DEPARTAMENTO DE ECONOMIA

PUC-RIO

TEXTO PARA DISCUSSÃO
N.º 302

RETRAINING UNDER CONDITIONS OF ADJUSTMENT : THE CASE OF BRAZIL

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AGOSTO 1993

[1]I am thankful to Alberto Melo e Souza, Azuede Fogaça, Barbara Burns, Beatriz Azeredo, Cláudio Moura Castro, Hans Mathieu, José Marcio Camargo and Ricardo Paes de Barros for useful discussions on the themes of the paper. Many thanks to Marcelo Abi-Rama Caetano, Marcelo Guimarães, Simone Passini Pereira, João Carlos Scandiuzzi and Artur Wichman for their excellent research assistance.

Summary:

This study deals with the following question: are the main training institutions in Brazil prepared to face the challenges posed by strucutural adjustment? After looking at a few general notions regarding vocational education under conditions of unemployment and adjustment, we provide a brief description of the changes in the Brazilian labor market. We then examine the major training agency for industrial workers in Brazil (SENAI) focusing on the characteristics and performance of SENAI's graduates, the industries and firms attracting SENAI's graduates, the structure and nature of courses and the relationship between firms and SENAI. With the scanty information available, we provide a brief description of the training agency for the tertiary sector (SENAC). We focus the final remarks and recommendations on SENAI, and conclude that it is not prepared to deal with the demands associated with the changes to which the Brazilain labor market is going through.

Resumo:

Este trabalho lida com a seguinte pergunta: as principais agências de treinamento no Brasil estão preparadas para enfrentar os desafios colocados pelo ajuste estrutural? Depois de discutir algumas noções gerais sobre educação vocacional no contexto de desemprego e ajuste, fazemos uma breve descrição das mudanças no mercado de trabalho brasileiro. Examinamos então a principal agência de treinamento de trabalhadores industriais (SENAI) com ênfase nas características e na performace dos egressos do SENAI, nas indústrias e firmas que atraem os egressos, na estrutura e natureza dos cursos oferecidos e na relação entre as firmas e o SENAI. Com as escassas informações sobre a agência de treinamento para o setor teciário, fazemos uma breve descrição do SENAC. Com ênfase na experiência do SENAI, concluimos que ele não está preparado para lidar com as demandas associadas com as mudanças a que vem sendo submetido o mercado de trabalho no Brasil.

1. Introduction

The effects of economic adjustment and other macroeconomic phenomena on the labor market are not independent from the institutions which provide flexibility to the supply of labor. "Flexibility" both in the sense of speeding up the process of matching between supply and demand and in the sense of filling in the requirements resulting from discontinuities in the demand for labor both within firms and between industries and sectors.

The 90's will be inevitably different from the 80's in Brazil. The Brazilian economy is under great pressure both because of the "stabilization crisis" --or the lack of a sustainable solution to reduce inflation-- and because of the structural changes resulting from the drastic reduction in the degree of protection from foreign competition.

The 80's were marked by periods of recession (1981-83) and growth (1985-89) but the economy was not subject to any major structural change. There was not any important change in the structure of employment in the industrial sector for example. The main characteristic of the adjustment during the 80's was a substitution of exports for domestic consumption without any significant change in the sectoral profile of employment. The years to come will certainly see more movement of workers across industries and sectors, and that is why flexibility and retraining will become a central issue.

In the last three to four years, there are essentially two types of macroeconomic processes occurring simultaneously in Brazil. One associated with the stabilization effort which accounts for an enormous pressure on firms to rationalize

production and which inevitably generates redundancy of labor. Industrial employment has fallen 20% in four years. The other associated with a structural adjustment in which the reduction in the size (and hence employment) of the government and the opening up of the economy play prominent roles. Both types of adjustment increase the requirements to enhance the degree of flexibility of the labor market to minimize costs measured in income losses, the endurance of unemployment and the growth of the informal sector.

The other factor increasing the importance of labor flexibility is that there is an international trend towards the introduction of new technologies which require new aptitudes on the part of workers --aptitudes which are essentially associated with their capacity to communicate (team work) and conceptualize the tasks (participatory decision making). These aptitudes are directly linked with the workers' ability to learn which in turn requires a special type of education, training and retraining and, in particular, a greater emphasis on formative and general training in contrast to specific training.

The institutions which enhance flexibility --that is, the ability of workers to respond to a reduction in the supply of jobs and to adapt their skills to the new demands-- operate at different levels. In the macroeconomics dimension they are associated with the mechanisms determining wages and the costs of hiring and dismissing workers as imposed by the culture permeating capital-labor relations and legislation. This, of course, is not the theme of the present paper.

In another dimension, flexibility results from the capacity

of the firms themselves and training institutions to conform the labor force to new market conditions and technologies. Retraining is certainly an important element in providing flexibility to the labor force besides increasing its productivity. In this particular sense, flexibility has in fact two dimensions. One associated with the workers' ability to learn and adapt to a changing environment, and another associated with the mastering of specific skills. A competent training system must tackle both dimensions.

Training and retraining take place both within firms and in specialized training institutions. The latter are supposed to provide both general and formative education and specific training. The former, namely, general vocational education, is meant to fit the demands of a broad set of firms using different techniques since it provides the workers with the capacity to conceptualize and to rapidly master new tasks. For this reason, in a sense, general and formative vocational education is like a **public good** which, in principle, firms do not have the incentives to provide or finance. On-the-job training, within the firms themselves, is a vital complement to the effort of the training institutions and can be seen as a **private good** which firms have a greater interest in providing and financing.

These introductory remarks raise at least three issues which are central to understanding the challenge of training and retraining institutions in Brazil:

- The first one is that retraining the unemployed has become an imperative. Industrial employment fell during the 1980's but not as much nor as quickly as in the recent years. As

we shall see, training institutions in Brazil are prepared to operate in growing economies, not stagnant economies facing structural adjustments.

- The second is that in face of the uncertainty concerning the future structure of the Brazilian productive sector, and the new demands on the abilities of workers, retraining should emphasize general (not specific) education.

- The third issue is associated with the division of labor between firms and institutions in the provision of training and retraining services. Since firms naturally have greater incentives to provide specific training to their workers, the provision of general and formative vocational education should be the primary task of the training institutions.

There are two major training agencies in Brazil --one for the industrial sector (SENAI) and another for the tertiary sector (SENAC). Both are financed through a 1% contribution on the payroll of firms and are administered by the respective employers' associations. This study will concentrate on SENAI for two reasons. First, because the data provided by SENAI is both systematically organized and reasonably reliable. Second, because SENAI has a somewhat structured strategy of action. The data on SENAC is very scarce and not very reliable, and it is very difficult to tackle a strategic approach in the operations of SENAC. The lack of information on SENAC --and on a lesser extent on SENAI--is certainly an important hindrance to a more rigorous analysis of the training system in Brazil.

