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A Study of Supply and Demand for Elementary School Teachers in Venezula

Evilexis Betancourt
Utah State University

A STUDY OF SUPPLY AND DEMAND FOR ELEMENTARY SCHOOL TEACHERS IN VENEZUELA

by

Evilexis Betancourt

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INTRODUCTION AND OBJECTIVE

In Venezuela, as in most Latin American countries, education is one of the most important factors in the development process. Within the educational structures, primary schooling is especially important due to the large share of the population under age 12, the great percentage of people of lower social status (who are content with primary schooling for their children), and a still high rate of illiteracy. Fortunately this rate has been declining due to emphasis on and importance of primary education.

Eliminating illiteracy is very essential to the whole process of development and growth in the country. Simple and basic skills in agriculture can never be acquired without the minimum level of primary education. Communication and dissemination of knowledge and achievement of higher levels of learning can not proceed without a primary level of education. The same is true for industry. Skills can be taught much faster and more thoroughly on the foundation of a high rate of literacy.

In Venezuela the main purpose of primary education is to raise the literacy level and to prepare the people to take part in a modern society as effective citizens. It is not considered as primarily vocational, but does serve as a basis for selecting those who will go on to secondary education and higher education. This emphasis justifies the objective of this paper which is to study and analyze

the factors affecting the supply of and demand for elementary school teachers in Venezuela.

To give the reader a general idea about the conditions within which the Venezuelan educational system operates the remainder of this section is devoted to a brief and general background about the country and its educational system.

General Background on Venezuela

Venezuela has been an independent republic since 1830, under a federal democratic system restored in 1958. With an area of 325,140 sq. mi., it is ten times smaller than Brazil (the largest country in South America with 3,286,170 sq. mi.) and somewhat larger than Texas (267,170 sq. mi.). Situated on the northern coast of South America between Colombia, Guyana and Brazil, the Republic of Venezuela is made up of alternating mountainous and low land territory, drained, for the most part, by the Orinoco River and its tributaries. Two thirds or more of the rapidly growing population, most of it concentrated in coastal and northern areas, is of mixed Indian, White and Negro descent; pure Whites (20 percent) and Negroes (8 percent) make up the remainder.

The capital of Venezuela is Caracas with a population of 2,175,438, followed by Maracaibo (690,350), Barquisimeto (281,620) and Valencia (224,820).

Venezuela is divided into 20 states, 2 Federal Territories and 1 Federal District.

The population in 1969 was 10,204,000. The annual rate of growth has been 3.5 percent from 1963 to 1970, and the density by 1968 was 28 per square mile [12, p. 409].

The population by urban and rural areas is presented in Table 1. The rural population has been declining while the urban has increased from 31 percent to 63 percent between 1941 to 1961.

Table 1. Population distributed by rural and urban areas (thousand).

Years	Total		Rural[a]		Urban[b]	
	Amount	%	Amount	%	Amount	%
1941	3,851	100	2,644	69	1,207	31
1950	5,035	100	2,623	52	2,412	48
1961	7,523	100	2,818	37	4,705	63
1968	9,686	100	2,507	26	7,179	74

[a]Less than 2,500 inhabitants.

[b]More than 2,500 inhabitants.

Source: 3, p. 5.

Table 2 contains data about birth and death rates per thousand inhabitants since 1941. The birth rate increased between 1941 and 1961. However, the 1941 birth rate may be understated because of census omissions. The death rate has been decreasing throughout this same period because of development of medical assistance programs. Consequently the population growth has been increasing over the period.

Table 2. Birth and death rates in Venezuela.

Years	Birth	Death	Net
1941	35.3	16.4	18.9
1950	42.6	19.9	31.7
1961	45.3	7.3	38.0

Source: 3, p.8.

Although national wealth is very unevenly distributed, Venezuela boasts the highest per capita income of any Latin American country. This is a direct result of the vast petroleum deposits, amounting to 6 percent of world oil reserves. These reserves have made Venezuela the world's third largest oil producer (after the United States and the Union of Soviet Socialist Republics) and the largest single oil exporting country.

