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Postgraduate Problems 1988 to 2000: ESE-IPN Case in Mexico

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ABSTRACT

This article is presented under the deductive method, in the hermeneutic paradigm, with a qualitative approach, of interpretative type and narrative design of topic. The Escuela Superior de Economía: Instituto Politécnico Nacional (ESE-IPN) - Higher School of Economics of the National Polytechnic Institute- offers a master's and doctorate in economics, starting courses in January 1970 and February 1986 respectively. During the last years of the last century, these postgraduate programs presented two complex problems: Too long time between the completion of academic subjects and the achievement of the professional license, and they were not recognized by the Programa Nacional de Posgrados de Calidad (PNPC) -National Quality Postgraduate Program. The first master's degree card registration is kept until 1993 and the doctorate one is given in 2003, after completing the thesis and defense of the exam, taking up to fifteen years to obtain it. Regarding the degree of excellence that the PNPC qualifies, the ESE-IPN doctorate obtained this recognition until 2010, eighteen years after the first register of postgraduate excellence in the country was released, the master's degree being in a similar situation.

INTRODUCTION

Postgraduate studies are considered the pinnacle and culmination of the educational processes at the higher level, where the aim is to reinforce the training of the professionals required by the country to link them with the productive sectors of society, in aspects of science, technological development and innovation. The postgraduate program is potentially conceived as a series of methodologies to serve as a basis for research work or for the specialization and professionalization of human resources. Until the end of the 1960s, postgraduate programs were scarce and insignificant in Mexico, depending on foreign universities for the training of scientists and high-level professionals in the country. In 1970 there were only 13 institutions with graduate studies, with 226 programs offered and 4,088 graduate students (Arredondo, 1989).

The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2019) uses an International Standard Classification of Education to divide higher education into: a) Short-cycle tertiary education programs (level 5); b) The tertiary education degree or equivalent (level 6); c) Master's degrees, specializations or equivalents (level 7); d) The doctorate level or equivalent (level 8). These levels of higher education are recognized in Mexico:

> Level 5: Higher Technician or Professional Associate, requires 180 credits.

> Level 6: Bachelor's Degree, which is recognized with 300 credits.

> Level 7: Divided into: 1) Specialty, which requires 45 credits additional to the bachelor's degree; 2) Master's degree, which requires 75 credits subsequent to the bachelor's degree. The specialty is equivalent to 60% of the master's degree, reaching the latter with 30 additional

credits.

> Level 8: Doctorate, equivalent to 150 credits after the bachelor's degree, or 75 credits after the master's degree, or 105 credits more if the specialty is taken as a starting point.

Until the end of the last century, according to Reynaga Obregón (2012), there was confusion and disorder in the country among the three recognized postgraduate levels, mentioning that there was no consensus on the specific requirements for accrediting each of them. Sometimes a specialization was more rigorous than a master's degree, or this in turn could be more rigorous than a doctorate, depending on the institutions offering these postgraduate programs: "This has led to the fact that on a national scale we have specialties that are taught as master's degrees, master's degrees that give the appearance of being a re-medial process of a bachelor's degree, or that we sometimes accept international doctorates that could be studies equivalent to bachelor's degrees".

The work is presented under the deductive method, following a hermeneutic paradigm, based on the experience on the subject. The approach addressed in the article is qualitative, since descriptions of specific situations are made, of interpretative type and narrative design.

RESULTS AND DISCUSSION

Registration and qualification of postgraduate studies by educational authorities

For UNESCO (2019), specialization and master's programs are oriented to develop research skills, are usually essentially theoretical and sometimes include practical training, while doctoral programs are oriented to advanced research, usually concluding with the presentation and defense of a thesis, which must make a

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significant contribution to a specific field of knowledge. It is considered that postgraduate studies began to be offered on a massive scale in the country in 1970. According to Alcántara Santuario & Canales Sánchez (2004) in 1969 there were 5,011 postgraduate students in the country, representing 2.6% of the total number of higher education students in the country, of which 1,677 were for specialties, 2,802 for master's degrees and 532 for doctorates. By institution, these students were: Universidad Nacional Autónoma de México (UNAM) 3,055 (61%); Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) 698 (13.9%); Universidad Autónoma de Nuevo León (UANL) 408 (8.1%); Instituto Politécnico Nacional (IPN) 294 (5.9%); Centro de Investigaciones y Estudios Avanzados (CINVESTAV-IPN) 121 (2.4%); Universidad Autónoma Chapingo 200 (4%). These six universities absorbed 95.3% of the students enrolled.