The study is organized as follows. In section 2, we discuss a few general principles and notions guiding this study. In

section 3, we provide a brief description of the recent changes in the Brazilian labor market. Section 4 discusses SENAI: the characteristics and performance of SENAI's graduates, the industries and firms attracting SENAI's graduates, the structure and nature of courses and the relationship between firms and SENAI. Section 5 provides a brief introduction to SENAC. Section 6 concludes and offers recommendations.

2. General notions

The study takes as starting points the following principles and notions:

(a) The success and costs of vocational training are importantly affected by the quality of basic education. The "educated" worker or trainee has greater facility to learn and to communicate. For this reason, it is less expensive to train an educated worker than to train an non-educated worker.\[2]

(b) Within the sphere of vocational education, there exists a difference between the goals to be attained with general and formative courses and specific training courses. Specific courses are usually firm-specific, and for this reason more efficient in the case of employed workers whose tasks demand specific abilities. Like basic education, formative courses provide the worker with general abilities thus enhancing his/her

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[2]/ Dougherty (in Tuijnman, 1992, p. 559) notes that "the better the quality of basic education ... the more trainable is the employee, and hence the more quickly he or she can be taught specific skill, or the better will be the transfer of the training. In either case, the greater will be the cost-effectiveness of continuing education and training for the employer and accordingly the greater will be the incentive to provide it."

capacity to learn and communicate.

(c) Formative training is like a "public good" which benefits all firms whereas specific training is more like a private good benefiting specific firms. As a result, given that firms do not have the incentives to reveal their preferences concerning the provision of formative courses, these should be provided by official agencies. Specific training, on the other hand, should be the responsibility of firms.

(d) Large firms have enough economies of scale and capacity to protect themselves against economic fluctuations, and therefore are able to develop their own human resources and training systems. Small firms lack these two characteristics and, as a result, depend on the provision of certain services which they cannot have in house. For these reasons, official training institutions should pay special attention to the needs of small enterprises.

(e) Unemployed workers tend to have their human capital depreciated and usually have difficulties in self-financing the up-grading of their qualification. On the other hand, employed workers are usually trained by the firms for which they work. Hence, it makes sense to provide unemployed workers with training to compensate for the natural decay of their abilities. However, especially when the uncertainties concerning the tendencies of the structure of employment are great, it seems unwise to provide specific training to the unemployed. On the contrary, they should be exposed to materials which can strengthen their general capability.

(f) The reduction in industrial employment, or the

reduction in the rate of growth of industrial employment, is a global phenomenon. This obviously implies that retraining, specially of the unemployed workers, should concentrate on general abilities but with certain emphasis on the demands of the tertiary sector.

3. The Brazilian labor market and the challenge of the 90's

The rate of open unemployment in Brazil is low and very insensitive to changes in the level of economic activity. In recent years, in spite of the deepest recession in the country's history, the rate of unemployment has remained below 6%. The real adjustment is through the growth of the informal sector --illegal wage earner and self-employed. Approximately 10% of the labor force --around 6 million people-- have migrated from the formal to the informal sector in the last three years. Employment in the industrial sector has fallen 20% during the same period and the level of occupation has increased in the services sector.

The downsizing in the industrial sector was accompanied by the introduction of new management methods and the rationalization of the labor process. Due to the recession, investments in new capital goods, embodying innovations which demand greater education from the workers, have not taken place. Both the changes in management, the labor process and the introduction of new equipments will certainly demand an up-grading of the general abilities of workers.

The workers who were expelled from the industrial sector were exactly those who lacked an adequate formation to master the new techniques. The firms retained the workers who showed greater

potential in face of the new challenges.

The return to a growth regime will increase the demand for workers with greater general capabilities. In face of the low levels of education of the Brazilian labor force, it will be very difficult to operate the up-grading of abilities of the current unemployed workers. For this reason, not only the unemployed must be retrained, but greater emphasis should be given to the formation of young workers. In other words, notwithstanding the tendency towards the introduction of labor saving techniques, there must be an increase in the number of apprenticeship enrollments and a greater emphasis on formative courses.

4. The SENAI system

The Serviço Nacional de Aprendizagem Industrial (SENAI) was created in the early 1940's and since then has had a prominent role in the formation of qualified workers in Brazil. Most evaluations of SENAI consider it a model institution which over its 50 years of existence has been able to supply the industry with the appropriate volume and quality of capable workers.\[3]

SENAI maintains very close ties with firms and employers associations. Some of the courses offered are taught within firms and an increasing proportion of courses are firm-specific. The management of SENAI is under the responsibility of the National Confederation of Industries (CNI) and the Federations of Industries in each state. The close relationship with enterprises and the associations is seen as a positive element in making the vocational system responsive to the demands of the industry. The

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[3]. See for example Moura Castro (1992).

decentralization of SENAI makes it very difficult to provide a general assessment of the institution. Federations in each state have enormous autonomy for example to determine the types of courses offered and to establish cooperation agreements with firms and public enterprises.

The present study is strongly influenced by the information resulting from surveys conducted with SENAI's students and graduates in the state of S. Paulo. In this respect it is rather partial. On the other hand, given the importance of the industry of S. Paulo --in which more than 50% of the industrial labor force is located-- and the importance of SENAI in S. Paulo -- which concentrates more than 50% of SENAI's activities-- it seems fair to say that the results are not totally irrelevant for an initial approach to the role of SENAI in the past and future development of the Brazilian industry.

The main source of SENAI's funding is a 1% tax (or contribution) on the payroll of all firms; enterprises having more than 500 workers pay 1.2% over the payroll. Firms can become exempted from paying part of the contribution if they prefer to use the money to make a special agreement (acordo de isenção) with SENAI. Through these agreements, firms can use the money to train their own workers, finance the construction of new units for SENAI and the acquisition of new equipments, and demand specific services from SENAI. Since the late 1970's a new legislation authorizes SENAI o establish technical and financial direct agreements (acordos de cooperação) with firms. In these agreements, firms are exempted from paying part of the contribution if they develop in house training and retraining

activities. SENAI either provides the retraining services or supervises and provides technical assistance.

The majority of courses taught by SENAI in S. Paulo falls within one of the following categories:

CAI (Curso de Aprendizagem Industrial):
- apprenticeship
- for 14-18 years old students
- the minimum educational requirement is 4th grade/primary and in some schools even higher
- general education
- long course --880 hours/year long on average, one to two years long.

HP (Habilitação profissional):
- qualification in particular skills
- mostly for employed young workers
- primary education (complete)
- general education
- long courses --960 hours.

CEP (Curso de Especialização Profissional):
- specialization
- for 14-18 years old students in general
- 4th grade/primary education or more in general
- no general education/specific training
- very short courses --around 45 hours.