Iron ore is also extracted and exported on a considerable scale. In addition to a growing manufacturing sector, Venezuela has been rebuilding its historic position as a major cattle raising and agricultural country. Continued diversification and upgrading of the economy have been the main objectives of a National plan for 1965-68 and of a new National Development plan begun in 1969. Venezuela's external market for oil, particularly in the U.S. (which buys about 37 percent of its crude oil and refined petroleum products) has been threatened to some degree by competition from Middle East oil and discovery of oil in Alaska.

A $1 billion program initiated in 1969 is designed to place the country among the leading exporters of petrochemical products.

In 1967, the GNP was $8.23 billion and the per capital income was $880 [12, p. 109].

Table 3 shows the GNP by sectors since 1950. The primary sector has more than 35 percent of total GNP, this is a typical case for developed countries, but in Venezuela it is the oil and not agriculture which exerts a big influence in the primary sector. Between the years 1950-1964, the secondary sector increased by 8.4 percent per year. This was at a greater rate than Brazil, Argentina, Chile or Mexico. The tertiary sector, which includes transportation, communication, commerce and services, during 1950-64, shows an increment of 6.4 percent and a share in total GNP of about 45 percent is more or less typical for developing countries.

Table 3. GNP by Sectors (million Bs,[a] 1957 prices).

Years	Primary Sector[b]	%	Secondary Sector	%	Tertiary Sector	%	Total	%
1950	4,831	38	2,170	17	5,726	45	12,727	100
1955	7,087	37	2,789	19	8,449	44	19,325	100
1960	9,661	37	5,121	19	11,653	44	26,435	100
1964	11,435	35	6,643	21	14,058	44	32,136	100

[a] $U.S. = 4.50 Bs.

[b] Includes petroleum and minerals

Source: 3, pp. 24, 86, 105.

General Background on Education in Venezuela

Venezuelan educational facilities were extremely poor in the colonial period as well as in the first half of the 19th century.

All phases of Venezuelan life, especially education, have been strongly influenced by the Catholic Church. The Church supplied most of the teachers and the schools under a strictly controlled arrangement designed to promote religious instruction.

In 1589, a group in Caracas petitioned Philip II to establish a School and a Seminary. Philip granted this petition in 1591 but that was the extent of it. In the seventeenth century schools were established by religious orders but without great success.

Later in 1673 the Seminario de Santa Rosa was founded in Caracas with the support of the Bishop, and in 1721 the King elevated it to the rank of a Royal University and gave it the power to confer degrees, and thus it became the first university in Venezuela. Today, it is the Central University. At that time the University interest was in theology, literature, arts and medicine only [10, p. 47].

Some progress in basic education occurred in the second half of the nineteenth century as a result of the work of the Venezuelan educator, Cecilio Acosta, who stressed the functional (vocational), rather than the classical aspects of knowledge.

Public education was removed from the jurisdiction of the Roman Catholic Church in 1860 and unofficially put under government auspices until 1870, when a decree made free public education the government's responsibility. At that time the president was Guzman Blanco. The dictators who followed him showed scant interest in teaching anything except obedience to their wishes.

> Typically, Juan Vicente Gomez in 1928 closed The National University - not just temporarily, but forever, after some of the students were found plotting against his oppressive rule. When he died in 1935, only about one Venezuelan child in ten was receiving any schooling whatever and only one adult in four could read and write.

> Education improved slowly after Gomez, and faster after novelist Romulo Gallegos became president in 1945. Schools were built, teacher training expanded, and no less than 12 percent of the national budget was earmarked for education.
>
> All that came to an abrupt halt in 1948, when the dictatorial Perez Jimenez regime replaced Gallegos. Funds for education were cut back so sharply that for ten years the main growth of schools and universities was financed by churches and other private sources. The illiteracy rate rose steadily. Worse, the average Venezuelan once again began to believe that school had no real place in his life. [25, p. 111]

With the overthrow of Perez Jimenez in 1958 a new era dawned. For the first time Venezuela got a government that took education seriously. President Romulo Betancourt had rather deep feelings about it. He had been one of the students whose anti-Gomez moves brought on the closing of the university. He and other top planners now were convinced that without education the Venezuelan people would be lost in today's increasingly complex world.

