

# Barriers to Entry and the Self-regulating Profession: Evidence from the Market for Italian Accountants\*

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## Abstract

This paper provides a systematic study of the market for accountants in Italy during the period 1980-91. Firstly, it develops a comparison in the determinants of incomes of the two competing professions (Commercialisti and Ragionieri) focusing on entry as one of the main variable of interest to explain some stylised facts and trends in the profession itself. Second, we carry out an empirical analysis using panel data to test the effects of self-regulation, in terms of discretion in the admission policy in the profession, on incomes. Our results confirm that the institutional barrier to entry is effective in generating economic rents; furthermore, we show that admission rates are an endogenous variable strongly influenced by past level of incomes.

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*The exclusive privileges of corporations, statutes of apprenticeship, and all those laws which restrain, in particular employments, the competition to a smaller number than might otherwise go into them, . . . are a sort of enlarged monopolies, and may frequently, for ages together, and in a whole classes of employments, keep up the market prices of particular commodities above the natural price, and maintain both the wages of the labour and the profits of the stock employed about them somewhat above their natural rate.*

Adam Smith, *The Wealth of Nations*, I:7.

## 1 Introduction

The self-regulating profession displays a substantial discretion to restrict entry in the market; indeed, it is often successful in imposing additional requirements in terms training programs and human capital and plays an active role in the selection of perspective candidates. The rationale for that lies in the fact that active professionals should be better suited to establish the educational profiles and to evaluate the quality of the applicant. Comparative evidence about legal, accountancy, and engineering professional services<sup>1</sup> clearly indicates that this institutional arrangement is prevalent across countries; furthermore, legislation often allows the professions to operate in non-competitive regimes.

Starting from the seminal work by Friedman and Kuznets (1945), economists have raised the issue whether these institutional barriers to entry were successful not only in preserving the average quality of the member, but also in raising the rate of return of the profession up to supernormal levels. In this case, self-regulation could limit competition within the industry and raise the concern of antitrust authorities. Some studies<sup>2</sup> have collected evidence that the American Medical Association restricted the supply of physicians lobbying successfully to obtain a legislation that reduced the number of accredited medical schools. In a related study, Becker (1986) has shown that additional requirements tend to increase professional incomes and some states are more prone to be “captured” the lower is voter participation in elections, the higher is the level of education. This allows a larger representation of consumer interests within the legislature.

Some tests have been developed to establish the welfare effects of these policies; analysing in cross-section US states, Svorny (1987) has found a negative correlation between the number of physicians and the level of qualification imposed by regulation. If we interpret the former as a proxy for the equilibrium demand for professional services, then a more restrictive regulation has reduced consumer surplus; in fact, consumers were not willing to increase demand despite the higher qualification of operating professionals.

While the effects of input regulation have raised the attention of economists, quite surprisingly the economic literature about the impact on the competitiveness of the industry of admission rates is very limited. Boards generally display substantial control on the pass-to-fail ratio that may reveal a powerful instrument to manipulate the supply side of the

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<sup>1</sup>See Professions, activités et réglementation dans la zone del OCDE (1995).

<sup>2</sup>See Curran (1993).

market and generate undue economic rents. Maurizi (1974) has shown that for a large number of self-regulating professions failure rates seem correlated to prevailing economic conditions. Demand fluctuations seem indeed responsible of a manipulative activity by the Boards: admissions are restricted to respond to a decrease in activity or to prolong a period of high incomes due to expansionary demand.

Aim of the present paper is essentially twofold; first, we try to carry out a descriptive analysis on the Italian accountancy market. In this area the urge for quantification is compelling, since separate figures for the professional service market are not reported on national account statistics. Second, we build two different specifications of a dynamic panel data model for the demand and supply for accountancy services taking explicitly into account admission rates as a crucial determinants for the equilibrium emerging in the market.

Two major stylized facts emerge from the descriptive analysis: first, the convergence in the last years in incomes of the two professions operating with different licensure requirements, namely Ragionieri and Commercialisti; second, the existence of a substantial earning differential between the two professions despite the recent trends. We claim that the rate of entry, and in particular, the admission policy in the profession implemented each year by Boards, provides some interesting insights to explain this evidence.

From a dynamic setting, we obtain the following empirical results: firstly, lagged admission rates represent an important factor to explain professional incomes. In particular, we find a strong negative correlation between the two variables, confirming the view that institutional barriers to entry are successful in creating economic rents. Second, and maybe more importantly, admission rates are an endogenous variable and deeply influenced by past level of incomes.

Indeed, a negative correlation between admission rates and accountants' income might indicate that consumers are just paying higher prices for a more qualified service that is warranted by professionals with higher skills, namely those given who survived the hard selection. In this case, the anti-competitive effect of institutional barriers to entry has to be weighted with the increase in consumer surplus due to the higher quality of the good exchanged.

Our findings provide some evidence that on average the admission policy by Board is more influenced by past market condition than by the average quality of the candidate. Furthermore, despite our result are far away to be conclusive, we suspect that, where implemented, the quality-inducing policy via entry restriction has failed to restore efficiency in a market pervaded by information asymmetries.

The paper is organised as follows: section 2 provides a descriptive analysis of the Italian market for accountancy services and characterises the details of the institutional setting; section 3 presents our specification for the market for accountants; section 4 presents the empirical results of our panel data simultaneous equations estimation. Section 5 concludes.

## 2 The accounting profession in Italy

In this section we provide a brief analysis of the working of the market for accounting services over the period 1980-91. In Italy such services can be supplied by professionals enrolled in two professional bodies (Ragionieri and Commercialisti). The main difference between the two bodies concerns the length of the academic curriculum required in order to be allowed to practice. In the period under observation to become a Commercialista one had to get a four years university degree in Economics and then to pass an examination to some extent controlled by the professional body, while to become a Ragioniere there was no need for any university education but, in order to be admitted to the professional exam, three years of working experience were required.<sup>3</sup>

Once the professional examination is passed, the new professionals can enter the market without further constraints in terms of regional quotas or freedom of settlement - as it is the case for other professions in Italy (e.g. public notaries) -. Moreover, except the above institutional differences in the educational requirements, the regulatory regime does not foresee any other limit for either profession in dealing with specific classes of clients or in providing some types of services. As a consequence, there is no functional distinction between the markets for the two professions such as there is in England and Wales between solicitors and barristers.<sup>4</sup>

In this respect, the Italian market for accounting services and the two aforementioned professions undoubtedly represents a good setting in order to test the hypothesis according to which self-regulating professional bodies which are given discretion over the procedures to enter the market, tend to use it not in raising the quality level, but in raising the income level of the members of the profession.

### 2.1 Trends in the two professions

The following analysis draws from two main data sets. The first is the Archivio delle Professioni built by INPS, the Italian state-owned company managing the compulsory pension schemes. The archivio includes personal data and reported incomes of all the Italian professionals from 1980 to 1991.<sup>5</sup> As you can see from Figure 1, over the period, the cumulative number of records for the two professions here under investigation has been between 20,000 and 37,000.

The second data set, ANCITEL, includes about 250 socio-economic variables at the

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<sup>3</sup>After the period under observation, the procedures to enter the market have been changed and made significantly more costly and demanding. For the Ragionieri to be admitted to the professional exam it is now required to get a three years degree in Economics, and further three years of working experience in a partnership with a registered Ragioniere. For the Commercialisti it is now required to have three years of working experience in a partnership with a registered Commercialisti. In other words, for both professions the two requirements - university education and working experience - have now been made compulsory.

<sup>4</sup>Although this is not the purpose of the present paper, the existence of two legally recognised professions in the market for accounting services, characterised by a different level of human capital, might allow for a comparative analysis of the returns from the investment in higher education.

<sup>5</sup>After 1991, the Archivio has been dismantled because the data on the compulsory contribution to the National Health System, for which it was originally organised, passed under the administrative control of the Ministry of Finance.

city/town level (about 8,500 observations for each year). Such data are collected from several official sources such as ISTAT (the national agency for statistics, Bank of Italy, the Ministry of Finance, other regulatory agencies, providers of public services such as telephone services, electricity, etc.). This second data set is used in order to better understand how the economic fundamentals of the market for accounting services are related with the economic structure in which are provided.

The two professions under investigation are in the middle range of the Italian professions as for the number of registered members. To get a comparative idea, the largest profession is that of medical doctors with some 300,000 registered members in 1991 of whom most are employed in the National Health Service, followed by the engineers (100,000), and by the lawyers (60,000). Much smaller professional bodies are the architects (9,000) and the public notaries (4,000).<sup>6</sup>

As one can see from Figure 1, Commercialisti and Ragionieri started from a very similar membership in 1980 (approximately 10,000) with the Commercialisti slightly below the Ragionieri, but then followed a different pattern of growth in the period under observation. By 1991, the Ragionieri reached about 15,000, while the Commercialisti went up to over 22,500 (about 4 over 1,000 people). This difference is particularly remarkable if one recalls that the two professions can supply precisely the same type of services and that there is no public regulation on entry except that delegated to the professional bodies. Moreover, among the rapidly growing service industries, the market for accountants would not appear to be subjected to technological changes of such magnitude as to justify such a rapid shift from one kind of supplier to another.

For these reasons one is led to look for institutional explanations of such a low initial proportion of accountants with a university education. In this respect, there are perhaps two institutional factors which might explain such differences: First, on the supply side, Italy only in the late '70s and early '80s, has witnessed a large increase in the university population due to the reduction of the fees and to a massive increase in the supply of courses in the public universities. Therefore, at the beginning of the '80s the relatively low proportion of accountants with a university degree can be explained mainly referring to a generally low share of population with a university degree. Second, on the demand side, the Italian average firm size is much smaller than that prevailing in other developed countries.<sup>7</sup> On its turn this small scale effect has a negative influence on the demand for highly specialised accounting services.