CQP-I (Curso de Qualificação profissional)
- qualification in particular skills
- for employed adults
- 4th to 7th grade/primary in general
- no general education/specific training
- short courses taught at night --around 100 hours.

CQP-IV (Curso de Qualificação profissional):
- qualification in particular skills
- for employed adults sent by firms
- primary education (complete)
- no general education/specific training
- sort courses during the day --180 hours.

The difference between these courses is that CAI and HP are long courses and include general education whereas the three others are shorter courses specifically designed to enhance the qualification of the worker in a specific occupation. CEP and CQP-I courses are short and specific courses designed for self-enrolled students whereas CQP-IV courses are designed for employed workers sent to SENAI by the firms in which they work.

The nomenclature used in the above description of courses is based on the classification used by SENAI in São Paulo since most of the information available comes from the excellent documents produced in the São Paulo branch. The national

administration of SENAI uses a different terminology but there is a correspondence between the two systems. The relation between the two classifications is, **grosso modo**, as follows:

São Paulo	Brazil
CAI	Apprenticeship
HP	Qualification
CQP.IV	Qualification/ Habilitation
CEP and CPQ.I	Training

4.1 The Students of SENAI

In what follows, based on the data resulting from surveys with graduates in **SENAI/S. Paulo** between 1975 and 1990, we examine the basic characteristics of SENAI students and their performance in the labor market.

Education of Parents. As shown in Tables 1a and 1b, the parents of SENAI students in general have had greater access to formal education than the relevant population. The only important exception are the parents of CQP-I students who have approximately the same level of education of the population.

Table 1a Education of Parents (S. Paulo, 1975-85)

	CAI	HP	CQPIV	Pop.*
Illiterate	7	3	10	25
Primary (incomplete)	27	15	34	28
Primary (compl.) - Secondary (incompl.)	61	57	49	41
Secondary (compl.) or more	5	25	7	6

Table 5.2.1b Education of Parents (S. Paulo, 1975-85)

	CEP	CQP-I	Pop.*
Illiterate	5	26	25
0-4 years	26	31	28
4-8 years	63	42	41
8 + years	4	1	6

* Male population, 40 years old or more, S. Paulo, 1985.

Education of students. The level of education of SENAI students is very high compared with the relevant populations. In Brazil, only 22% of those who enter the first grade reach the 7th grade and the average number of years in school for the age group of 15-19 years old is 5.2. The majority of CAI, HP and CQP-IV students are certainly part of the minority who have reach the 7th grade. Table 3 shows quite clearly that SENAI trains the relatively better "educated", not the "non-educated".

Table 2a Education of students entering SENAI, S. Paulo

	CAI (75-85)	CAI 85	CEP	CPQ-I
Primary (until 4th grd)	26	0.7	1	30
5th to 7th grd	65	84	27	36
Primary (complete)	13	15	48	21
Secondary (incoml)	4	0	20	8
Secondary (complete)	0	0	5	4

Table 2b *Education of students entering SENAI, S. Paulo*

	HP	CQP-IV
Primary (complete)	90	50
Secondary (incomplete)	10	22
Secondary (complete)	0	22
College(incom. & com)	0	4

Continuation of Studies. The systematic surveys conducted in S. Paulo after 1985 provide important information on the extent to which SENAI students continue their studies after finishing the courses. The proportion of CAI 1985 graduates studying one year after they finish the course is 70%. In the case of the HP graduates, the proportion of students who continue their studies is around 40%. Among those studying, the proportion of the graduates attending preparatory courses for entering college and already in college is 72%. These figures imply that

two years after graduation in the HP course, roughly 30% of the graduates are either in college or preparing to enter college.

In the CPQ-IV group the figures are even more impressive. The rate of graduates studying one year after finishing the course in SENAI is 31%. Among these, 49.1% attend preparatory courses for entering college or are already in college. Again, these figures show that the proportion of SENAI CQP-IV students in college or preparing for entering college after two years of graduation is around 25%.

***Table** 3 Continuation of Studies (first, second and third years after graduation), S. Paulo, 1986-89)*

	1st year	*2nd year*	*3rd year*
CAI	*70*	*66*	*58*
HP	*40*	*58*	*63*
of which in college	*28*	*45*	*50*
CQP-IV	*31*	*51*	*53*
of which in college	*31*	*37*	*30*

Employed Workers. Except for the CAI and HP students, the great majority of the SENAI students are employed workers. As noted already, CPQ-IV students are sent to SENAI by the firms for which they work. CPQ-I students are usually self-enrolled students --90% of whom are employed-- who are trying to enhance their capabilities or to learn a new occupation. The admission of CAI and HP students is demand driven in the sense that SENAI tries to calibrate the enrollment of new students based on the

demand for trainees. Only 35% of CAI students are employed at the beginning of the course but the majority (around 70%) work as trainees during the course.

Level of Employment of Graduates. As seen in Table 4, SENAI's graduates have approximately the same level of employment as the average population in the work force between 19 and 24 years old. The only exception are the CAI students whose level of employment is below the average probably because they are doing the military service or continue studying. The rate of "involuntary unemployment" (of those who "could not find a job") of CAI students in 1986-88 varied between 4 and 8% which is more or less the average rate of unemployment for workers of their age.

Table 4 *Level of Employment of Graduates (one, two and tree years after graduation), S. Paulo*

	*One year**	*Two years**	*Three years**
CAI	*83.5*	*76.4*	*76.1*
HP	*80.4*	*83.1*	*87.5*
CQP-IV	*91.8*	*95*	*94.6*
CQP-I	*93.3*	*96.2*	*92.2*
Market (18-24years)	*87.3*	*87.1*	*88.1*

Occupational Evolution. The figures resulting from the surveys conducted between 1975 and 1985 indicate that in all

courses the proportion of students occupying higher positions (officer or master) when the survey took place some time after graduation (between six months and one and a half year) was greater than their positions in the first job after the course. The evolution is specially good in the case of CAI and CEP (day) students. The exceptions are the students of CEP courses taken at night.

Wage Evolution. Table 5 provides information on the wage evolution of CAI (1985), HP (1986), CQP-IV (1986) and CQP-I (1987) graduates in S. Paulo. The Table shows that he proportion of workers earning higher wages increases between the first and the third year after graduation.