The total enrollment of postgraduate students in 1970 was 5,953 students, while in 1980 and 2000 there were 25,502 and 118,090 students, respectively, according to ANUIES (Reynaga, 2002). This represents an exponential increase of twenty times in the number of graduate students registered in 30 years (from 1970 to 2000) or 4.6 times in 20 years (from 1980 to 2000). In 1970, postgraduate programs were offered by 13 institutions in the country, with 75% of enrollment concentrated in the Federal District, where UNAM absorbed 56% of the total, IPN 8%; the state of Nuevo Leon was the next in postgraduate offerings with 20% of the total, with UANL and ITESM standing out (Kent *et al*, 2001: 66).

Of the country's total graduate enrollment, Mexico City had 75.5% in 1970; 57.8% in 1980; 43.55% in 1990 and 35% in 2000; where the remaining percentage was concentrated in universities in other states (Alcántara & Canales, 2004: 119). Thus, it can be seen that the Federal District absorbed 3 out of every 4 graduate students in 1970, but only 1 out of every 3 students in 2000, despite the fact that three of the five largest public universities in the country are concentrated in the capital: UNAM, IPN and Universidad Autónoma Metropolitana (UAM).

The 1985 the Asociación Nacional de Universidades e Instituciones de Educación Superior (ANUIES) - National Association of Universities and Institutions of Higher Education- in Statistical Yearbook records a total of 37,040 graduate students, with 3% in agricultural sciences, 6.7% in natural and exact sciences, 29.5% in health sciences, 36.3% in social and administrative sciences, 10.2% in education and humanities, and 14.3% in engineering and technology. The same yearbook shows that the Federal District had 52.4% of the students at this level.

The main problem of postgraduate programs at the end of the 1980s was the graduation of the graduates, since the great majority of people who studied them in the country did not manage to formally complete their academic degree, as Arredondo Galván (1989) would say in this regard: "There is, however, a great concern for

the low terminal efficiency of graduate programs...The concern is centered, above all, on the scarce graduates' degrees, as well as on specifying the times for obtaining academic degrees..."

The Integral Program for the Development of Higher Education- was approved in 1986 by the general assembly of the ANUIES, where a specific part was contemplated for postgraduate education (Mendoza, 1989). In 1988, the document Declarations and Contributions for Educational Modernization (ANUIES, 1990), with a section on postgraduate education that stated: "In recent years, postgraduate programs have undergone enormous growth and diversification. However, in many cases the conditions in which these programs are carried out do not guarantee a minimum of quality".

In the National Program for Educational Modernization 1990-1994 (1990), the degree of concentration of postgraduate programs was noted, especially in social and administrative areas, highlighting: a) during the last five years, the relative participation of technological areas in postgraduate studies decreased; b) 50% of the enrollment is located in the Federal District, 32% in five states and the remaining 18% in 23 other states; c) 81% of researchers in the technological-logical area are concentrated in the metropolitan area of the Federal District.

In 1991, the Consejo Nacional de Ciencia y Tecnología (CONACYT)-National Council of Science and Technology- implemented the Graduate Programs of Excellence, acquiring transcendental importance in its supervision of graduate studies, giving them a boost and orientation towards research, reorienting the resources destined to the projects financed and above all to the scholarships granted to students.

When the Programa Nacional de Posgrados de Calidad (PNPC) -National Quality Postgraduate Program- was issued in 1991, only 424 postgraduate programs were approved, one fourth of the postgraduate programs existing in the country. The requirements of the PNPC are increasingly greater and by the year 2000 only 406 graduate programs were registered, which means a drop of 18 programs in a decade (4.2% decrease). The number of doctoral programs increased from 118 in 1991 to 151 in 2000, with 33 more programs at this level in a decade (28% increase).

The case of graduate programs at the ESE-IPN Graduate Section

On May 11, 1970, the ESE-IPN Graduate Section began its activities offering a master's degree in science with a specialization in industrial economics. According to Dean Ruiz Suárez (IPN, 2012: 14) in that cycle 22 students enrolled, who had to apply for financing through the Banco de México -Bank of Mexico-, since tuition was onerous for that time: \$2,000 pesos. The dean of the ESE-IPN reminds us that sometime later the master's degree was sponsored by other governmental institutions, such as the Ministry of Finance and Public Credit, the Ministry of Industry and Commerce, and National

Financial. The \$2,000 pesos of tuition in 1970, after making some calculations using consumer price indexes (Aguirre, 2022), would be equivalent to \$18,450 pesos in November 2021.