Taking into account these two institutional factors, however, one can only partially understand the differences in growth rates of the two professions in Figure 2. Indeed, while the reduction in the opportunity cost of getting a university degree can explain the constantly higher growth rates of the accountants with such a degree during the '80s, since the university reform takes time to affect the market for professional services, it is less clear the impact of the second factor. Indeed, the Italian industrial structure has not experienced major changes as for the average size of the firm before or during the period

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<sup>6</sup>Notice that the number of professionals in Figures 1 and 2 refer to the professionally active on the market and paying a specific contribution to the health service. Such contribution is proportional to the earned income.

<sup>7</sup>See Barca and Visco (1992).

under observation. This means that there has not been a structural shift in the demand of services required by the firms in consequence of a more complex organisational structure. It follows that the differences in the growth rates are to be explained mainly with supply variables or with a growing demand for more sophisticated accounting services - which might explain an increase in the proportion of Commercialisti over Ragionieri.

In a different perspective, Figure 2 shows that both growth rates decline over the years, with the Commercialisti starting over 8 % and ending up at less than 6 %, and the Ragionieri starting not far from 5 % and declining to less than 3 %. The two rates are correlated, but by no means perfectly so. Indeed, the Commercialisti witness a relatively high rate of entry (over 8 %) till 1988, and then decline swiftly to a final level below 6 %, while the Ragionieri are characterised by a much smoother trend in the growth rates.

The drop for the Commercialisti can be interpreted as the beginning of a period in which, after about 10 years in which the supply of accountants with a degree had grown to compensate the previous scarcity, the market adjusted to a lower equilibrium. Alternatively, the drop in the growth rates can be seen as a signal of a greater control of the professional body over entry. The rationale for this behaviour can be seen in the growing competition in the market for accounting services. In comparison, the entry for the Ragionieri follows a much smoother pattern possibly for symmetric reasons: there had been no comparable shock on the supply side due to institutional reasons, and therefore there was less urge to take measure in order to restrict entry after a large inflow of new members.

## 2.2 Regional distribution of professionals

In this section we look at the regional distribution of the professional in order to see whether they actually operate in different markets in terms of economic fundamentals although we have seen that they are not legally separated. This is because in Italy, each large area (North, Centre and South) has distinct economic features which to some extent may provide insights on the functional characteristics of the two professions. In particular, we will provisionally assume that there are at least two components in the demand for accounting services. First a basic demand expressed by individuals and very small firms, and distributed uniformly across regions and, second, a more sophisticated demand expressed by larger firms or firms operating in international markets.

In Figure 3 the Italian regions are geographically ranked on the horizontal axis from North (left) to South (right). It emerges quite clearly that the more heavily industrialised Northern regions witness only a slightly higher density of Ragionieri than the Southern ones. In this respect the highest density of Ragionieri is to be found in the regions of the Centre which are characterised by a large number of very small firms.

A rather different picture emerges in the regional distribution of the Commercialisti. With the exception of Lazio - the region which includes Rome, and therefore all the Ministries and the central bureaucracies - the more industrialised Northern regions witness a much higher average density than the Central, and especially the Southern ones.

If one looks at the difference between the density of Commercialisti and of Ragionieri as a proxy for the size of the market for specialised accounting services, the data summarised in Figure 3 clearly support the idea that such a market exists, and that is heavily concentrated

in the Northern regions where firms need more sophisticated professional services.

### 2.3 The distribution of income

As we have seen, in the '80s Ragionieri and Commercialisti exhibited quite different growth rates, with the Commercialisti increasing more rapidly than the Ragionieri and covering more specialised areas of the market. These two effects should have played some role in explaining the trends of the income levels for the two professions as shown in Figure 4.

Such trends are clearly symmetric with respect to those of the membership shown in Figure 1. For the Commercialisti - whose number more than doubled in the period - the average income went up from 40 millions in 1980 to nearly 50 millions in 1991.<sup>8</sup> For the Ragionieri - whose membership grew less than 50 % over the 12 years period - the average income went up from 23 millions to over 50 millions in 1991, overcoming in the last year that of the Commercialisti.

The comparative growth of the incomes of the Ragionieri is quite surprising even in relation with other professions, and it can hardly be justified only in terms of the particularly low rate of entry in the profession. Indeed, in Figure 3 we see that the Ragionieri on average supply rather traditional accounting services in a market in which the Commercialisti should face no problems in competing for market shares. One would have expected that the Ragionieri were to be less able to defend their incomes from the competition of the members of the other profession who are better trained and can offer more highly qualified services. As the opposite is the case, one is led to interpret these preliminary data as *prima facie* evidence in favor of the idea that the degree of institutional control over entry is not an irrelevant factor in explaining the profitability of the markets for professional services.

However, there is at least another institutional factor which must be considered in order to evaluate this inverse relation between rate of entry and income levels. The demand for basic accounting services - more likely to be provided by the Ragionieri - is expressed by small firms, which after 1983 have been subjected to a new fiscal system which made less profitable not to include the fees for the accounting services in the income report. On its turn this new incentive for small firms to ask for a regular fiscal receipt from the Ragionieri forced the latter to increase their reported income. Such change in the fiscal legislation would have little or no effect on larger firms who were given relatively strong incentives to report their accounting fees even before 1983.

The above hypothesis is at least partially supported by the data shown in Figure 4, as one of the sub-periods of more dramatic growth in the levels of income for the Ragionieri occurs precisely in 1984 and 1985, that is right after the change of the fiscal legislation, and as that period is followed by two years of slightly declining incomes. However, a similar argument does not apply to explain the upward trend observed in 1987. Therefore, at least for the late '80s, as a possible explanation for the differences in income trends we set forth a conjecture in terms of a different admission policy which will be further explained in section 3.7.

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<sup>8</sup>Incomes are expressed in Lire 1992.

## 2.4 The regional distribution of incomes

Since the Italian market is clearly differentiated along the geographical dimension (see Figure 3) some more relevant information may come from the analysis of the regional distribution of the income levels. This for two main reasons. First, because the higher the average income in a given region, the higher the opportunity cost of entering the profession. Second, as we have seen, because the degree of economic development seems to be in close relation with the type and quality of the professional services.

To that purpose we show the regional distribution of incomes in the first (Figure 5) and second (Figure 6) part of the period under observation. During the first period, the income differential between Commercialisti and Ragionieri is still rather evident and is almost completely concentrated in the more heavily industrialised Northern regions. In the second period such differences have virtually disappeared, and the catching up has taken place almost completely in the Northern regions. This seems to indicate that in the richest areas of the country, where the larger firms operate (and therefore where stronger should be the demand for more specialised accounting services), there has been a competitive edge of the profession characterised by a lower level of human capital.

In this respect the convergence of incomes between Ragionieri and Commercialisti is not surprising only in itself because of the relatively short period in which has taken place, but also because its effects are more evident in those regions where one would have expected the opposite trend to prevail.

For this lack of a convincing explanation of the above convergence, in the following sections we will try to identify other factors which may not be observable at the regional level, but which might shed some more light on this effect at the city/town level. However, working on the results of the previous sections, even at that more disaggregated level, we will necessarily take into account the rate of entry in the local market as one of the main candidates in order to explain the different trends in incomes.

## 2.5 Entry and the profitability of the local market

The plots in Table 1<sup>9</sup> describe the relationship between the cumulative entry rate over the 12 years period<sup>10</sup> and the average professional incomes. The local areas are sorted into 4 classes each including one fourth of the total areas from the lowest income level (1) to the highest (4). As one can see, for both professions, the analysis of the local markets confirms the rather neat inverse relationship between entry rate and income levels.

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<sup>9</sup>For reasons of graphical presentation some outliers have been removed from the tables. The distribution represented in the plot has not been otherwise modified. In every table there is a plot for each class of the variable described along the horizontal axis. Every box plot includes several elements describing the shape of the distribution of the variable described along the vertical axis.:

- a central cross indicates the average value of the distribution;
- a lower dotted line with two crosses indicates the first quartile of the distribution;
- a upper dotted line with two crosses indicates the third quartile of the distribution;
- an internal dotted line with two stars indicates the median value of the distribution.
- vertical lines ( — ), zeroes (0) and asterisks (\*), indicate outliers further away from the average value.

<sup>10</sup>The cumulative entry rates is defined as the number of new professionals which entered during the period over the stock of professionals at the beginning of the period.



As for the Commercialisti the cumulative entry rate is 74 % for the lowest income class, and goes down to about 55 % for the highest income class. Moreover, while the median entry rate is well above the mean for the first three income classes, it becomes lower for the highest one. This indicates that by far the majority of local areas with high incomes is also characterised by yearly entry rates of about 48 %.

In Table 1 one should also notice that the interquartile differential increases significantly going from the lower income class to the higher ones. This larger variance in the local markets with high incomes is mainly explained by differences in the first part of the distribution of the entry rates. Indeed, in class 4 the first quartile is at a cumulative entry rate of 20 %, while in all other classes is above 50 %. This means that the greatest proportion of local areas with very low entry rates is also characterised by higher income levels.

A rather different sketch emerges from Table 1 looking at the income distribution for the Ragionieri.<sup>11</sup> First of all, and not surprisingly, the rate of entry is on average lower than that for the Commercialisti in all income classes. In this respect, in classes 1 and 4 one half of the local markets features a zero entry rate, and in classes 2 and 3 one fourth respectively. However, the main difference with the Commercialisti is in the lack of a clear negative relationship between incomes and average entry rates.<sup>12</sup> This would point to a minor relevance of entry in determining the income levels in the local markets as far as the Ragionieri are concerned.