***Table** 5 Wage Evolution, in Minimum Wages (MW), (one, two and tree years after graduation), S. Paulo*

		1st year	*2nd year*	*3rd year*
	1-3 MW	*69*	*63*	*51*
CAI	*3-5 MW*	*17*	*24*	*28*
	5 + MW	*3*	*5*	*10*
	2-5 MW	*52*	*48*	*21*
HP	*5-7 MW*	*15*	*24*	*23*
	7 + MW	*9*	*19*	*49*
	3-5 MW	*29*	*26*	*9*
CQP-IV	*5-7 MW*	*21*	*16*	*13*
	7 + MW	*42*	*47*	*66*

Use of skills learned in SENAI. Among the CAI students working one month after the course (1975-85), 60% were using the skills they learned in SENAI; when the survey was made some time after the first month, this percentage had fallen to 42%. In the HP group, 55% were using skills when survey was made. Among the CQP-IV students, 66% were using the skills they had learned. This is a very good performance compared with the other groups. The worst performance is certainly that of the short courses: In the CEP group, one month after the end of the course, 50% were using the skills they learned, and when survey was made, percentage had fallen to 35%. Among CPQ-I graduates, 18% were using skills after one month and only 15% when survey was made.

There are two possible interpretations for the reduction in the extent to which the skills are used: one is that the course is not very useful and another, more benevolent interpretation is that, after a while, the students are able to use their general education to perform different tasks. The information on occupational and wage evolution seems to confirm the latter hypothesis.

4.2 Industries and firms employing SENAI's students.

Figure 1 shows the industries in S. Paulo which attract the majority of SENAI graduates. In the case of the CAI students, 60% of the graduates are employed in three industries, namely, metallurgy, mechanics & transport equipment and electronics. These industries together employ 32% of the industrial labor force in Brazil. The other industries employ 68% of the labor

force but absorb 19% of CAI graduates.\[4] The mechanics and transport material industries employ more than 30% of SENAI's graduates in HP, CQP-IV and CQP-I courses and no more than 16% of the total labor force.

[4] The other 23% of CAI graduates work on other sectors (services, commerce, agriculture).

