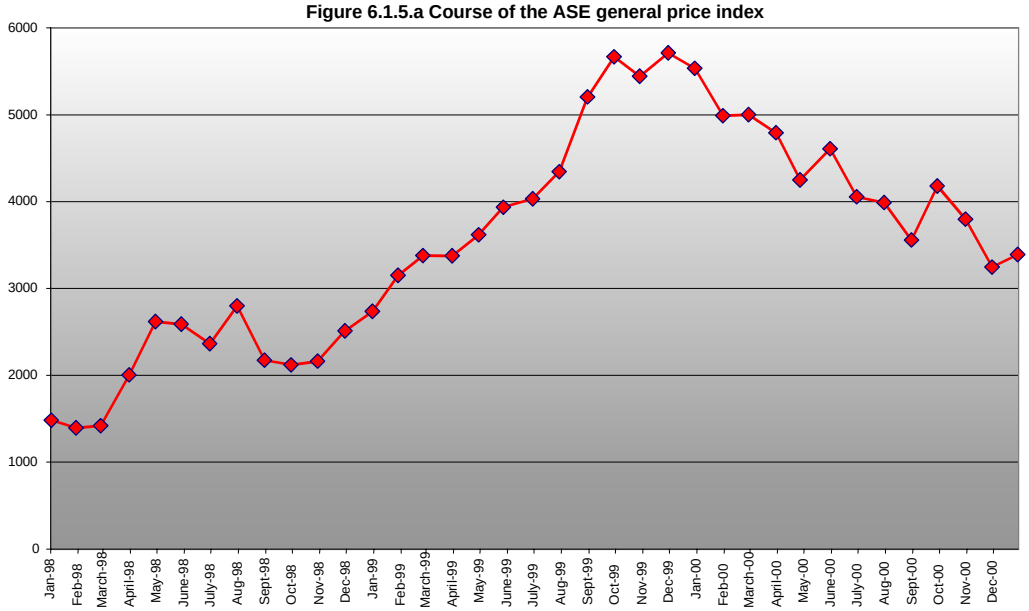
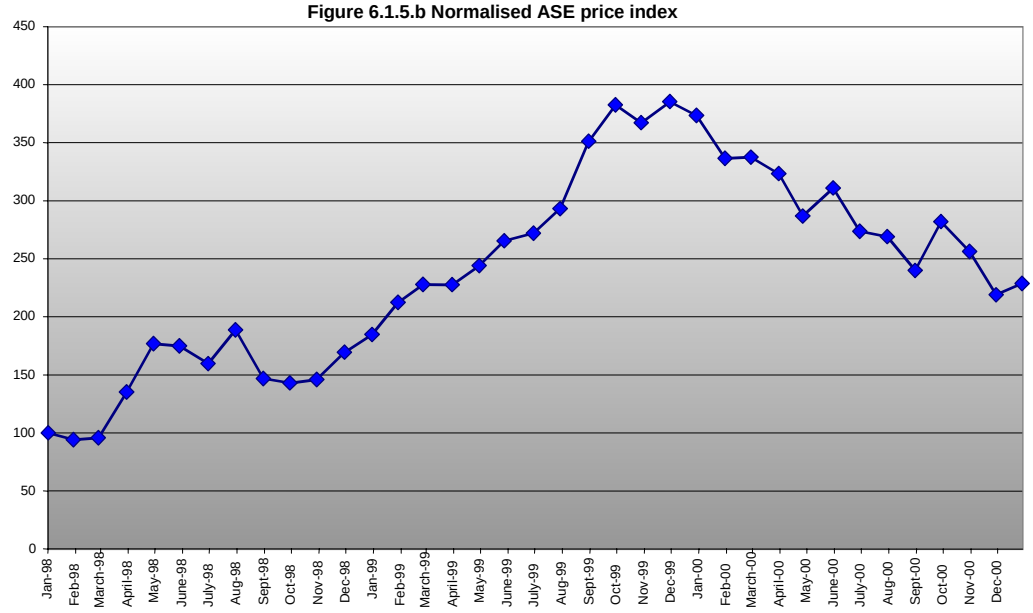


Figure 6.1.5.b Normalised ASE price index



6.1.5.2. LIST OF COMPANIES

Table 6.5. The per field companies for the calculation of the individual indexes and the hi-tech index.