Summing up, the analysis of the entry-income relation in the local markets supports the evidence of the previous sections at the regional and national level as for a negative relationship between the two variables. Such evidence is however less controversial for the Commercialisti whose incomes seem more heavily affected by the entry of new competitors. Recalling Figure 2, one can say that the convergence between income levels might be more due to the lack of control on entry on part of the Commercialisti rather than a successful policy of entry restriction by the Ragionieri. Hence, the low rate of entry for the Ragionieri can be alternatively explained as most potential entrants elected to invest in human capital anticipating a higher return and discounting a lower cost of higher education.

## 2.6 Age-earning profiles

The latter comments posit the question of the profitability of the investment in higher education. It is then important to compare the main differences in the earning profiles of the two professions object of the current analysis.

In Table 2 we show the distribution of incomes (along the vertical axis) in different classes of age. The age classes are built splitting the membership in four classes of equal membership, and giving each member the age he had in 1986, the median year of the period. Accordingly, the first quartile of the age distribution for the Commercialisti is at 28, the median at 38, and the third quartile at 47, while the analogous values for the Ragionieri are 4 to 5 years higher with the first quartile at 33, the median at 41, and the third quartile at 51. In other words, the high entry rates of the Commercialisti had a clear impact on the

<sup>11</sup>See above for a more through explanation of the institutional changes in the fiscal law which might have biased the relatively high rate of growth in the Ragionieri's income levels throughout the period.

<sup>12</sup>This might be due to the relatively long period under observation.

age structure of the membership.

In order to better understand how this different age structure influences the incomes at the local level, in Table 2 one can also observe the income distributions for each class of age. For the Commercialisti, the average income level in the first class is relatively low (about 25 millions), but growing rapidly over 50 millions in the second, and reaching the highest level in the third, after which the income falls back to about 60 millions.

To understand the differences between Commercialisti and Ragionieri one must keep in mind that for the latter profession the age classes are shifted forward 4 to 5 years. Taking this into account, one is not particularly surprised to detect only relatively small differences in terms of average income comparing similar classes of age. However, if one looks at the income dynamics, one notices that there is a much steeper ascending trend for the Commercialisti than for the Ragionieri in terms of both means and medians.

This difference is not at all surprising when one takes into account the different level of human capital available for the members of the two professions. Indeed, the Ragionieri in class 1 (age below 33) have already a considerable working experience (they enter the market on average at 22), and therefore have had the possibility to establish relatively strong client-professional relationships or in other words to secure a relatively stable market share. On the other hand, the Commercialisti in class 1 (lower than 28) which enter the market on average at 25 have too a short time to establish the above relationships, and therefore to reap the returns from the higher investment in human capital. When the Commercialisti reach approximately 35 years their average incomes are very similar to those of the Ragionieri, and when they get over 40 their advantage starts to widen.

Summing up, although the Commercialisti have a delayed entry due to the higher requirements in terms of human capital, the rate of return on such capital seem to be significant even in the first ten years of their professional life. It follows that the entry of new professionals in the market has a relevant negative effect on the average income of the competitors.

The variance of the income distribution differs significantly over the classes, with the younger professionals with an interquartile difference of less than 25 millions, while in the other classes the differential is over 50 millions. This clearly depends on the process of specialisation which takes place as the working experience accumulates, and which explains why the variance for the Ragionieri in the first class is larger than for the Commercialisti. Moreover, the degree of asymmetry in the distribution is quite different across classes with the first two with a much greater density of incomes towards the lower end of the distribution (the median is far below the average value). Only from the third class onwards both professions assume a more symmetric distribution which signal that most members have reached a higher degree of income stability.

In this section we have commented on evidence related to the earning profile in the two professions under observation. Such evidence has made it clear that while it takes about ten years of professional activity for the Commercialisti to overcome the income levels of the Ragionieri, the former manage to reach relatively high income level in a short period after entry. This points to the fact that the entry of new professionals represents an immediate competitive threat for those already established.

In this respect, Table 3 shows the average incomes in the first 8 years of professional life. For the Commercialisti there is a steady growth of the average value, and a much steeper trend of the median. As a result, the income distribution which starts very asymmetric with the average values almost twice as large as the median, become progressively less skewed, so that in the eighth year of profession the difference is less than 2 millions. This is due to the fact that at first years of professional life very few new-comers succeed in reaching relatively high levels of income while the vast majority stays at very low levels. Once the professionals get more established, due to the quasi normal distribution of talents and disutilities from work, the distribution of incomes tend to become more symmetric around the central values.

Furthermore, as the mean-median differential gets smaller, the interquartile differential becomes much larger possibly due to a progressive process of specialisation and differentiation. Alongside this process, the first quartile grows at a much slower rate than the third quartile signalling the presence of a consistent minority of new professionals which is left to the margin by the competitive process.

The new Ragionieri start from slightly higher income levels in the first three years of professional life and witness thereafter slower rates of growth. What makes the case of the Ragionieri particularly interesting is that the mean-median differential is not closing up even after a relatively high number of years of professional life. This is mostly due to the very slow growth of the first quartile (a large group is characterised by very low income levels with respect to the mean of the professionals of equal experience) and points to the fact that the area of professionals which either are working only part-time or are at the margin of the competitive process.

## 2.7 Admission rates at the professional examinations

If the educational requirements are met, to enter the market a candidate must pass a professional examination. Although the rules of such examinations do vary extensively across professions, on average the examining body is made of 40 % of representative of the professional bodies, 40 % of civil servants and 20 % of university professors. However, as many university professors, and sometimes even some civil servants are also involved, directly or indirectly, as suppliers in the market for professional services, the professional bodies manage to keep a high degree of control over the admission rates.

The evidence presented in the previous sections has focused on the link between income levels and entry rates as measured by the actual earnings reported by the new professionals. It is however clear that the rate of entry is determined by many economic and institutional factors, among which is not at all easy, at this stage of the analysis, to single out the specific role played by the professional bodies in establishing higher barriers to entry.

In this respect, we were able to collect systematic data only for the Commercialisti, whose professional examination is organised by the Faculty of Economics of the State Universities. The data refer to the period 1984-1991 and to 15 Universities. Figure 7 shows the average admission rate for the professional examination of Commercialisti over the aforesaid period and the average income of the Commercialisti in the cities where the examinations take regularly place every year.<sup>13</sup> In Figure 7 one observes a clear inverse relation between

<sup>13</sup>Cities are ranked from the highest average admission rate (Naples) to the lowest (Trento).

income levels and admission rates. The cities with lowest average incomes are those in which the admission rates are higher. Moreover, this relation becomes on average more clear-cut as the income levels get larger, with the only exception of Urbino.<sup>14</sup>

In order to find more evidence on this point, and recalling that the Commercialisti reduced substantially their entry rate after 1988 (see Figure 2) it might be useful to look at the trend of the admission rates between 1984 and 1991. From Figure 8 one can see that the last year featuring relatively high admission rates is 1987. After that year, there is a clear decrease in the admission rates so that the average rate for the period 1984-87 is 29 % while the same average for the period 1988-91 is 24 %. We then conjecture that the professional boards are responding to the declining incomes increasing the level of the institutional barriers to entry.

The data from both Figures 7 and 8 - although rather crude - make it hard to accept *prima facie* the idea that such systematic differences in the admission rates over a relatively long period are purely the result of differences in evaluation procedures and/or in the candidates' performances.

This notwithstanding, the above evidence is difficult to interpret, because it is not clear in which direction one might establish a causal link between the two variables or if there is a mutually reinforcing relationship. The higher income levels might be the result - among other factors - of a more restrictive entry policy to keep a high quality standard in the profession, and/or the admission rates could be seen as the result of a deliberate strategy of the professional bodies to keep those incomes high.

Even if we assume that there is a mutually reinforcing relation between admission rates and incomes, there are further interpretative problems. While it might be sensible to assume that in areas where professional incomes are higher there are higher incentives to deter entry, it is not completely clear why professional bodies in low income areas should be less ready to defend their incomes by restricting entry. One possible interpretation is that if the cost to keep out a candidate is fixed the benefits to deny access to the market are higher when the prospective candidates will swiftly reach a relatively high income level.<sup>15</sup>

The descriptive evidence shown so far repeatedly points out to a strong negative relationship between rates of entry in the local markets and professional incomes. This is particularly true for that profession (the Commercialisti) for which there is a need to invest more heavily in human capital because the earning profile rises rather rapidly after entry. Moreover, we have seen that the ability of the professional bodies to control entry might be a crucial variable in order to stabilise incomes at a higher level. On this base, in next sections, we will estimate a demand and supply model of the market for accounting services where we also treat the admission rates at the professional examinations as an endogenous variable.

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<sup>14</sup>Alternatively, one might say the admission rates are influenced by other factors directly or indirectly linked with the degree of economic development as there is a strengthening of the relationship as we move from the economically less developed Southern regions to the more advanced Northern ones.

<sup>15</sup>Such a cost might be approximated by the risk of being subjected to a disciplinary action or a civil suit on part of one of the candidates, or the opportunity costs of refusing bribes.

### 3 The market for Commercialisti

We estimate two different econometric models for the market for Commercialisti; the first is a simultaneous-equations model for the demand and supply in which admission rates in the profession are considered exogenous. The second specification takes explicitly into account the possible endogeneity of this variable in a three simultaneous-equations system.