Figure 1: Industries Attracting SENAI Graduates

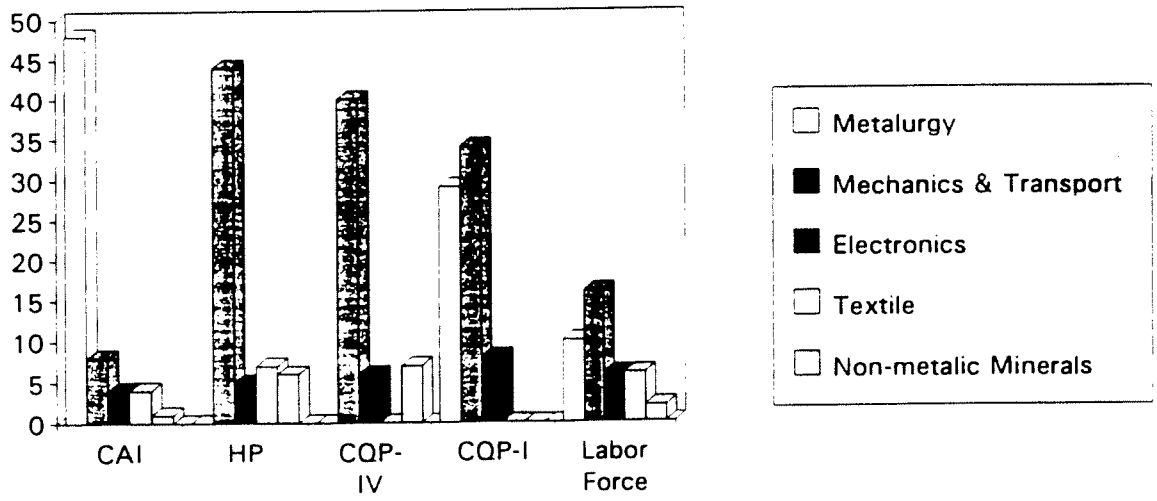


Figure 2: Size of Firms Attracting SENAI Graduates

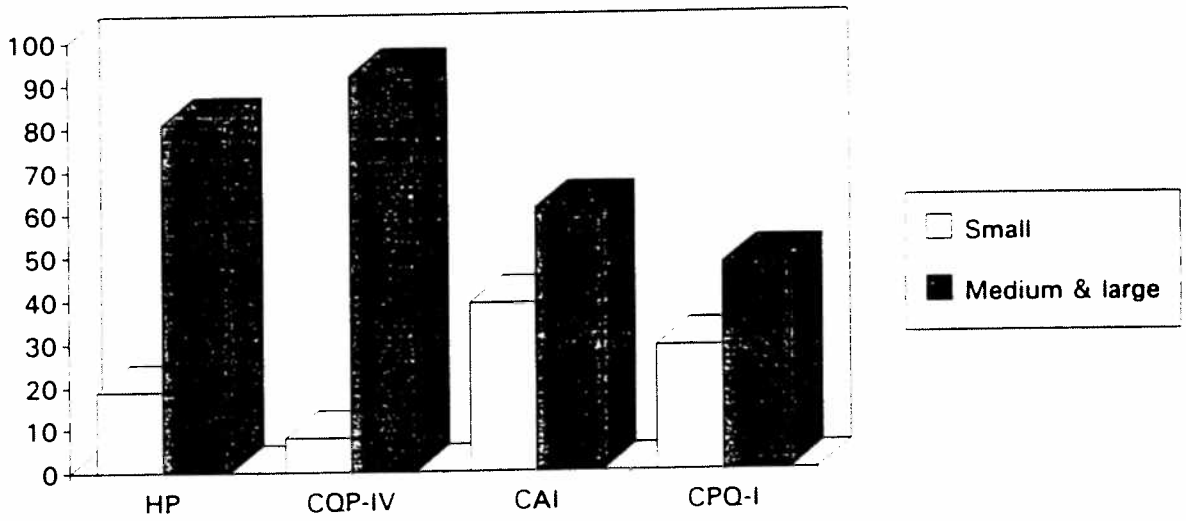


Figure3: Relative Wages and Industrial Concentration

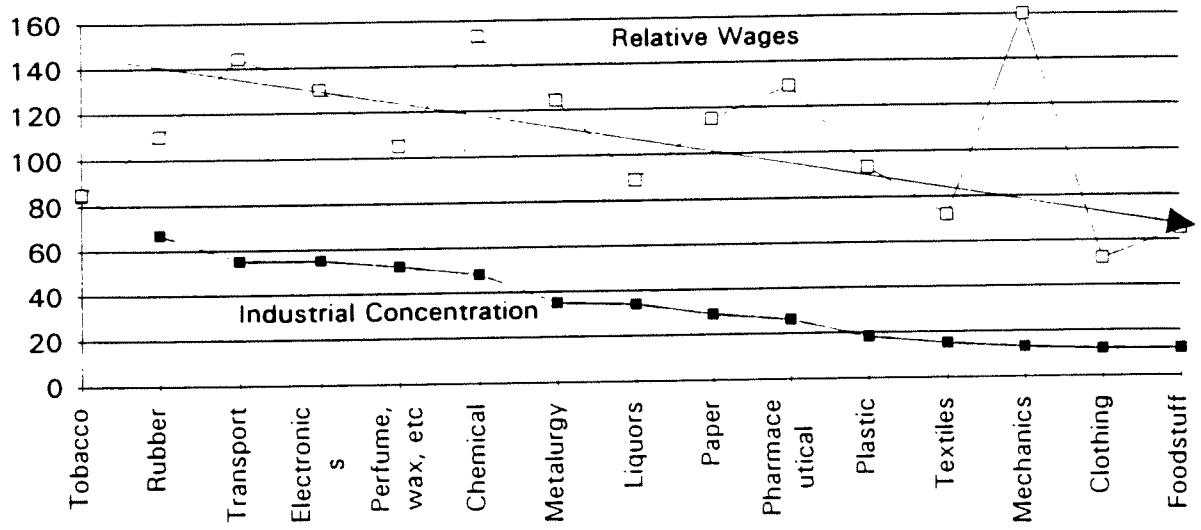


Figure 2 shows that 61% of CAI graduates, 81% of HP graduates and 92% of CQP-IV graduates are employed in medium and large small firms with more than 99 employees. The proportion of industrial workers in Brazil employed in medium and large firms is around 58% which obviously implies that SENAI's graduates (specially the more qualified) tend to work for the large firms.

Figure 3 shows that there exists a positive correlation between the degree of industrial concentration and relative wages. Those industries in which large firms dominate the market (that is, where the market structure is essentially oligopolist) are the same which pay higher wages. The industries which attract SENAI graduates (mechanics, metallurgy, electronic and transport material) are among those which pay higher salaries, and except for mechanics, are also among the industries with greater degree of industrial concentration. In sum, it seems clear that SENAI's graduates are attracted by those industries in which firms pay higher wages and where the larger firms dominate the market.

4.3. The Structure of SENAI Courses

There has been dramatic changes in the structure of courses in **SENAI/Brazil** over the last ten to twenty years. The share of enrollments, graduates and hours dedicated to courses in short term courses (training) has grown considerably, whereas the share of longer courses (apprenticeship and qualification) courses has fallen. Between 1986 and 1990, the total number of enrolled students in SENAI grew 50%. Direct action (that is, SENAI's

activities with its own resources) grew 24% and indirect actions (through cooperation agreements with firms) grew 88%. The total number of hours dedicated to courses increased 4% between 1986 and 1990. The number of hours in direct action grew 11% whereas the number of hours in indirect action fell 12%.

In sum, the number of enrollments in indirect activities grew three times more than the number of enrollments in direct activities and the reduction in the ratio of the number of hours to enrollments was mainly due to the reduction in the number of hours in indirect activities through cooperation agreement between firms and SENAI.

Figure 4 shows that the proportion of total enrollments in indirect action (exemption and cooperation agreements) grew from 40% in 1986 to 53% in 91. Over the same period, the proportion of enrollments associated only with cooperation agreements --that is, retraining within firms-- grew from 7% to 30%. The share of enrollments in "training courses" using SENAI resources remained almost stable between 1986 and 1991, whereas the share using SENAI plus cooperation agreements funds increased from 74% to 84% (Figure 5). The average number of hours per enrolled student in courses using SENAI resources fell from 198 to 160 hours between 1986 and 91, whereas in courses using SENAI plus agreements funds the number of hours fell from 120 to 59 (Figure 6). Finally, Figure 7 shows that the share of course hours dedicated to training courses increased from 20% to 31% whereas the share of hours dedicated to apprenticeship courses fell from 60% to 49%.

It seems very obvious that there exists a correlation between the change in the structure of courses and the change in

the structure of funding of SENAI. Firms have a strong preference for short and specific training courses, and use the acordos de isenção and cooperação to offer or to have SENAI offering these courses to their employees.

Figure 4: Enrollments: indirect action and cooperation agreements (%)

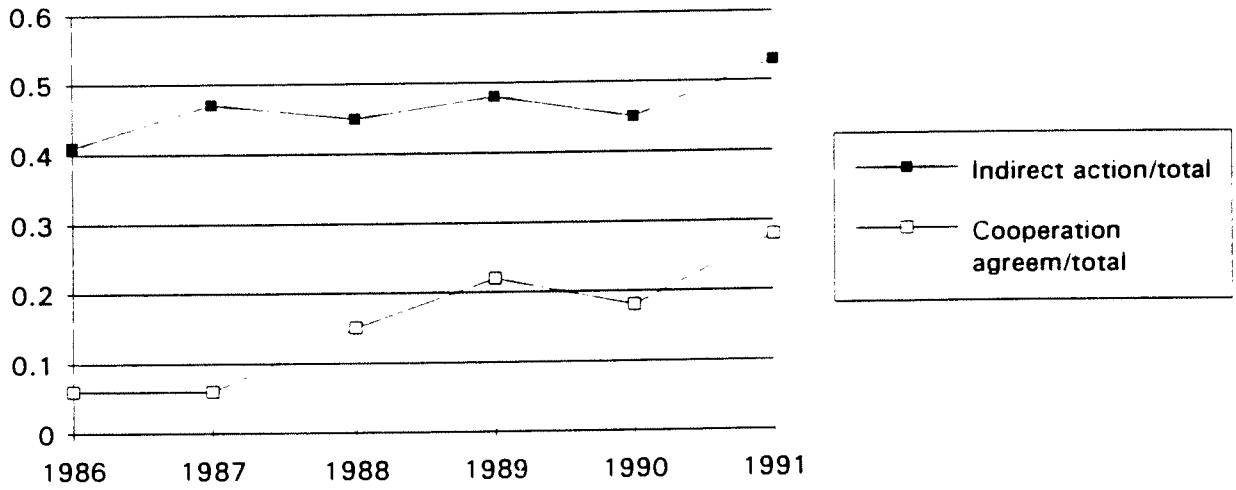


Figure 5: Enrollments in training (% of total enrollments)