According to the Gazette Polytechnic of January 31, 1970 (IPN, 1970), the master's degree in industrial economics was the first postgraduate program in Latin America to be offered on this subject.

The ESE-IPN Graduate Section incorporated the Master of Science with specialization in International Trade and Economic Development in 1973 and 1974 respectively, offering for the first time the PhD in Economic Sciences in February 1986. The specialty of Financial Economics was offered until 1998, which eventually changed its name and now the specialty taught is Financial Risk Management.

In order to establish a general regulation for postgraduate studies, in 1965 the first Postgraduate Regulations were approved at the IPN. In 1981, a new Organic Law of the IPN came into force and on November 16, 1982, the General Advisory Council approved the second Regulation for Graduate Studies, while López Portillo was still President of Mexico. In 1983, the Regulations for Graduate Studies were modified once again, as part of President Miguel de la Madrid's Modernization Program (Tena, 2008).

In May 1991, a new Regulation of Graduate Studies was approved, which was in force for fifteen years, and in 2006 substantial modifications were made to these graduate regulations (Ruiz *et al*, 2006: 43-44). Finally, on September 15, 2017, the new Regulations for Graduate Studies of the IPN came into force.

The postgraduate programs offered in Mexico in the area of social sciences and especially in the division or subject of economics and development (related subject), according to Kent Serna *et al* (2001: 100) since 1980 were as follows:

- o In 1980 there were 14 master's programs dedicated to economic-development, representing 9% of all social science programs; while in 1997 there were 58 programs (10.1% of social sciences).
- o In 1980 there were 2 doctoral programs dedicated to economic-development, representing 9.5% of all social science doctoral programs; while in 1997 there were 8 programs (15.4% of the social sciences).
- o In 1997, of the total number of programs offered in the area of economics-development: 2% corresponded to specialties; 91.1% to master's degrees; and 6.9% to doctorates.

Of the 14 master's degree programs registered in the area of economics-development in 1980, the ESE-IPN Graduate Section had a master's degree in science with its three specialties: industrial economics, international trade and economic development. In 1980, the two doctoral programs that existed in this area corresponded to the economics program offered by the Faculty of Economics (UNAM) since 1976 and the socio-economics, Statistics and Informatics program offered by the Postgraduates

College since 1979.

Until February 1986, the doctoral program in economic sciences was offered at the IPN, making it the third doctoral program in the economic area offered in the country. By 1997, eight doctoral programs in the area of economics and development were being offered.

Arredondo G. (1989) mentions that at the end of the eighties, most postgraduate programs were located within the same academic and administrative structure of the undergraduate schools or faculties, causing an almost inseparable inertia to be observed between the undergraduate and postgraduate programs, where the ways of teaching and evaluating were so similar, not to say that they were completely the same, observing that professors in the same school cycle taught undergraduate and postgraduate courses.

García, J. (1995) agrees with this panorama, stating that the postgraduate sub-system was mixed with the undergraduate in academic-administrative procedures in several universities, for example, in some cases both levels of higher education share a budget, as well as professors and physical space. It should be noted that there should be a level of differentiation between undergraduate and graduate programs, where the latter should have a division, council or directorate to manage academic and administrative matters.

In this aspect, the then ESE-IPN Graduate Section (now Graduate Studies and Research Section) was so independent from the undergraduate area that at the beginning of the 1980s, the semester in the Graduate Section began in the first days of August, while the semester in the undergraduate area began in October (two months later), so that if a student from the school itself wanted to study a master's degree, he had to wait four additional months to begin his studies.

Another point of independence of the bachelor's and master's degree areas at ESE-IPN was that bachelor's degree graduates did not have an automatic pass to the master's degree, but had to take the propaedeutic course just like applicants from other institutions, noting that the mathematics content in these courses was demanding, therefore, a little more than half of the students enrolled in the master's program came from engineering areas or from foreign countries (Colombia, Ecuador, Peru, Dominican Republic, Bolivia, Costa Rica), for which they were not as "severe" when it came to accrediting the propaedeutic course.

In reference to the fact that they could be the same professors for the bachelor's and master's degrees at ESE-IPN, no undergraduate professors were found teaching graduate classes, nor were undergraduate professors who were graduate students, at least from 1983 to 1987.

Regarding the physical space, the ESE-IPN Graduate Section was located on the second floor of the building, where almost no undergraduate students circulated and it felt as if there was 'a door' when accessing the graduate part, where it had its own library, offices for student services, as well as its own auditorium and since 1986 it

had its own computer center. In addition, its classrooms were totally different from those of the undergraduate part, where the professor sat in the center and the students in a half circle in how many benches (15 per classroom). Before the end of the eighties, a small annex building was built exclusively for the graduate area.