COMPANY	FIELD
ALPHA LEASING	INNOVATIVE FINANCIAL SERVICES
ETBA LEASING	INNOVATIVE FINANCIAL SERVICES
PIREOS LEASING	INNOVATIVE FINANCIAL SERVICES
ALPHA TRUST ORION	INNOVATIVE FINANCIAL SERVICES
ASPIS EPENDITIKI	INNOVATIVE FINANCIAL SERVICES
DIAS FSSA	INNOVATIVE FINANCIAL SERVICES
NATIONAL PORTFOLIO INVESTMENTS COMPANY	INNOVATIVE FINANCIAL SERVICES
HELLENIC PORTFOLIO INVESTMENTS COMPANY	INNOVATIVE FINANCIAL SERVICES
EMPORIKI EPENDITIKI	INNOVATIVE FINANCIAL SERVICES
EXELIXI	INNOVATIVE FINANCIAL SERVICES
EPENDISIS ANAPTIXEOS FSSA	INNOVATIVE FINANCIAL SERVICES
EPENDISIS ERGASIAS	INNOVATIVE FINANCIAL SERVICES
INTERINVEST	INNOVATIVE FINANCIAL SERVICES
MARFIN	INNOVATIVE FINANCIAL SERVICES
PIREOS EPENDITIKI	INNOVATIVE FINANCIAL SERVICES
PROODOS	INNOVATIVE FINANCIAL SERVICES
EOLIKI FSSA	INNOVATIVE FINANCIAL SERVICES
ALPHA INVESTMENTS	INNOVATIVE FINANCIAL SERVICES
ACTIVE EPENDITIKI	INNOVATIVE FINANCIAL SERVICES
ALPHA TRUST ASSET MANAGER	INNOVATIVE FINANCIAL SERVICES
ALPHA FINANCE	INNOVATIVE FINANCIAL SERVICES
ELLINIKA HRIMATISTIRIA	INNOVATIVE FINANCIAL SERVICES
BYTE COMPUTER ICSA	INFORMATION TECHNOLOGIES AND HI-TECH
FORTHNET	INFORMATION TECHNOLOGIES AND HI-TECH
INFORMER	INFORMATION TECHNOLOGIES AND HI-TECH
LOGIC DATA	INFORMATION TECHNOLOGIES AND HI-TECH
QUALITY & RELIABILITY S.A.	INFORMATION TECHNOLOGIES AND HI-TECH
SINGULAR	INFORMATION TECHNOLOGIES AND HI-TECH
UNISOFT PC PROGRAMMES S.A.	INFORMATION TECHNOLOGIES AND HI-TECH
DELTA PLIROFORIKI	INFORMATION TECHNOLOGIES AND HI-TECH
INTRALOT	INFORMATION TECHNOLOGIES AND HI-TECH

INTRASOFT	INFORMATION TECHNOLOGIES AND HI-TECH
INTRACOM	INFORMATION TECHNOLOGIES AND HI-TECH
ALTEC ICSA	INFORMATION TECHNOLOGIES AND HI-TECH
CPI	INFORMATION TECHNOLOGIES AND HI-TECH
DATAMEDIA	INFORMATION TECHNOLOGIES AND HI-TECH
INFOQUEST	INFORMATION TECHNOLOGIES AND HI-TECH
MICROLAND	INFORMATION TECHNOLOGIES AND HI-TECH
SYSWARE S.A.	INFORMATION TECHNOLOGIES AND HI-TECH
UNISYSYSTEMS	INFORMATION TECHNOLOGIES AND HI-TECH
INTERTECH	INFORMATION TECHNOLOGIES AND HI-TECH
INFORMATICS	INFORMATION TECHNOLOGIES AND HI-TECH
DESPEK	INFORMATION TECHNOLOGIES AND HI-TECH
POULIADIS	INFORMATION TECHNOLOGIES AND HI-TECH
PLIROFORIKI ERGASIAS	INFORMATION TECHNOLOGIES AND HI-TECH
PC SYSTEMS (MICROCOMPUTER SYSTEMS)	INFORMATION TECHNOLOGIES AND HI-TECH
COSMOTE	TELECOMMUNICATIONS AND MOBILE TELEPHONY
OTE (GTO)	TELECOMMUNICATIONS AND MOBILE TELEPHONY
PANAFON	TELECOMMUNICATIONS AND MOBILE TELEPHONY
NEXTNET	TELECOMMUNICATIONS AND MOBILE TELEPHONY
UNIFON S.A.	TELECOMMUNICATIONS AND MOBILE TELEPHONY
GERMANOS S.A.	TELECOMMUNICATIONS AND MOBILE TELEPHONY