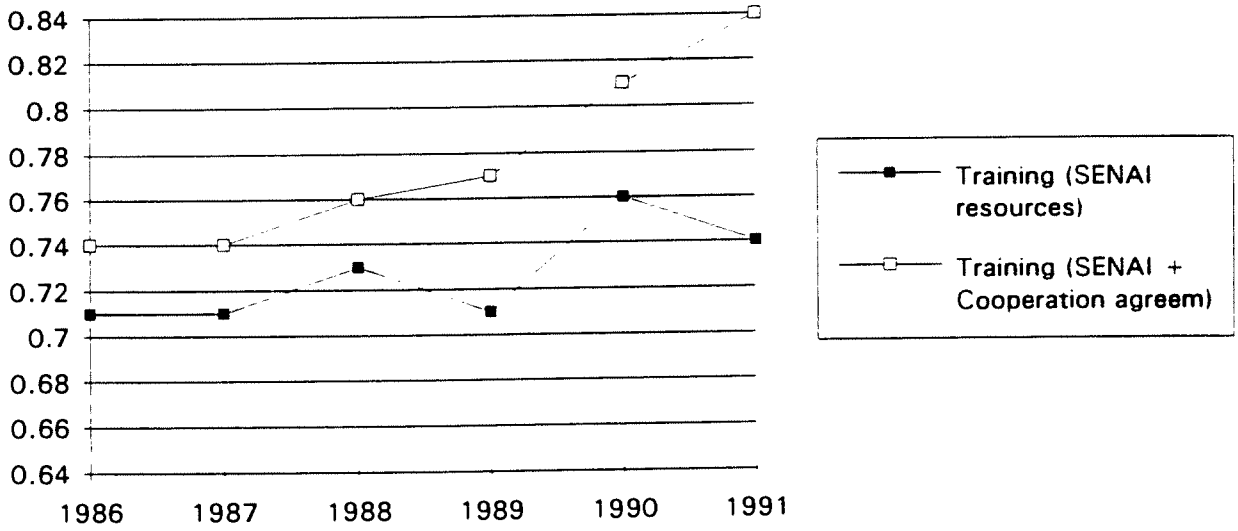


Figure 6:The hours:enrollment ratio

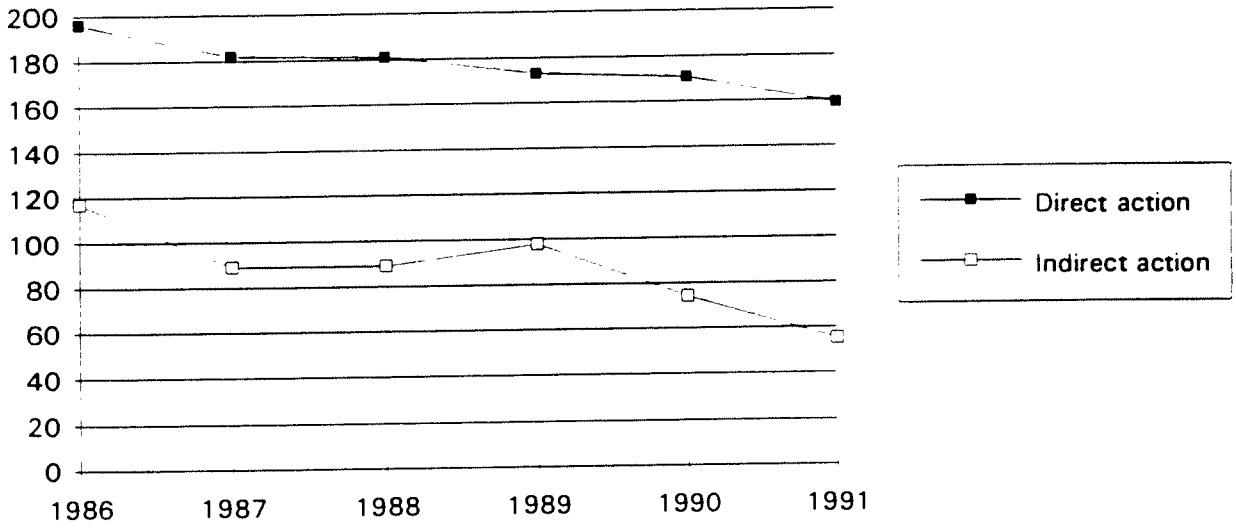
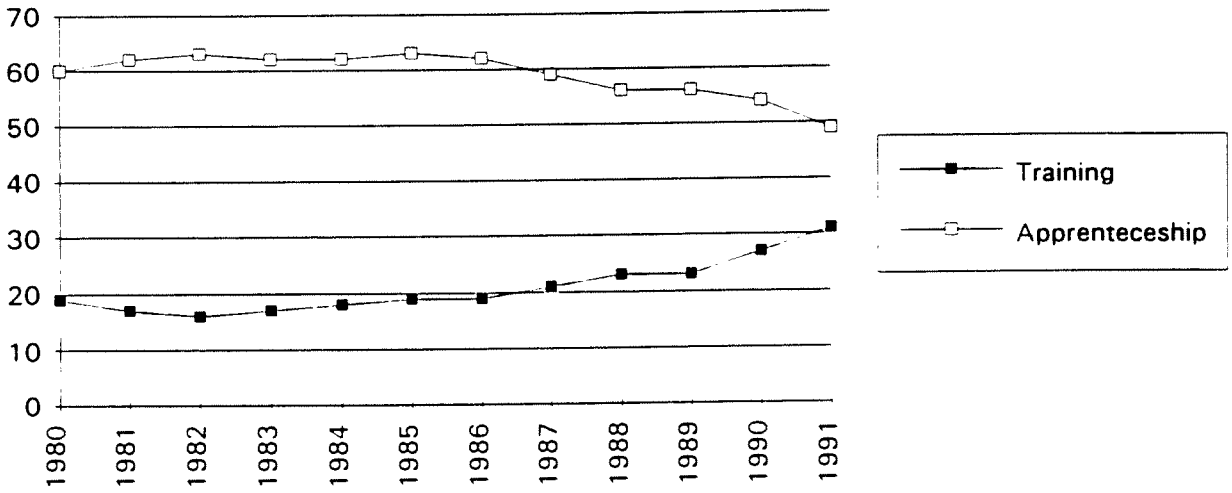


Figure 7: Share of Total Hours in Courses (%) - SENAI and Coop Agreem. resourses



The modification in the structure of courses seems to be associated with the rapid increase in the number of firms establishing financial and technical agreements with SENAI. As noted already, firms can be exempted from paying the 1% tax over the payroll if they establish a cooperation agreement with SENAI, and as part of the agreement, they contract direct training services from SENAI or simply establish their own training facilities and operations under the supervision of SENAI officers. Under these arrangements, firms have shown a consistent preference for **short term courses with very specific contents.**

5. An introduction to the SENAC system

SENAC is the analog of SENAI for the service and commerce sectors. The information available on SENAC is not comparable to that available in the case of SENAI. On the one hand, the information is very scarce and, on the other, it is not reliable. The data is not dependable especially because the information coming from the local agencies is not uniform. That is, the terminologies used by the agencies are not comparable which makes the aggregate of the information rather unreliable. For these reasons, the evaluation of SENAC is much less complete than that of SENAI, and the interpretation of the data should be taken with caution. For the same reasons it is very difficult to take any reliable conclusions from the information available.