In the ESE-IPN Graduate Section, the highest body that made decisions on academic and technical aspects was the College of Professors, where only the Head of the Section, the professors and students representing the three specialties of the master's program could participate. I never heard of any pressure exerted by the school administration or any other educational authority. Arredondo G. (1989) mentions that at UNAM the General Examination Regulations governed students from high school to postgraduate level, where it was established that class attendance was not compulsory for high school and undergraduate levels, since there were extraordinary exams (called at some time at the IPN "proficiency examination"), while at postgraduate level class attendance was compulsory, since there were no extraordinary exams to accredit the subjects at that level. In this aspect, the same requirements were applied in the IPN graduate programs, since only ordinary subjects could be accredited, and if the subject was not accredited, it would have to be taken again in another period. Also, the 1982 IPN Graduate Regulations established that the minimum passing grade for studies at that level was eight on a scale of ten, stating that if two different subjects were failed or the same subject twice, graduate students would be automatically dropped from the program.

In general, in 1986, some graduate courses continued to be taught by personnel with bachelor's degrees, since there were no better qualified academics due to the growing number of students registered in the graduate program; 15% of the professors had bachelor's degrees and were teaching in some graduate program (García, 1995). It was also common for professors with master's degrees to teach at the doctorate level, since there were not as many professors with the highest degree.

In the case mentioned, since the ESE-IPN Graduate Section worked independently, there was no case of a professor with a bachelor's degree teaching at the postgraduate level. What I saw in the first generation of the doctoral program was that the subject of Computer Science was so new at the beginning of 1986 that one of the graduates of the master's program (candidate) had to serve as a tutor for that course, since he was an expert in the subject and had dedicated himself professionally to it. Master's and doctoral graduates who had completed all the credits of the academic program, with the exception of the thesis with its respective presentation of the degree exam, were called candidates, where they used to put the initial 'C' after the academic degree, to denote that they did not have the respective title or degree.

Ruiz Gutiérrez *et al* (2006) show that the educational institutions that offered the most doctorates in Mexico in 2000 and those that were classified as of academic

excellence in the PNPC were the following:

- o UNAM: 32 programs, of these 25 included in the PNPC (78%)
- o UANL: 23 programs, of which 5 were registered in the PNPC (22%).
- o CINVESTAV (IPN): 22 programs, the only institution with 100% endorsed in the PNPC.
- o Universidad de Guadalajara (UdeG): 20 programs, 9 registered in the PNPC (45%).
- o IPN: 18 programs, 8 registered in the PNPC (44%).
- o UAM: 15 programs, 11 included in the PNPC (73%).
- o College de México: 6 programs, 5 registered in the PNPC (83%).

As can be seen, the country's top university (UNAM) had the largest number of doctoral programs in 2000, with more than three quarters of them having academic quality recognition. IPN's CINVESTAV ranked second in doctorates offered in the country in that year, besides being the only institution that has all its doctorates recognized for excellence in the PNPC.

The IPN and the University of Guadalajara (UdeG) have similar figures in terms of doctoral programs offered, where both universities had less than 50% of their doctorates in the PNPC excellence list. UAM also had about three quarters of its doctoral programs recognized as high quality by CONACYT, which speaks of the spirit of teaching-research. It is also noteworthy that the College de México has five doctoral programs rated as excellent out of the six it offered.

Adding the doctoral programs offered by CINVESTAV and the IPN would give the figure of 40 doctoral programs offered by both institutions in 2000, becoming the institution with the largest number of doctoral programs, as well as 30 programs recognized as excellent by CONACYT, placing it in first place nationally.

The diagnoses made in the National Program for the Improvement of Graduate Studies in 1988 by ANUIES and in the National Program for Educational Modernization 1990-1994 of the SEP were carried out in an adequate and timely manner. The problem is that no transition period was contemplated between the programs offered and the new educational quality requirements, leaving a good part of the postgraduate programs offered at the IPN in an impasse or trance, as was the case of the master's degree programs in economics offered since 1970 and the new doctorate program in economics offered since 1986.

The problem of the IPN's postgraduate programs in economics was located in the registration before the Dirección General de Profesiones (DGP) -General Directorate of Professions- of the Secretaría de Educación Pública (SEP) -Ministry of Public Education- and in the National Program of Quality Postgraduate Programs (PNPC) of CONACYT, in such a way that the postgraduate programs offered at the ESE-IPN remained in the 'limbo' of recognition for a period of time. In this undefined space, it was not possible to process degree certificates, nor was it possible to obtain financing or

scholarships.