Tables 4 through 9 show the trend in the number of students in elementary, middle and higher education as well as the trend in the number of students, schools and teachers in elementary education. From Table 4 it can be shown that the total number of students increased between 1948 and 1960 at a rate of 8.4 percent per year.

Table 5 shows the number of students in elementary education by private and public schools. It is clearly seen from this table that the total number of students increased rapidly between 1959 and 1967. Most of this increase was absorbed by government schools. Table 6 shows the number of schools for elementary education by private and public sectors. Public schools accounted for an average of about 90 percent of the total during the period covered. The number of students per school in elementary education was always lower in

Table 4. Number of students 1948-49 to 1959-60 in elementary, middle and higher education (thousands).

Year	Elementary	%	Middle	%	Higher	%	Total
1948-49	442	92.2	32	6.6	6	1.2	479
1949-50	497	92.5	34	6.4	6	1.2	537
1950-51	503	91.9	37	6.8	7	1.3	547
1951-52	536	92.6	41	7.0	2	0.3	579
1952-53	570	92.6	41	6.6	5	0.8	616
1953-54	596	91.5	48	7.4	7	1.1	652
1954-55	623	90.7	56	8.2	8	1.1	687
1955-56	647	89.7	66	9.2	8	1.1	721
1956-57	694	88.9	77	9.9	9	1.2	780
1957-58	752	88.9	83	9.8	11	1.3	845
1958-59	917	87.7	111	10.6	17	1.6	1045
1959-60	1095	86.5	148	11.7	23	1.8	1265

Source: 3, p. 115.

Table 5. Number of students in elementary education by public and private schools.

Year	Total	%	Public	%	Private	%
1959-60	1095604	100	933441	85	161163	15
1960-61	1254255	100	1080631	87	169624	13
1961-62	1298427	100	1129149	87	169278	13
1962-63	1339663	100	1159564	87	180099	13
1963-64	1370665	100	1188742	87	181923	13
1964-65	1421959	100	1227663	86	194296	14
1965-66	1481333	100	1276092	86	205241	14
1966-67	1541236	100	1328310	86	212926	14
1967-68	1584383	100	1364661	86	219722	14

Source: 10, p. 15

Table 6. Number of schools for elementary education by private and public.

Year	Total	%	Public	%	Private	%
1959-60	9650	100	8727	90	923	10
1960-61	11863	100	10920	91	943	9
1961-62	10734	100	9787	91	947	9
1962-63	10956	100	9985	91	971	9
1963-64	10973	100	9999	91	974	9
1964-65	10837	100	9824	91	1013	9
1965-66	10922	100	9867	90	1055	10
1966-67	10853	100	9759	90	1094	10
1967-68	10733	100	9601	89	1132	11

Source: 10, p. 17.

Table 7. Students per school in elementary education.

Year	Total	Public	Private
1959-60	123	117	174
1960-61	118	112	178
1961-62	120	115	178
1962-63	122	116	185
1963-64	125	119	187
1964-65	131	125	192
1965-66	136	129	194
1966-67	142	136	195
1967-68	148	142	194

Source: 10, pp. 15, 17.

Table 8. Students per teacher in elementary education.

Year	Total	Public	Private
1959-60	35	38	26
1960-61	35	37	26
1961-62	36	38	26
1962-63	35	37	26
1963-64	36	37	26
1964-65	34	36	26
1965-66	34	36	26
1966-67	34	36	27
1967-68	34	36	27

Source: 10, pp. 15, 39.

Table 9. Teachers per school in elementary education.

Year	Total	Public	Private
1959-60	3	3	7
1960-61	3	3	7
1961-62	3	3	7
1962-63	3	3	7
1963-64	4	3	7
1964-65	4	3	7
1965-66	4	4	7
1966-67	4	4	7
1967-68	4	4	7

Source: 10, pp. 17, 39.

public schools than in private schools in the period 1959-67 (Table 7). Also the number of students per teacher was always higher in the public schools during the same period as Table 8 shows. This implies that the number of teachers per school is higher in the private schools than in the public schools. This is also evident from Table 9.