The funding of SENAC is based on a 1% tax on the payroll of firms operating in the services sector. Differently of the case of SENAI, tax exemption schemes are not common in the SENAC system. The relationship between the local agencies and the

federations of commerce is very strong --in particular, the administration of the agencies are totally under the control of the federations-- but the relation with the firms is very weak. As a result, the clients of SENAC are not the firms and their respective employees, but the students themselves.

SENAC provides many types of courses, but four concentrate 93% of the enrollments:

Iniciação. Initiation of young students to very primitive skills directed to specific occupation. In 1990, 22.2% of SENAC's enrollments and 15% of the hours dedicated to courses were associated to this type of courses. The majority of these courses last between 30 and 120 hours but the variance is not insignificant.

Qualificação. This is the type of course which usually provides the student with a general formation and specific training to an occupation. In 1990, 34% of the enrollments and 62% of the hours were dedicated to these courses. The typical course ranges between 40 and 250 hours.

Aperfeiçoamento. This is an extension type of course designed to improve the abilities of the students in occupation in which they already have some expertise. In 1990, 25% of the enrollments and 12% of the hours were dedicated to these courses. These are short courses (between 15 and 60 hours long).

Instrumentação. These are formative courses in Portuguese, mathematics, English, design, etc. In 1990, 11% of SENAC's enrollments and 6% of the hours dedicated to courses were associated to this type of courses.

SENAC students and courses

A profile of the SENAC student. The picture of the SENAC student provided in the following paragraph is based on a few surveys conducted at the national level in 1984 and 1989.

In 1984, 61% of the SENAC enrolled students were female; the great majority of the students in the 1984 survey (56%) had less than 20 years of age, and only 3.3% had more than 40 years of age. The level of education of the students was surprisingly high. More than 60% had completed primary education and 23% had competed secondary education. In 1989, 88% had completed primary education and 54% had completed secondary education. Given that the majority of the students are very young, it would be reasonable to assume that a relevant proportion will continue their formal education.

Differently from the case of SENAI, in which most of the students were employed, in SENAC only 29% (in 1984) and 46% (in 1989) were working during the course. The percentage of students who had never worked in 1984 was 47%. This is an evidence that firms are not the typical clients of SENAC.

Among those students who were not working in 1984, 29% were looking for their first job, 28% could find a job, 25% decided to continue studying. Among those who were not working (70% in 1984) 65% had never worked before. Among those who had worked before, 11% were unemployed for less than 3 months, 22% between 3 and 6 months, 14% between 6 and 11 months, 21% between 1 and 2 years 22% more than 2 years.

Among the graduates in 1984, 69% were wage earners working in the regulated (legal) sector, 15% in the unregulated (or

illegal) sector and 9% were self-employed.

The wages of graduates were relatively low considering the high levels of education for Brazilian standards. Only 23% received more than three minimum wages \[5] Among the wage earners working in the unregulated sector, 55% received less than one minimum wage and among the self-employed, 32% received less than one minimum wage.

The structure of courses. Among the major courses, the number of enrollments in aperfeiçoamento remained practically stable over the 1980's whereas the number of enrollments in qualificação and iniciação increased. As for the total number of hours, they increased substantially in the case of the qualification courses, exactly those with a formative content. In this respect, it seems that SENAI and SENAC are moving in different directions: while in the former the number of hours dedicated to formative course is falling, in the latter it is increasing. The number of hours per enrolled student is also increasing in the qualification courses. This is also a positive sign.

6. Vocational Education in Brazil: Summary and recommendations

Retraining is certainly a very polemical issue and that is why even in face of relatively abundant information, it is not very easy to draw definite conclusions, let alone to make policy recommendations. Anyhow, here is a summary of the conclusions and an attempt to provide recommendations according to the principles

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[5]. The minimum wages in 1984 was around US$ 80 a month.

and general notions listed in section 2 in face of the challenges of the Brazilian economy listed in section 3.

Starting with SENAI. SENAI forms and retrains employed workers or young students --most of them trainees-- and does not have any special program for the unemployed. SENAI is an institution fit for a growing economy and to supply qualified workers and retraining services to employed workers, and not to an economy subject to shocks in which adult unemployed workers need retraining. The fact that SENAI, together with the Ministry of Labor, does not have any special program for the unemployed is an evidence that the institution is not really prepared to facilitate adjustment processes which demand the reallocation of labor.

It is obvious that, in face of the uncertainties concerning changes in the occupational structure in the future and in face of the introduction of methods of production which require the adaptability of labor, vocational education and retraining should emphasize courses which provide general and formative education rather than specific training. Providing the unemployed with specific training makes little sense. Specific training is something that the firms which will eventually hire the unemployed workers should be responsible for.

It should be the responsibility of SENAI and the Ministry of Labor to provide general education to the unemployed workers who meet certain standards in order to enhance their ability to learn new specific tasks and to lower the costs of providing them with specific training. This should be specially the case in a period of adjustment in which the vocational education system can

play an important role in increasing the flexibility of labor. It is also an important contribution in the spring of a new technological environment in which the flexibility and adaptability of labor is so critical.

The supply of young qualified workers as represented by the number of SENAI apprenticeship graduates remained constant between 1986 and 1991, around 25,000 per year. This figure represents less than 0.5% of the industrial labor force in Brazil. It is true that industrial employment has fallen considerably during this period. But there are at least two good reasons to increase the number of apprenticeship enrollments.

The first one is associated with the demand for workers with general education to replace those whose abilities are too specific and who will have great difficulties in adapting to new tasks and demands. In face of rapid technological changes, the rate of replacement, or the rate of obsolescence, of industrial workers is likely to increase in the future, and a greater contingent of young workers will have to be prepared.

The second reason to increase the number of apprenticeship enrollments is associated with the qualification of workers in small enterprises. A few industries (mechanics, transport equipment, electronics and metallurgy), where large enterprises prevail, employ the majority of SENAI's graduates. The problem with this finding is that medium and specially smaller firms which can profit from more qualified and better trained workers do not have access to them. Smaller firms cannot establish in-house training facilities. This obviously reduces their competitiveness and reduces their chances of success and

survival. The reason for the lack of attraction of SENAI students by small firms might be that the students' reservation wage is too high compared with the wages small firms are able to pay. There are evidences that SENAI graduates are attracted by industries which pay higher wages.

Medium and smaller firms can also profit from more qualified and better trained workers. However, a recent survey conducted by the National Confederation of Industry (CNI, 1992) shows that small and medium size firms are far behind the large enterprises in Brazil in the introduction of practices which would enhance the productivity of their labor force. It seems therefore, that in face of these facts, there must be an increase in the supply of qualified workers to meet the potential demand of the small enterprises. Furthermore, vocational education and training institutions should provide the smaller firms with programs and facilities specially designed for them.