Casanova del Ángel (2006) shows that at the end of the 1980s, the educational authorities did not allow graduates of the Escuela Superior de Ingeniería y Arquitectura (ESIA-IPN) –School of Engineering and Architecture– to obtain masters and doctorate degree certificates: “At the end of the 1980s, the General Directorate of Professions of the Ministry of Public Education, through the Department of Educational Institutions, informed the Polytechnic Institute that it was not going to issue any graduate certificates to IPN graduates because most of its master’s and doctoral programs were not duly registered”. In this regard, Casanova (631-632) reminds us that the ESIA-IPN carried out several necessary procedures and on November 8, 1988, the SEP issued several addendum communiqués for the registration of master’s degree programs (environmental engineering, architecture, soil mechanics and geology), later adding two more master’s degree programs.

Tena Núñez (2008) shows us that in 1991 the IPN Advisory Council approved the new Regulations for Postgraduate Studies and Research, where changes were introduced in the operation of postgraduate sections, academic programs and teaching staff. Also, with the entry into force of the CONACYT’s National Postgraduate Program of Excellence, criteria for rigorous evaluation of ESIA-Tecamachalco’s postgraduate programs would be incorporated, such as the following: 1) Adjustment of student records in school control, causing the opening of an audit related to the purging of files; 2) Repatriation program for IPN scholarship holders who were studying abroad; 3) Appointment of 10 new full-time positions for teachers who had completed master’s and doctoral studies, thus preventing professors without a master’s or doctoral degree from teaching courses in postgraduate programs.

Another factor that could have influenced the problems experienced by the IPN’s economics graduate programs could have been the application of neoliberal policies that Salinas de Gortari had been promoting since he became president, where this current of thought took complete control of public power, including the field of education, science and technology. In this sense, P. Bordieu and S. Khan (1986; 2012; cited by Garrido, 2017) express that universities are vital to understand the elite in power in a country, where they play a crucial role in the creation and distribution of social, cultural and knowledge capital that the elites themselves need to emerge, survive or renew themselves.

On this subject, García Escalante (2008 quoted by Villalobos, 2021) believes that the Mexican government, during the last years of the 1980s, adopted the American model of postgraduate education, abandoning and rejecting centuries of European tradition, where from that time onwards, the performance of education began to be measured based on the number of articles and books published, where the neoliberal model would also establish profitability in higher education institutions

as a reward, the author adds: “During the government of Salinas de Gortari (1988-1994) ‘the free market’ was introduced in Higher Education, which caused a proliferation of private IES -Institutions of Higher Education-. These centers of education were given the generic term ‘university’ without having the necessary infrastructure, and without the universality that should distinguish universities from lyceum”.

In the diagnoses of ANUIES and CONACYT, it was mentioned that in the 1980s, postgraduate degrees in engineering and physical sciences were in decline, so it was necessary to promote them through the State’s educational policies, since young people had opted to study postgraduate degrees in administrative and economic areas in order to improve their labor position or obtain higher salaries.

In this regard, Adalid, C. (2011) points out that the classification of excellence was not very well received by some academics and researchers in the social and administrative sciences, where a large number of programs in the natural and exact sciences were included, as well as a considerable increase in the number of postgraduate programs offered in private institutions. Similarly, Padilla Tirado & Barrón Magaña (2013) indicate that programs in psychology, psychology, economics and education, among others, were punished by the authorities in terms of funding and rating of excellence.

According to the standards of quality postgraduate programs elaborated by CONACYT, Reyes García (2006) mentions that the IPN had these programs considered in this select list: in 1991: 21 master’s degrees and 6 doctorates; in 2001: 15 master’s degrees and 10 doctorates; and in 2004: 13 master’s degrees and 6 doctorates. As can be seen, very few IPN programs had been considered of quality by CONACYT.

The worst happened 13 years after that first evaluation in 1991, in 2004 the IPN only had thirteen master’s programs that were considered of quality by CONACYT, which means that eight master’s programs lost that approbatory quality, which represented 38% of the master’s programs approved in 1991; the number of doctorates grew ten years later, but there were only six approved thirteen years later.