#### 3.1 A demand and supply model

The demand and supply equation for a professional service can take many form; it is however customary in the literature to consider the number of professional and their incomes as proxies for quantities and prices of professional services respectively.<sup>16</sup> We therefore propose the following model:

$$y_{it} = \alpha_0 + \alpha_1 q_{it} + \sum_{j=0}^2 \alpha_{2+j} a_{i(t-j)} + \alpha'_5 X_{it} + \epsilon_{it} \quad (1)$$

$$y_{it} = \beta_0 + \beta_1 q_{it} + \sum_{j=0}^2 \beta_{2+j} a_{i(t-j)} + \beta'_5 Z_{it} + \eta_{it} \quad (2)$$

Equation (1) represents the structural form of a semi-log inverse demand function, where  $y_{it}$  is the (natural) log of Commercialisti incomes,  $q_{it}$  the number of active Commercialisti,  $a_{it}$  the admission rates,  $X_{it}$  the vector of exogenous demand determinants, and  $\epsilon_{it}$  the error term. Equation (2) describes the supply side of the market, where  $Z_{it}$  is the vector of exogenous supply determinants and  $\eta_{it}$  the error term;  $y_{it}$  and  $q_{it}$  are therefore the only endogenous variables in this system. Subscripts refer to cross-sectional units observed at time  $t$ .

This specification deserves some comments. If accountancy services are a normal good, we would expect a downward sloping demand curve, but we do not have any a priori reason to exclude that it could exhibit non standard functional forms. The literature has stressed that in a market pervaded by information asymmetries prices convey information about quality; therefore demand functions might be upward sloping along some critical intervals.<sup>17</sup>

The admission rates are a crucial variable to explain how institutional barriers to entry influence equilibrium quantities and prices in the market for accountants. Let us consider the supply side first; when candidates decide to train and to try the examination in a local market where Boards are very restrictive in the selection, they know that this will require a career-specific investment. In particular, the high probability of failure, the extended period of study given several trials needed before success will raise opportunity costs. Incumbent Commercialisti are therefore protected from competition so that incomes can raise to provide a fair return to an investment that is at least partly sunk.<sup>18</sup> Under the assumption that

<sup>16</sup>See Pashigian (1977), Noether (1986), Kantor, Legros (1993).

<sup>17</sup>See Stiglitz (1987).

<sup>18</sup>This argument is similar to the one that Klein and Leffler (1981) set forth to justify licensure in the markets for professional services.

restrictive Boards are benevolent institutions who strive to admit only highly skilled and educated candidates, and that after the examination there are no spill-overs among Board jurisdictions, institutional barriers to entry may reveal effective in providing quality and a premium to operating professionals at equilibrium.

As it has been stressed by Svorny (1981), for a given supply of Commercialisti, we should therefore find in the demand equation a positive relation between Board restrictiveness and incomes. We believe that this argument can be more fully understood in a dynamic specification, so we have introduced two lagged values for admission rates.

The vector of exogenous determinants include socio-economic and anagraphic variables that are described in detail in Table 4. Instead, the vector of exogenous variables in the supply equation conveys information about the competitiveness of the local market in which professionals operate, namely entry, exit and the standard deviation of incomes.

An ongoing debate in the theoretical literature on professional services is trying to establish the effects of an increase or decrease in the number of competitors on fees. Obviously, the conclusions of competing explanations depend on the assumption about the prevailing regime within the industry. In monopolistically competitive regimes, the increasing monopoly model<sup>19</sup> posits that when the number of professionals is larger, search costs increase; this makes consumers less sensitive to prices so that equilibrium professionals' fees increase too. The target income theory<sup>20</sup> claims that professionals may respond to an increase in competition stimulating internally demand for their services and then maintaining constant or even increasing their incomes.<sup>21</sup> If instead some degree on intra-professional competition is displayed, entry will plausibly push downward incumbents' incomes.

In this respect, the standard deviation of incomes can be interpreted as a proxy for the prevailing market condition on the industry. If a market for a professional service is characterised by a low variation in incomes, the professionals in general sell an homogeneous good and, if a similar technologies are adopted, one would expect a price-taking behaviour. Viceversa, a high variance in incomes might be a signal of high product differentiation and of the presence of scattered monopolistic rents in the market. All this causes a substantial deviation from the ideal of a perfectly competitive regime.<sup>22</sup>

### 3.2 Endogenous barriers to entry

In the second model, we take explicitly into account the possible endogeneity of admission rates. In this specification, we therefore assume that Boards, in establishing admission rates, do not only evaluate the average quality of the candidate, but also the prevailing market conditions. We propose the following three simultaneous-equations model:

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<sup>19</sup>See Satterthwhite (1979).

<sup>20</sup>See Evans (1974).

<sup>21</sup>For an empirical testing of increasing monopoly vs. target income theory see Pauly and Satterthwhite (1981).

<sup>22</sup>For an intriguing interpretation of the variability of fees in a market for experts in a Bertrand equilibrium see Emons (1994).

$$q_{it} = \alpha_0 + \alpha_1 y_{it} + \sum_{j=0}^2 \alpha_{2+j} a_{i(t-j)} + \alpha'_5 X_{it} + \epsilon_{it} \quad (3)$$

$$y_{it} = \beta_0 + \beta_1 q_{it} + \sum_{j=0}^2 \beta_{2+j} a_{i(t-j)} + \beta'_5 Z_{it} + \eta_{it} \quad (4)$$

$$a_{it} = \gamma_0 + \sum_{j=0}^2 \gamma_{1+j} y_{i(t-j)} + \gamma'_4 W_{it} + \omega_{it} \quad (5)$$

Essentially, equation (3) and (4) are the same demand and supply of the previous model except for the fact that we model a direct demand equation. Equation (5) provides our specification of the barriers to entry function; as customary in the industrial organisation literature, barriers to entry are put in relation with the profitability of the market: where economic rents are present, one could argue that incumbents endeavour to preserve them.<sup>23</sup> Entry restrictions have a lasting effect on incumbents income which is stronger if the profession operates in a monopoly regime and if Boards can directly manipulate pass-to-fail ratios in response to market conditions. The vector  $W_{it}$  therefore includes the same exogenous variables about the competitiveness of the market that were present in the previous specification and other useful control dummies.

This model represent a logical step forward with respect to the simple demand and supply since it provides a more appropriate setting to evaluate the counterbalancing welfare effects of entry restrictions and to investigate the possible determinants of admission entry under an alternative behavioural assumption by Boards.

## 4 Empirical results

Estimates of the first model are obtained by two stage least squares. By the order condition, both equations are over-identified.<sup>24</sup> We estimate therefore the reduced form of the supply equation and replace quantity with its predicted value in the demand equation. This allows to obtain consistent estimates despite the correlation between endogenous variables and the error term.

We performed a plain ordinary least squares for unbalanced panel data in the first and second stage assuming constant slopes and intercepts. More sophisticated procedures that could be useful to test the existence of individual or random effects could not be adopted since some variables are averages in the time dimension.

Table 5 contains the empirical results for the first model; our estimates confirm the existence of a downward sloping inverse demand curve in the market for Commercialisti; the contemporaneous and lagged values coefficient of admission rates are highly significant and negative; this indicates that institutional barriers to entry are indeed effective in raising accountants' income.

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<sup>23</sup>As Stigler (1971) points out, regulation limiting entry are the even preferred to direct subsidies, since these will be dissipated by competition for the market.

<sup>24</sup>See Pyndick, Rubinfeld (1981).

According to the theory we mentioned to in section 3.1, this indicates the existence of a substantial premium for the Commercialista operating in a regime where entry is limited by Boards. Supply being equal, consumers seem therefore willing to pay for the increase in the quality of the service.

Excluding per capita income and the number of banks operating in the cross-section area, socio-economic variables have the expected sign and are significant. As far as the anagraphic variable are concerned, seniority and male sex are positively correlated to incomes; using a quadratic expression for the variable age we capture the peculiarity of the age-earnings profile that we observed in the descriptive analysis in section 2.6. Incomes are indeed increasing in age but at decreasing rates. The time dummy is not significant despite the observed upward trend in incomes in 1987. The regional dummy instead is significant, but has the wrong sign. As a matter of fact, southern Italy accountants are characterised by far lower level of incomes with respect to their northern and central Italy colleagues, as Figure 5 and 6 clearly indicate.

As we stated in the introductory section, Boards display substantial discretion in the admission of new members in the profession. One can figure out that Boards might take into account income levels to manipulate entry and therefore supply, neglecting the average quality of the candidate as the primary variable during the selection. If admission rates were an endogenous variable, the estimates of the simple demand and supply model would be inconsistent.

In this direction, we have performed a Hausman (1978) test adopting the omitted variable interpretation;<sup>25</sup> the results in Table 6 confirm our suspects: admission rates are endogenous at the 1 % significance level. We turn therefore to our second specification that explicitly takes into account the endogeneity of admission rates. Three-stage least squares estimates for the second model are reported in Table 7.<sup>26</sup>

In the demand equation, equilibrium quantity of accountancy services are positively related to prices; this result contradicts the information of the previous model, where the demand function was downward sloping. If the services provided by Commercialisti are a search or credence good,<sup>27</sup> consumers are not able to evaluate quality properly and tend to infer it from prevailing fees. Therefore, where fees are higher, consumers tend to expand their demand since the information asymmetry is partially fulfilled. The supply equation is instead a conventional upward sloping function; as fees increase, a larger quantity of professional services will be supplied.

Now we turn to the main variable of interest of our analysis. Indeed, when treated as an endogenous variable in the system, admission rates result a very interesting variable to explain the equilibrium quantities in the market for Commercialisti. First of all, we claim that the lagged values for the admission rates deserve closer attention; even if it is

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<sup>25</sup>See Maddala (1992), p.510-11.