Both arguments made above --on the necessity to retrain the unemployed workers and to increase apprenticeship enrollments-- imply that SENAI should focus its activities on formative, not specific, courses. The growth of cooperation agreements however has led the SENAI system to emphasize short term specific training. Firms have naturally shown a sound preference for contracting SENAI to provide or supervise short term courses with specific contents. On the one hand, this can be seen as a good sign --a sign that SENAI is responding to the immediate demand of firms, or letting firms do what they think is best for them. However, on the other hand, there is a conflict between the immediate objective of firms and the long term and social demands

on the training system. There is also a trade-off between the funds required to increase the supply of formative courses and workers with general abilities and the way firms are spending the money which, in principle, is meant to finance SENAI.

In a way, it can be argued that a tax meant to finance the provision of a public service, namely, general vocational education, is turned into a tariff to finance the provision of a private service, namely, specific training. Not only that but only the large firms which are able to establish in house facilities are able to make good use of cooperative agreements. Based on these arguments, the tax exemption program and the cooperation agreements should be revised in order to restore the emphasis on long and formative courses.

The central recommendation which derives from this interpretation is that the funding of SENAI should be revised. Not only large firms which can afford to establish in-house training systems should not be exempted from paying their contribution, but those students who are able to pay for an education should start paying. The latter recommendation has been made by the World Bank in its study on secondary education in Brazil based on the following evidences:

> Students from poor families tend to be oncentrated in the lower-cost programs and underrepresents in heavily subsidized programs, such as SENAI's secondary schools and post-secondary program (World Bank, p. 1989, p. 40)

> Students get accepted to federal technical schools because they excel academically and on entrance exams... This is also largely the case with SENAI. The issue is that de facto these schools meritocratic admissions procedure processes combined with policies which assure these schools generous levels of funding irrespective of their enrollment levels have resulted in an inequitable situation... (World Bank, 1989, 67).

The extra funding should be used to increase the share of general and formative courses, on the one hand, and on the other to expand the opportunities to the less educated. At the end the result would be a considerable increase in the supply of qualified workers with general education which hopefully would reduce the wage gap between qualified and non qualified workers and the ability of small firms to up-grade the quality of their human resources.

As for SENAC, as noted in the introduction, the information available is both scanty and not very reliable. This makes generalizations, conclusions or comparisons with SENAI rather irrelevant. Given this proviso, a few concluding remarks and comparisons can be made. First, SENAC trains and forms young and unemployed students whereas SENAI trains and forms employed students. Second, the level of education of students in both institutions is high given the Brazilian standards although it seems that it is even higher in SENAC than in SENAI. Three, the level of wages of SENAC's graduates is rather low given their levels of education but this can be explained by their age and inexperience. Four, although very little can be said based on the aggregate information on the structure of SENAC courses, it seems that neither the total number of hours nor the average number of hours per enrolled student in the formative courses has fallen over the 1980's.

R e f e r e n c e s :

ADAMSSON-MACEDO, Colin. Training and 'new' technology. International Labour Office. 1992.

CARNEIRO, Tania Regina. O mercado de trabalho industrial em São Bernardo do Campo. SENAI-SP (DPEA). Agosto/90

CARUSO, Luiz Antonio. Difusão da tecnologia microeletrônica e modificações nas relações de trabalho: implicações para a formação profissional, M. Sc. Dissertation, IEI/UFRJ.

CASTRO, Claudio de Moura. "SENAI: Há vida depois dos 50?", Mimeo.

CLEMENTE, Maria de lourdes Mendes. Análise da trajetória profissional nos 3 anos pós-curso dos formandos do 2o. semestre de 1987. SENAI-DOP(DEP). Julho 1992

CNI. Estado atual da gestäo pela qualidade e produtividade nas indústrias brasileiras (pesquisa). 1992.

GUERRA, Marcia Halben. SOARES, Maria Fernanda. Tendência da evolução profissional e escolar dos ex-alunos da Habilitação Profissional - HP, formados em dezembro/86: análise dos resultados do acompanhamento realizado de 1987 a 1989. SENAI-SP. Dez/1991

GUERRA, Marcia Halben. LOMBARDI, Maria Rosa. Tendência da evolução profissional e escolar dos ex-aprendizes do CAI, formandos do 2o. semestre de 1985: análise dos resultados do acompanhamento realizado de 1986 a 1988, por mala-direta. SENAI-SP. Abril 1989

GUERRA, Marcia Halben. SOARES,Maria Fernanda. RIBEIRO, Noriko Iwamoto. Tendência da evolução profissional e escolar dos ex-alunos do Curso de Qualificação Profissional-CQP-IV, formados em dezembro/86:análise dos resultados do acompanhamento realizado de 1987 a 1989. SENAI-SP. Dezembro 1991

IBGE. Censos econômicos de 1985. CENSO INDUSTRIAL. No. 1 - Dados gerais - Brasil. .

KEEP, Ewart and MAYHEW, K. Education, training and economic performance, Oxford review of economic policy, vol. 4, n. 3, 1988.

LEITE, Elenice M. SENAI-SP: Dez anos de avaliação. SENAI. Abril/86

LOMBARDI, Maria Rosa. Respondentes e näo-respondentes à 1a. mala direta com egressos do CAI dez/85: testes para identificação de diferenças entre os dois grupos. SENAI-SP(SAPES). Set/87

LOMBARDI, Maria Rosa. Resultados da 2a. mala direta com ex-alunos da Habilitação Profissional formados em dez/86: situacso profissional em 1988, dois anos após a formatura. SENAI-SP (SAPES). Maio/89

MANCUSO, Maria Inês. RIBEIRO, Noriko Iwamoto. Notas de seleção versus desempenho no mercado de trabalho. SENAI-SP. Julho 1991

RIBEIRO, Noriko Iwamoto. Resultados da 1a. mala direta com ex-alunos do CAI formados em dezembro/85: situação profissional dos egressos em fins de 1986. SENAI-SP (SAPES). Abril/87

RIBEIRO, Noriko Iwamoto. Caracterização dos alunos do último termo do Curso de Aprendizagem Industrial do SENAI-SP. SENAI-SP. Setembro 1991.

RIBEIRO, Noriko Iwamoto. Resultados da 2a. mala direta com ex-alunos do CAI formados em dez/85: situação profissional dos egressos em fins de 1987. SENAI-SP (SAPES). Junho/88

SAPES - Sistema de acompanhamento permanente dos egressos do SENAI-SP, por mala direta. SENAI (DPEA). Dez/85

Sistema SENAI - Relatório 1990.

The World Bank. Brazil - Issues in secondary education - Sector memorandum, Vol 1 - , Nov/89

TUIJNMAN, A.C.. Effectiveness research into continuing education. International , in Journal of educational research. Vol. 17, no. 6, 1992.

Textos para Discussão:

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287. Fritsch, W.; Franco, G.H.B. "Import repression, productivity slowdown and manufactured export dynamism : Brazil, 1975-1990"

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