According to data from the PNPC (CONACYT; cited by Tinajero, 2005), the IPN in 2000 was not going through its best times in terms of postgraduate quality, since it only had 4 consolidated master’s degrees (highest quality level), while it had 11 conditioned master’s degrees; in doctorates only 2 were considered consolidated and 5 conditioned. Continuing with the same source, in the year 2000 there were only three doctoral programs in economics with excellent quality in the whole country, which were classified as emerging, so I can infer that this included the doctorate in economics offered by UNAM. Muñoz García & Suárez Zozaya (2004) prepared a table with data from the 2000 Census, as well as data from ANUIES and CONACYT, where I highlight the following:

o Total population of the country 97'014,867, with graduate studies 388,397 inhabitants. This means that 0.4% of the country's population had postgraduate studies.

o Academic personnel in higher education institutions 192,406 teachers, with postgraduate degrees 55,570 teachers, 28.9% of whom had postgraduate degrees in 2000.

o Students studying for doctorates 8,407 in 1999. Students with doctoral degrees 1,069 in 2000.

From this information we can see that out of every thousand inhabitants of the country, only four had access to postgraduate studies in the year 2000; we can also see that 3 out of every 10 professors of higher education institutions studied for a postgraduate degree. Doctoral students who obtained their degree and academic degree represent one eighth. From the information provided by Díaz de Cossío (2002; cited by de la Peña & Tello, 2004) for the year 2000, I take it that 56 public or private universities in the country offer a degree in economics.

In February 2010, the Polytechnic Gazette (IPN, 2010) reported that 12 more postgraduate programs were recognized by the PNPC, bringing the IPN's total to 66 postgraduate programs registered in CONACYT's list of excellence, increasing its recognition by 22%. These postgraduate programs, together with CINESTAV's 53, add up to 119 options registered in the national postgraduate studies excellence list, making IPN the second national university offering more postgraduate studies, behind the UNAM (National Autonomous University of Mexico).

The IPN went from 25 graduate programs recognized in CONACYT's PNPC in 2000 to 54 programs in 2009, the following year (2010) they reached 66, which shows a growth of 1.64 times in its quality graduate programs in a decade. IPN Postgraduate Director Trujillo Ferrara (IPN, 2010: 5) informed that four units that offer postgraduate studies entered the PNPC for the first time, among them the ESE-IPN with its doctoral program. This shows that it took eighteen years for its doctoral program in economics to be recognized as being of excellence by the PNPC. The most serious problem I see in the postgraduate programs offered during the last two decades of the last century is the lack of a degree or the complete completion of studies, with a large majority of them being presented as candidates for the degree.

With information from the ANUIES Statistical Yearbooks, we can see that there were 3,033 graduates with doctoral degrees in the country in the 2010-2011 school year, of which 1,120 corresponded to degrees awarded at universities in Mexico City (36.9% of the total). In the latest data available, for the 2020-2021 school year, ANUIES reports that 8,439 students graduated from the doctoral program in the country, of which 2,098 did so in universities in Mexico City (24.9%).

On an annual basis, the number of doctoral degree graduates in Mexico almost tripled from 2000 to 2010, while the annual number of 2020 doctoral degree

graduates grew six times in relation to the number of 2010 graduates. It is also observed that the number of doctoral graduates in 2020 in Mexico City decreased by one third in relation to the number of graduates in 2010.

Information on ESE-IPN postgraduate graduates

According to public information provided by the National Polytechnic Institute in its Repositories: Online Catalog (IPN, 2021) and information on professional licenses from BuhoLegal Monitoring of Judicial Activity (2021), this information is derived from graduates of the Graduate Studies and Research Section ESE-IPN:

> The first Master of Science degree with a specialty in industrial economics was awarded to Héctor Allier C. in 1993, presenting the thesis 'The exponential law as a statistical model of survival in systems reliability' in 1992. H. Allier already appeared in the Master's Degree Prospectus of the Graduate Section (1981) as a candidate for the Master's degree. This shows that the certificate issued by the General Directorate of Professions of the SEP took at least twelve years after the completion of his studies to be granted.

> The second certificate for a master's degree in science with a specialty in industrial economics was registered in 1996, to a student who had presented his thesis in 1982, which meant that it took fourteen years to obtain the SEP certificate. The third master's degree certificate was registered in 1999 and also corresponded to a thesis presented in 1982, which took 17 years to obtain the certificate.

> The fourth master's degree that I recognized is that of Socorro Sánchez I., of the 1983 to 1985 generation, who completed her thesis and exam in 1993, obtaining her master's degree in science with a specialty in economic development in 2001, which took her 8 years to obtain her certificate after completing her professional exam, obtaining her degree certificate 16 years after completing her studies.