<sup>26</sup>Three stage least squares involves the application of generalised least squares to the system under the assumption that error terms of each equation are correlated for identical cross-section units. Once the two stage least squares parameters are obtained, the residuals of each equation are used to estimate cross-equation variance and covariances. In the third stage, generalised least squares parameter estimates are obtained. See Pyndick, Rubinfeld (1991).

<sup>27</sup>See Nelson (1970), Darby and Karni (1973).



necessary to include contemporaneous values for that to be a proper simultaneous equation system, there are well-grounded economic reasons to discard that admission rates could have an immediate impact on incomes and quantities. As far as incomes are concerned, it is not sensible to establish any economic effect between the rate of new admissions in one year and income in the same year; Commercialisti that have passed the examination cannot immediately generate any real effects on incumbents' incomes. The same argument applies for the quantity of accountancy services actually demanded. Once again, it is rather difficult that consumer perceive instantaneously the variation in the average quality of the professional. These effects are more tangible in the following years after some consumption activity has been carried out.

Given these *caveats*, we observe firstly a strong negative correlation between past admission rates and incomes in the supply equation; this indicates quite clearly that the institutional barrier to entry is successful in creating rents. On the same line of reasoning of the previous model, the rationale for this economic rent could be found in the higher human capital investment that is necessary to step in the profession in a local market where Boards are quite selective. At this juncture, it is fundamental to establish if the selection of candidates is not biased by other factors, namely the profitability of the local market or the competitiveness of the industry. A close inspection of the admission rates equation clarifies that past incomes within the profession seem to be an important variable to explain the restrictiveness of the Boards. The negative correlation we find between past incomes and admission rates indicates clearly that the profitability of the market explains at least partly the admission policy. Boards are indeed restrictive where incumbents enjoy economic rents; in addition, the sign on standard deviation of incomes confirms that less competitive markets exhibit lower admission rates in the market for Commercialisti.

It is however possible to find a rationale for this anti-competitive behaviour by Boards; in fact the policy of creating and preserving rents may be functional to provide a relatively high return for those skilled Commercialisti who are the only admitted in the professional society. This argument does not seem too convincing; first, it is not at all clear that a policy of entry restriction should make consumers better off if their demand is upward sloping. Second, from our estimates the equilibrium consumption of services is *lower* in local markets where Boards have been restrictive. The coefficient on lagged admission rates in the demand equation are in fact both significant and positive. One could therefore argue that the quality-inducing policy has not been successful in increasing the willingness to pay for quality of a consumer who is peculiarly inclined to infer it by prevailing fees.

Some other interesting results are apparent from our estimation; in the demand equation, with the exclusion of the number of banks, the vector of socio-economic variables is significant and has the appropriate sign. The regional dummies confirm some of the stylized facts that emerged from the descriptive analysis: in the southern regions, income levels are substantially lower and admission rates much higher. In the supply equation, more entries reduce the profitability of the market, and this indicates that competition tends to dissipate rents. Finally, despite the relatively lower significance of the coefficient on standard deviation of incomes in the supply equation, we claim that a lower variability in incomes is associated with lower prices and higher admission rates. This result confirms that competi-

tion operates in downsizing profits and that, where economic rents are not tangible, Boards are not concerned to restrict entry.

## 5 Conclusions

In this paper, we have provided a systematic study on the market for Italian accountants; this market deserves close attention since the same service is provided by two distinct professions (Commercialisti and Ragionieri) which differ in terms of input regulation. By law, only Commercialisti must have a university degree to be allowed to practice. The paper has shown the existence of a substantial earning differential over the professional life cycle; we claim that this differential and the competitive threat exercised by new entrants and by the less qualified Ragionieri lie at basis of the admission policy administered by incumbent Commercialisti who are widely represented in the examining body.

Our empirical results indicate clearly that entry reduces sensibly the profitability of the market and that the institutional barrier to entry, namely the professional examination, is effective in preserving monopoly rents in the market. Furthermore, we have shown that the admission policy itself is endogenous and deeply influenced by market condition. Indeed, the cross-sectional variance in admission rates all over the country can only partially be explained by differences in education or professional ability of the candidates. Our analysis indicates that, once treated as an endogenous variable, admission rates are highly negatively correlated with past level of incomes. As far as Italian Commercialisti are concerned, this result casts some doubts about the view that professional Boards are benevolent institutions who strive to preserve high quality standards of active professionals and posits the question whether it might represent a possible guideline for an intervention by anti-trust authorities.

This analysis obviously can be extended in many directions; first, it would be extremely interesting to collect data on admission rates for Ragionieri. The comparative analysis between the two segment of the market for accountants would allow to put in relation differences in admission policies with the profitability of the two professions. In addition, it would be possible to estimate properly the degree of inter-professional competition and of substitutability between the services provided by Commercialisti and Ragionieri.

From an empirical standpoint, our estimates will probably be improved if we could have available a panel where all variables were not averages in the time dimension; in this case we could test for fixed or random effects in the cross-section. Furthermore, it would be useful to carry out other diagnostics to test the robustness of our specification. We leave all this to further research.

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**Table 5. Semi-log 2SLS estimates of Commercialisti incomes**  
(t-values in parentheses)

Dependent Variable:	First Stage Equation Q	Second Stage Demand Equation Y
CONSTANT	-5.0377 (-.5074)	5.7571** (27.1240)
FITQ		-.3954** (-25.3881)
ADM	-.0265 (-.7809)	-.0117** (-15.4921)
ADM(-1)	-.8979E-02 (-.2302)	-.2394E-02** (-3.1126)
ADM(-2)	-.4016E-02 (-.1291)	-.3588E-02** (-50.9061)
BANK	.01057 (.1158)	.1613E-02 (.9039)
PROD	.7626E-02** (18.2041)	.313313E-02** (25.0802)
POP	.6494E-04** (5.1026)	2567E-04** (24.7581)
INCOME	-.2014E-05 (-.7646)	-.7406E-06** (-12.4894)
CAREER	.8432** (3.5675)	.411912** (29.8931)
AGE	.1251 (.2665)	.1105** (12.0753)
AGE2	-.3659E-02 (-.6820)	-.2090E-02** (-18.1928)
SEX	-.6208 (-.3304)	.1553E-02 (.0411)
SOUTH	2.0434* (2.0476)	.1850** (4.7830)
1987	-.1144 (-.1251)	-.0185 (-1.0383)
STDY	-.3206 (-.8965)	
ENTRY	1.7796 (.7682)	
EXIT	-1.2710 (-.4715)	
N =	4228	4228
R-squared =	.8096	.5325
Adjusted R-squared =	.8088	.5309

\* = Statistically significant at the 5% level.

\*\* = Statistically significant at the 1% level.

**Table 6. Hausman test for endogeneity of admission rates**

(t-values in parentheses)

Dependent Variable:	First Stage Equation ADM	Second Stage Demand Equation Y
CONSTANT	7.1968** (24.3452)	9.1827** (35.0819)
FITQ		-.1630** (-8.7476)
ADM		-.5474E-02** (-6.9558)
FITADM		-.0524** (-20.6251)
ADM(-1)		-.1311E-02 (-1.7837)
ADM(-2)		-.1656E-02 (-2.8240)*
BANK		.1683E-03 (.0988)
PROD		.1240E-02** (8.7141)
POP		.1060E-04** (8.6303)
INCOME		-.2606E-06 ** (-4.2636)
CAREER		.2015** (13.3867)
AGE		.0691** (7.7219)
AGE2		-.1100** (-9.2017)
SEX		.1141** (3.1335)
SOUTH		-.2103** (-5.0604)
1987		-.2956E-02 (-.1737)
STDY	-3.1651** ( -13.654)	
ENTRY	.63866 (.44849)	
EXIT	7.2626** (3.9645 )	
N =	4228	4228
R-squared =	.04602	.5753
Adjusted R-squared =	.04534	.5738

**Table 7. 3SLS Estimates for the three simultaneous-equations model**

**Demand Equation**

Dependent variable: Q  
 Std. dev. of dependent var. = 48.717555  
 Mean of dependent variable = 13.6414  
 R-squared = .6768

Parameter	Estimate	t-statistic
ALPHA0	-111.057**	-4.2181
Y	11.3701**	4.7693
ADM	-1.7820**	-4.6779
ADM(-1)	.6143**	3.6430
ADM(-2)	.2572**	3.4865
POP	.6586E-04**	4.8379
INCOME	.2280E-05	.7390
PROD	.6749E-02**	14.7604
BANK	-.0799	-.7832
SOUTH	26.8898**	7.9198

**Supply Equation**

Dependent variable: Y  
 Std. dev. of dependent var. = .6059  
 Mean of dependent variable = 10.6460  
 R-squared = .1973

Parameter	Estimate	t-statistic
BETA0	10.1993**	36.6474
Q	.3278E-02**	13.9070
ADM	.0362**	2.6148
ADM(-1)	-.0141*	-2.3091
ADM(-2)	-.8801E-02**	-3.3423
ENTRY	-.6649**	-9.7268
EXIT	-.0329	-.4026
STDY	.0371	1.9574
SOUTH	-.9797**	-9.8819
1987	.6459**	4.3680

**Admission Rates Equation**

Dependent variable: ADM  
 Std. dev. of dependent var. = 15.1772  
 Mean of dependent variable = 25.7264  
 R-squared = .1034

Parameter	Estimate	t-statistic
GAMMA0	182.485**	10.6169
Y	17.8346**	5.7691
Y(-1)	-23.5855**	-10.9762
Y(-2)	-5.6643**	-6.8945
STDY	-3.8397**	-7.6802
SOUTH	7.9998**	5.9283