> The fifth master's degree was obtained in 2002, when the thesis had been presented in 2000. The sixth certificate was obtained in 2003 and corresponds to the first of the Master of Science with a specialization in international trade, having presented the thesis and degree exam in 2001. From these experiences it only took two years to obtain the SEP's degree certificates.

> As for the doctoral program, the first certificate registered corresponds to Marcos Portillo V., from the first 1986-1988 generation of the doctoral program, who presented the thesis 'Econometric model for agricultural technology adoption under ecologically restrictive conditions' in 2000, obtaining the IPN doctoral degree in economics in 2003, obtaining his degree certificate fifteen years after completing the academic part.

> The second doctoral degree in economics identified was obtained in 2006, where the thesis work was presented in 2002, so the process took four years to obtain the degree certificate.

> The third identified doctoral degree in economics

was obtained in 2008, where the doctoral thesis was presented in 2007, so the process was normal and it only took one year to register the degree with the SEP.

With the same sources of information, I will present information that could not be confirmed in obtaining a graduate certificate, but nevertheless presented thesis and degree exam at the ESE-IPN, so that the complexity of the regularization of graduate studies at this school can be observed:

> In 1973 the first exam for a master's degree in science with a specialty in industrial economics was presented, but no degree certificate was obtained. In 1977 and 1980, two graduates presented theses and took their master's degree exams, but did not obtain their respective certificates.

> In 1981, a student from Colombia presented a thesis and took the examination for a master's degree in science with a specialization in economic development. Foreign students cannot obtain a professional license in the country.

> In 1986, two foreign students (Dominican Republic and Ecuador) presented their thesis and took their master's degree exams. In 1989 two foreign students (Ecuador and Peru) presented their master's degree exam and thesis. The Peruvian student was able to legalize his papers in Mexico and the degree he obtained in that country is recognized with a Mexican professional certificate in 2002, while in 2004 he obtained a master's degree certificate from the IPN.

> In 1990, two graduates presented thesis and degree exam, but neither obtained a degree certificate. In 1992, three graduates presented a thesis and a master's degree exam, but none of them obtained a professional certificate. In 1993, another two graduates took their master's degree exams and neither of them obtained a professional license.

> The first doctoral examination in economics was given in 1991, very close to the date of completion of the first academic generation (1988), but there is no record of a degree certificate for this first graduate.

> In 1992, a foreigner (Dominican Republic) presented a thesis and took a doctoral degree exam in economics, not requiring a professional degree certificate. These first two graduates belonged to the first generation of 1986-1988 doctoral graduates.

> In 1995 and 1996, two doctoral theses and exams were presented, in which neither of the two graduates had a professional degree certificate.

> In 1999, another graduate from a foreign country presented a doctoral thesis and examination. In 2001 and 2002, theses and degree exams were presented, where neither of the two graduates has a professional degree certificate.

As can be seen from this information, the process of obtaining professional licenses for master's degrees taken at the ESE-IPN took up to fifteen years, as I noted, it was not until 1993 that the first license was issued for the master's degree in industrial economics. Although there was the will to completely close the end of graduate

studies, in those years there was confusion and extreme complexity for the final processing of degrees and degree certificates.

From 2002 onwards, the certificates for the master's degrees taught at the ESE-IPN were processed regularly, so I can affirm that since that year the complex situation of years of delays experienced by the first graduates in previous years to obtain the much-prized degree certificate granted by the General Directorate of Professions of the SEP was unblocked. As of 2008, the complex and late processing of the ESE-IPN's PhD in Economics degree certificates became normal and it only took one year for a graduate to complete the process of obtaining his degree certificate. Thus, from that year on, the chaotic and complex situation experienced by the first graduates of the doctoral program came to an end.

In the research study carried out on the graduates of the doctorate in administrative sciences of the Escuela Superior de Comercio y Administración (ESCA-IPN) - School of Commerce and Administration-, conducted by Garduño Román & Ruiz Saúl (2003), it is pointed out that the problem and weakness of many of the doctoral programs is fundamentally the obtaining of the degree, adding that by the beginning of the century less than 25% of the students who enroll in a doctorate program complete their studies.

In the reference study (Garduño & Ruiz, 2003) they found: a) Age: average age of graduates 43.3 years; b) Average grades were 9.65; and c) Time to graduate after graduation: 0.86 years. This shows that ESCA's doctoral graduates conclude their studies in a short time (one year), after completing the academic subjects, in contrast to what happened eight years earlier: "This is very encouraging for the tutorial model, since some figures found in 17 graduates of different generations of the school program, in force from 1965 to 1994, showed that the time to graduate after finishing the credits was between 6 and 17 years, which broke with the time to obtain the degree established in Article 88 of the Regulations of Postgraduate Studies of the IPN".