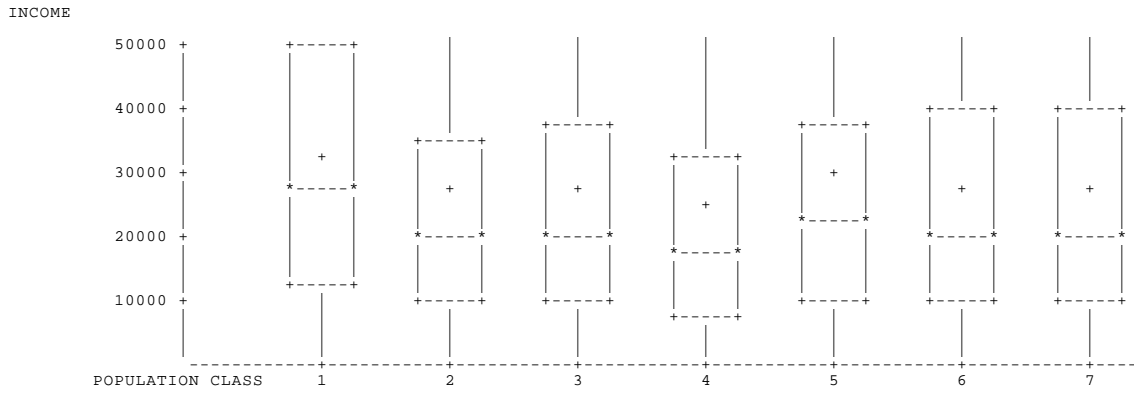
WALD test for the hypothesis that the given set of parameters are jointly zero:  $\chi^2_{(25)} = 19870.29$

\* = Statistically significant at the 5% level.  
 \*\* = Statistically significant at the 1% level.

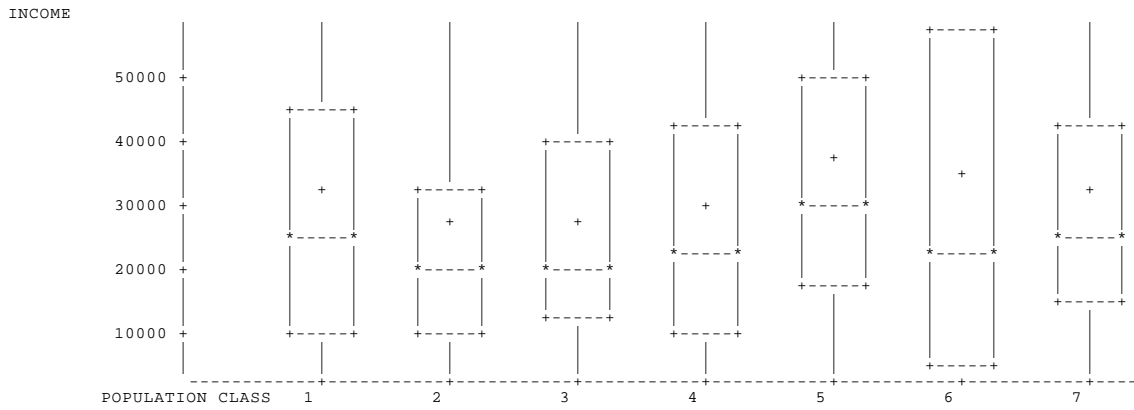


**Table 1 Relations between average income of the new professionals 1989-91 and local area population**

**COMMERCIALISTI**

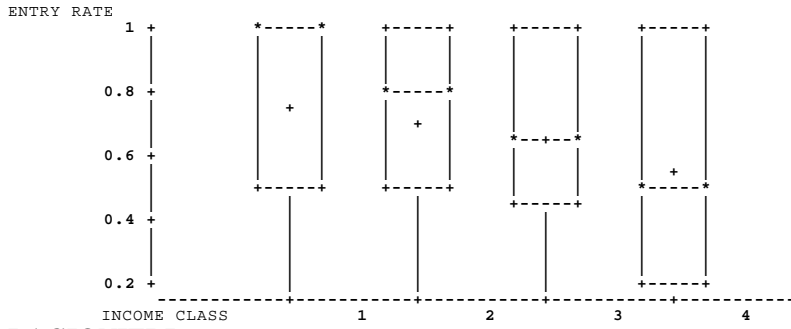


**RAGIONIERI**

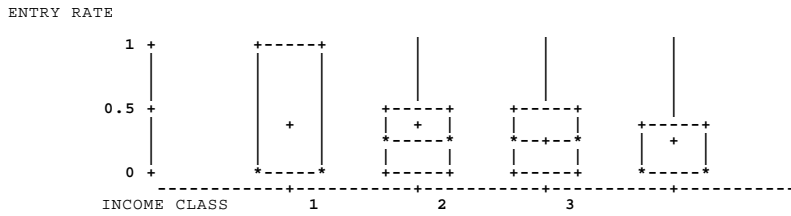


**Table 2 Relations between cumulative entry rate and income in local areas - Average values 1980-91**

**COMMERCIALISTI**

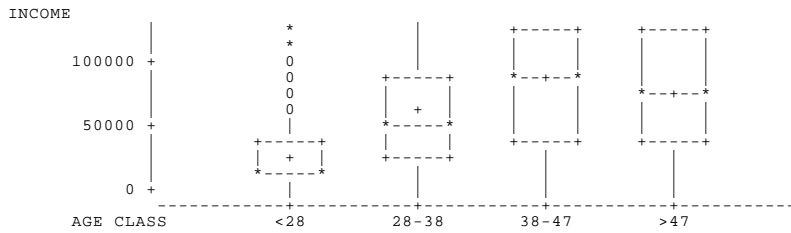


**RAGIONIERI**

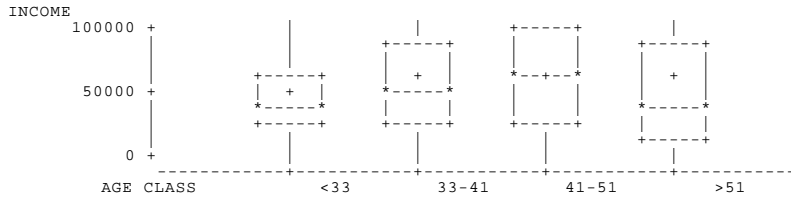


**Table 3 Relations between income and age - Average values 1980-91**

**COMMERCIALISTI**

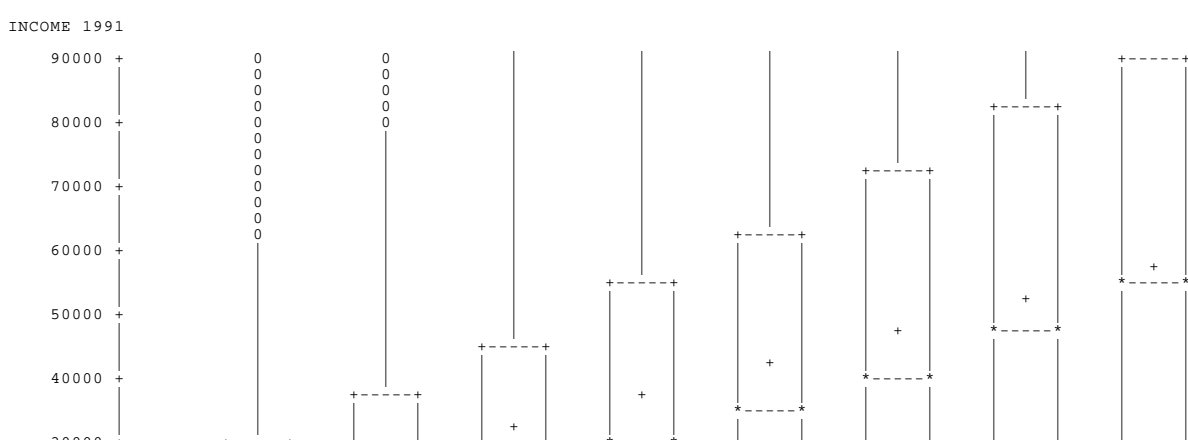


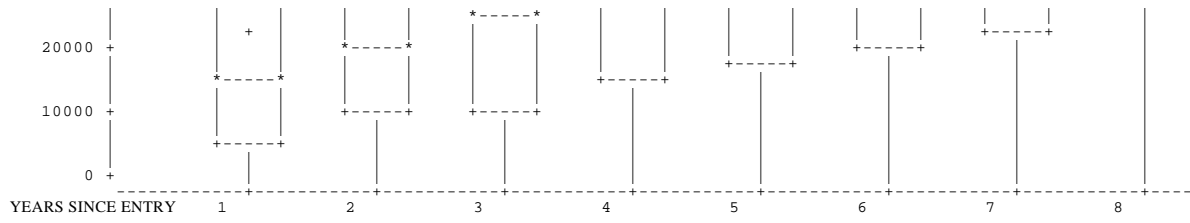
**RAGIONIERI**



**Table 4 Relations between income in 1991 and years since entry**

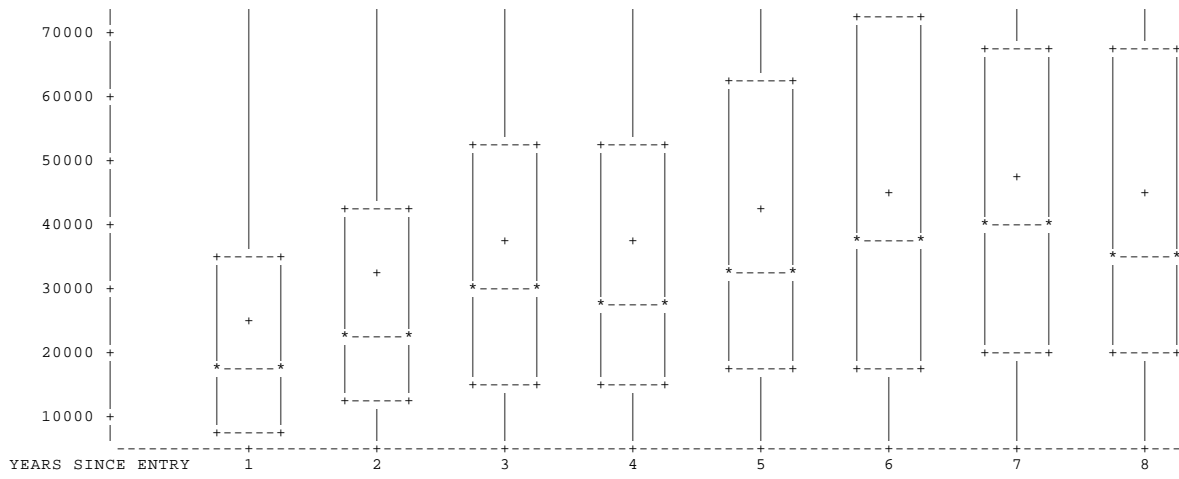
**COMMERCIALISTI**





## RAGIONIERI

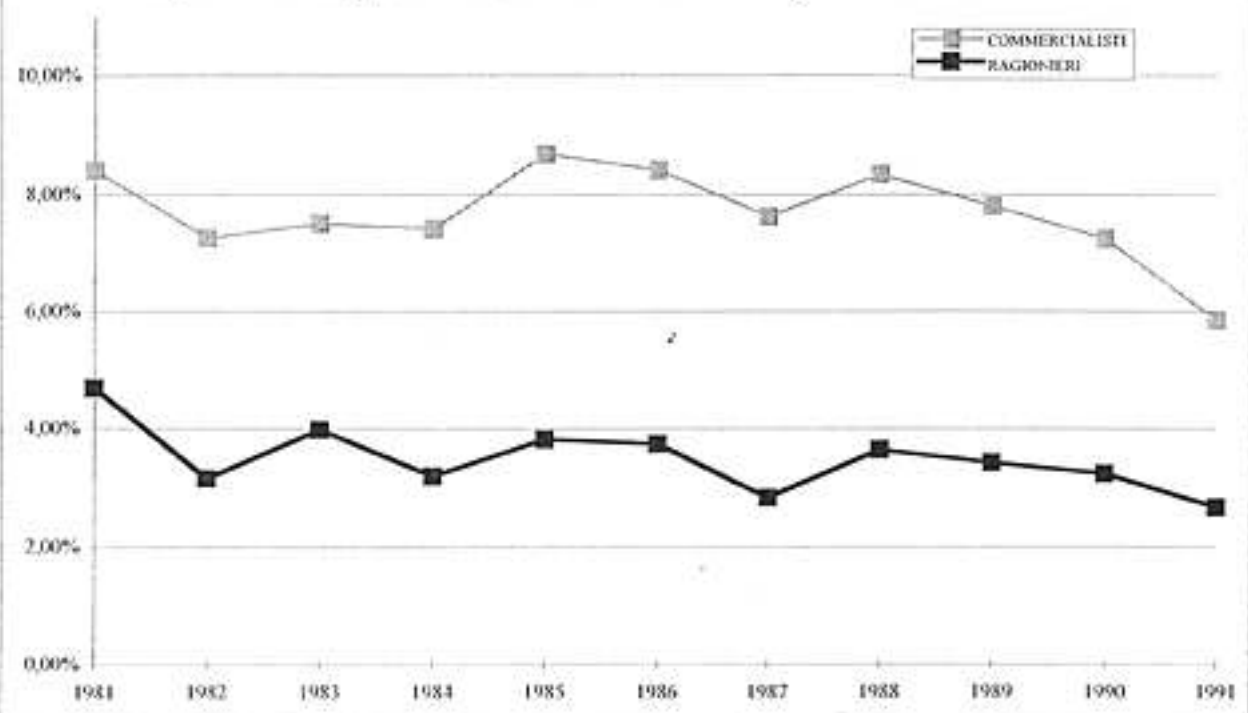
INCOME 1991



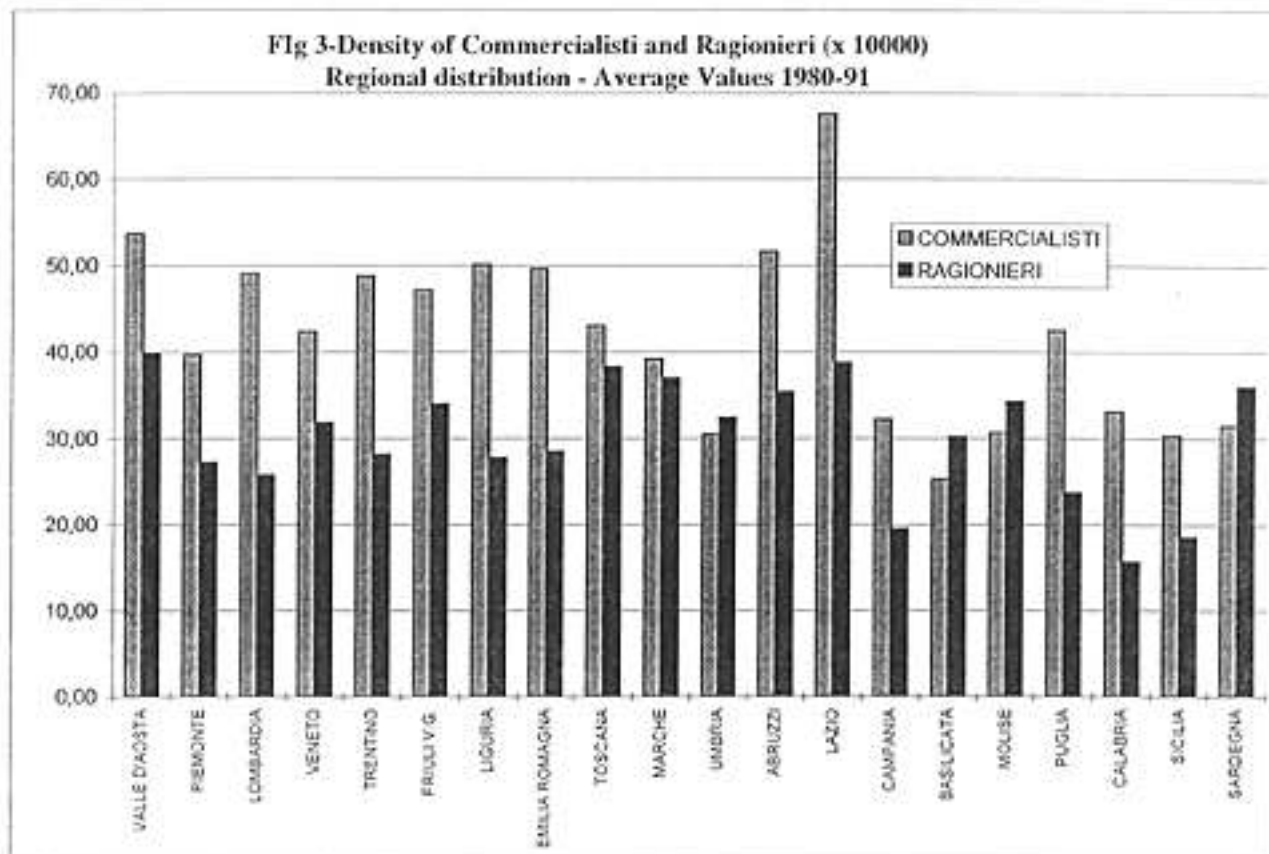
**Fig. 1 - Average number of Commercialisti and Ragionieri 1980-91**