From the ESCA study, it can be seen that until 1994 they had problems due to the long time it took for graduates of their doctoral program to obtain their degree, the same as those registered in the ESE, but the first school was able to solve them fifteen years earlier.

Currently, the master's and doctoral programs at ESE-IPN already have the degree of excellence granted by the National Program for Quality Graduate Studies (PNPC). In this sense, I constructed a table with information issued by the Statistical Yearbooks of the National Association of Universities and Higher Education Institutions (ANUIES) for the 2010-2011, 2019-2020 and 2020-2021 school years (the last year that has information). The specialty taught in the Graduate Studies ESE-IPN is Financial Risk Management.

The information presented shows that for the 2010-2011 school year, the master's and doctoral programs offered by ESE-IPN reached a total of 108 students, of

Table 9: Pattern of communication change in the rural society

Cycle	Postgraduate	Total	New Admission	Who Terminated	With Title
2010-2011	PhD.	34	14	11	5
	Masters	74	22	24	20
2019-2020	Suma	108	36	35	25
	PhD.	17	2	4	8
	Masters	58	14	19	27
	Speciality	21	8	7	4
	Suma	96	24	30	39
2020-2021	PhD	16	0	7	5
	Masters	55	16	20	19
	Speciality	22	8	12	11
	Suma	93	24	39	35

which 36 were new entrants and 35 graduates, achieving stability between new entrants and graduates; the master's program had 20 graduates and the doctoral program had 5 graduates.

For the 2019-2020 cycle, 96 students were enrolled in the postgraduate program, where it is observed that there are already students in the specialty, with a decrease of twelve students in relation to nine years ago. This year, 27 master's degree graduates are pre-sentenced, seven more than in 2011. At the doctoral level in 2019-2020, there was a drop of 17 students compared to nine years ago, with 8 doctoral graduates in that year, three more than in 2011. Where there is a sharp drop is in the number of new students entering the doctoral program (2 vs. 14) compared to nine years ago, even before the COVID-19 pandemic hit at its peak.

In the 2020-2021 cycle, 93 students are observed in the ESE-IPN postgraduate programs, dropping a total of three students in relation to the previous year, with similar numbers for the three levels: specialty, masters and doctorate. The number of specialty and master's degree graduates is 28, compared to 31 the previous year. The number of new specialty and master's degree students is 24, the same as the previous year.

At the doctoral level in the 2020-2021 cycle, there is one less student enrolled than in the previous year, a drop of more than 50% compared to ten years earlier. The number of Ph.D. graduates drops to 5, keeping the same number as ten years ago. What would be of concern is that there are no new students enrolled in the doctoral program in this last school year.

CONCLUSIONS

In the last fifteen years of the last century there has been a substantial and exponential increase in the number of students enrolled in graduate programs throughout the country, particularly in Mexico City. Since 1984, it was sought that postgraduate programs be evaluated and qualified by national educational bodies. In 1991, the first evaluation of CONACYT's National Program of Quality Postgraduate Programs took place, where only a quarter of the postgraduate programs offered in the country

could count on this qualification of excellence, the IPN being one of the most punished public universities in its qualification.

The master's degree in science with a specialty in industrial economics, which opened in January 1970 at the ESE-IPN, was the first master's degree offered on this subject in Latin America. The doctorate in economics, which began in February 1986, was the third doctoral program in economics to be offered in the country, after the one offered by UNAM and the Graduate School.

In 1988, the first warnings were given of how the qualifications of the postgraduate programs would be from then on, when SEP educational authorities notified at least two IPN schools that their postgraduate programs were not duly registered, namely the ESIA and the ESE. With the arrival of Salinas de Gortari to the presidency, the arrival of the neoliberal current in the application of public policies in the country became evident, and was also felt in the field of academia and higher education.

For graduates of the ESE-IPN master's program, the processing of professional certificates was regularized until 2002, taking a year or a little longer to obtain this important document, after the presentation of the thesis and the exam it entails, while doctoral certificates were regularized in 2008.

As for the degree of excellence granted by CONACYT's National Program of Quality Postgraduate Programs (PNPC), the IPN's PhD in Economics obtained this recognition in 2010, eighteen years after the first postgraduate degree of excellence was issued. From the same Polytechnic Gazette that informs about the doctorate, it is inferred that the qualification of excellence of the IPN's master's degree in economics is also given in those years.

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