**Fig. 2 - Rates of growth for Commercialisti and Ragionieri 1980-91**



**Fig 3-Density of Commercialisti and Ragionieri (x 10000)**  
Regional distribution - Average Values 1980-91



**Fig. 4 - Average income for Commercialisti and Ragionieri 1980-91**

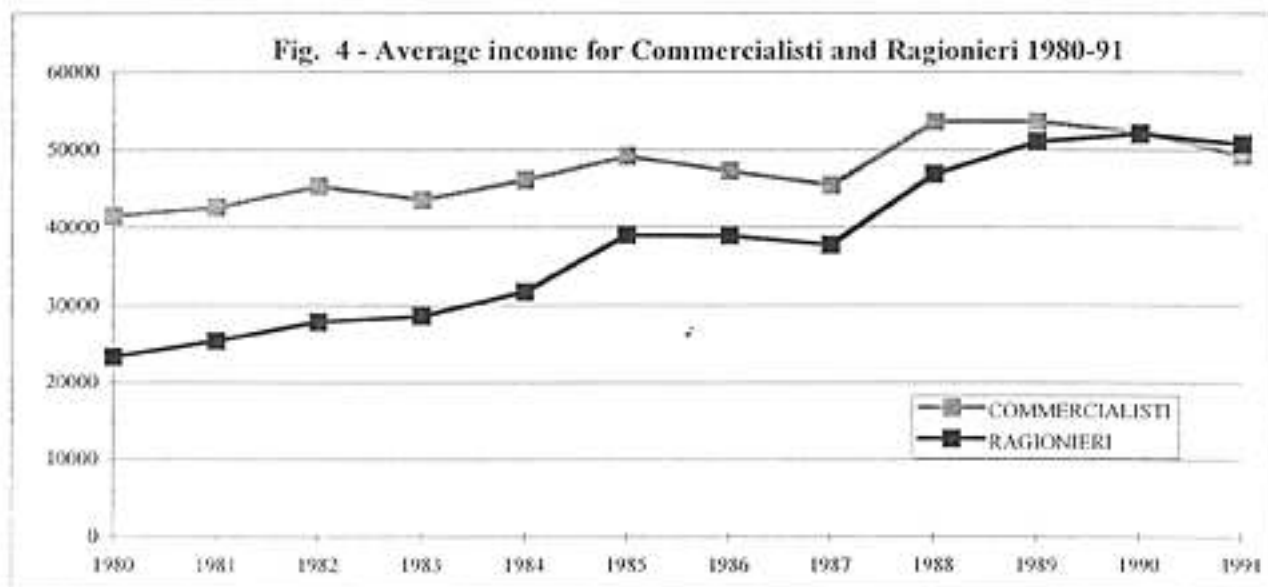


Fig 5 - Regional income distribution of Commercialisti and Ragionieri 1980-85

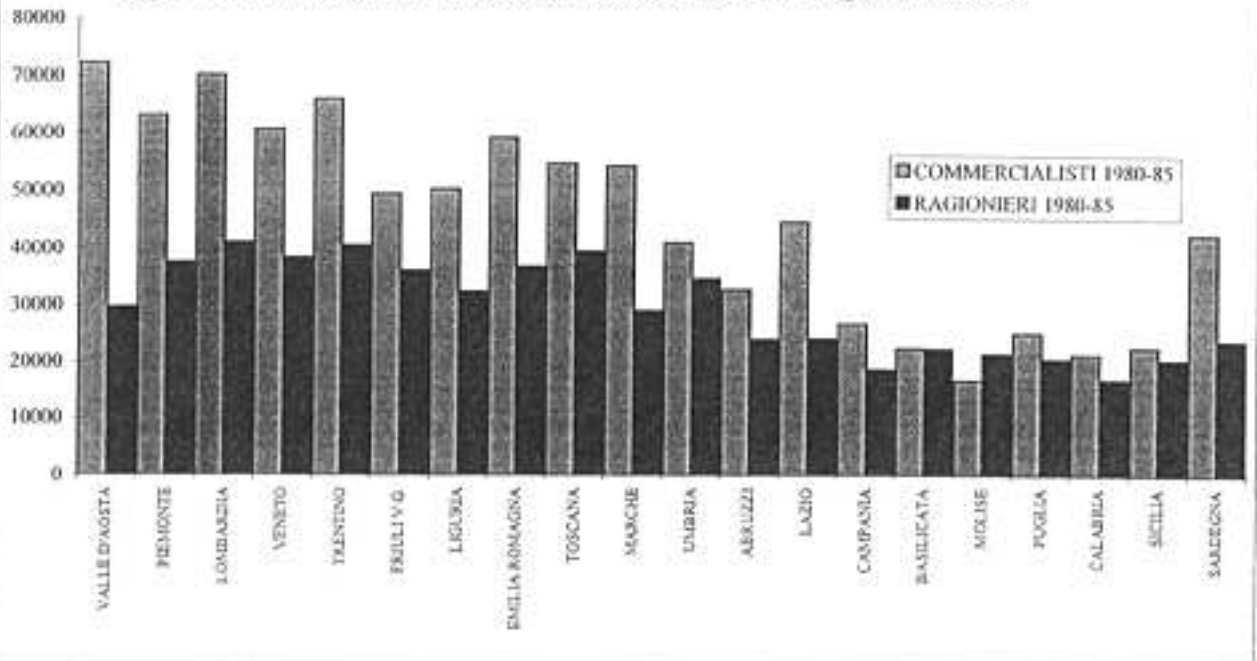


Fig 6 - Regional income distribution of Commercialisti and Ragionieri 1986-91

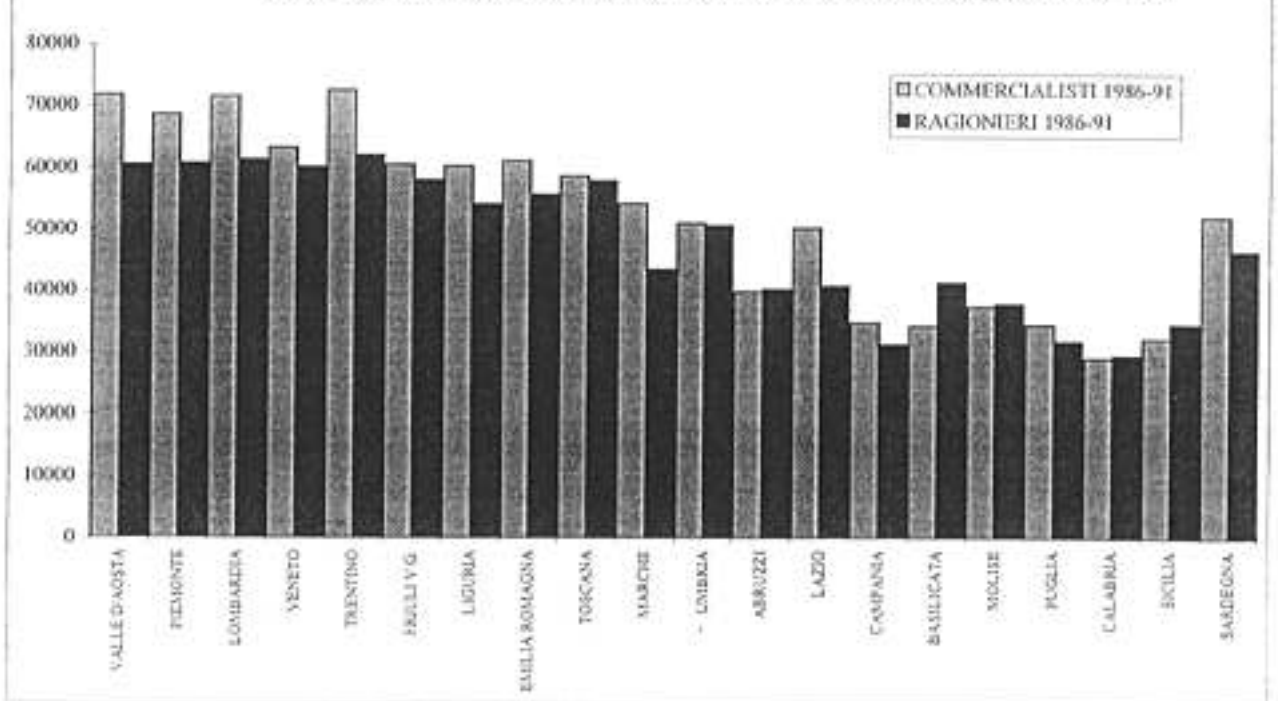


Fig. 7 - Average incomes and admission rates for Commercialisti in selected cities (1984-91)

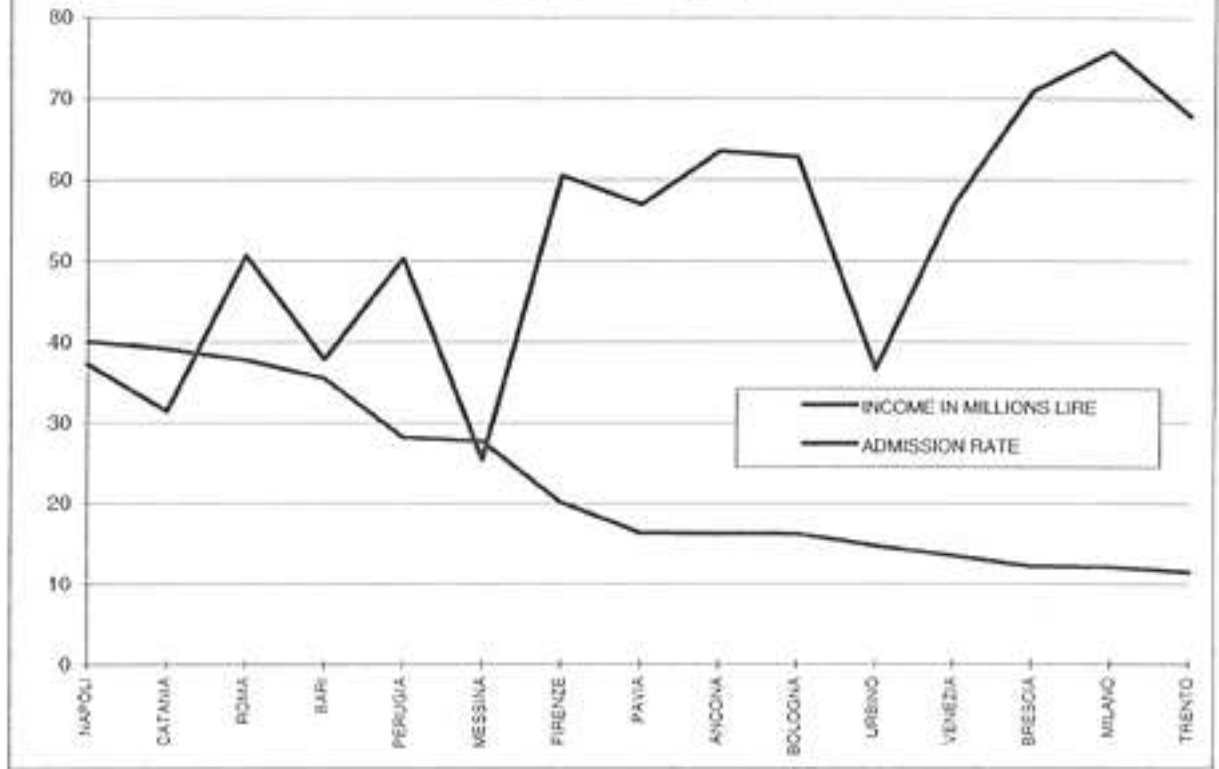


Fig. 8 Average admission rates for the Commercialisti