Betancourt's administration gave education top priority in national planning. The results began appearing almost at once. The number of children registered in primary educational institutions increased by about 80 percent. By the beginning of the school year 1961-62, Ministry of Education officials reported that classes were available for virtually all children of an age to enter first grade. This was the first time in the country's history that this had been the case [10, p. 24].

With the rapid expansion of the primary school population, it became necessary to recruit new members of the teaching staff. Inevitably it became necessary to employ thousands of individuals who did not have proper teacher training.

At the time of the overthrow of the dictatorship some 3,000 teachers were unemployed, and with the beginning of the new school year in September 1958, all of them found jobs. But because at that time the number of students was very high, people who did not have proper accreditation as primary school teachers had to be used. In the school year 1959-60, only 10,901 of the 24,788 teachers employed in the government primary school had proper accreditation.

Of the rest, some 13,761, had graduated from a secondary school other than a normal school, while apparently 106 had not completed their secondary education [8, pp. E-36, E-37].

The Betancourt government established new normal schools in order to complete the training of the unprepared teachers. The number of government institutions for training primary school teachers increased from ten in the last year of the dictatorship, to sixteen in the year after his inaugeration, to thirty-one in the school year 1959-60. The increase in normal school students is described in the Ministry of Education's 1961 report to Congress:

> The enrollment of normal school students in the year 1959 to 1960, in relation to the previous year, showed 8,029 more students (104.4 percent in public schools); 3,191 more in the private ones (48.1 percent), for a total of 11,200 (78.3 percent). The number of teachers in the schools increased by 423 in the public ones (128.2 percent), and 137 in the private ones (18.8 percent), or a total of 560 (52.9 percent).
>
> Comparison of beginning and final enrollment in the normal or training teaching schools in the year 1959 to 1960 shows that 2,783 students in all or 10.9 percent, dropped out. The public schools showed 12 percent dropouts, the private ones 9.09 percent....[8, p. E-8].

After the school year 1959-60, no new normal schools were started. It was felt that in view of the efforts being made to give in-service training to qualified teachers who were already on the job, the thirty-one existing institutions were sufficient to meet the country's needs. By the school year 1960-61, competition for teaching posts in the primary schools increased drastically, and there were some qualified teachers, unwilling to take jobs in rural schools, who were without employment.

Tables 10, 11 and 12 show the number of students in normal schools, the number of students in national teachers colleges and the number of graduating students from both training institutions.

Table 10. Number of graduating teachers of primary education.

Year	Total	Normal School	Professional Improved Inst.
1958	1,890	1,450	440
1959	3,571	2,586	985
1960	3,840	3,139	701
1961	6,211	4,797	1,414
1962	9,219	7,499	1,720
1963	10,509	7,343	3,166
1964	9,169	5,705	3,464
1965	3,348	3,348	...*
1966	1,920	1,920	...*

*Data not available.

Source: 10, p. 39.

The total number of graduates as Table 10 shows, increased continuously up to 1963 when it reached the peak, then declined continuously and rapidly thereafter. One of the reasons is that the Government closed the Professional Improvement Institute because it felt that the normal schools were sufficient to meet the country's needs.

Beginning in 1958, Venezuela mounted an intensive literacy drive through which more than one and a half million people were taught how to read and write [17, p. 8]. Up to 1955, the illiteracy rate in Venezuela was at about the same level as those of many other Latin American countries, but later, between 1961-63, Venezuela's status greatly improved in this respect, as shown by the Table 13.

Table 11. Number of students in normal schools.

Year	Total	Years of study			
		First	Second	Third	Fourth
1959-60	25546	12772	6279	3633	2862
1960-61	31641	11591	11012	5716	3322
1961-62	32434	7955	10174	9158	5147
1962-63	28901	4900	7326	8879	7796
1963-64	22203	3629	4307	6595	7672
1964-65	17336	3829	3338	4215	5954
1965-66	12831	2869	3044	3030	3888
1966-67	11015	3023	2422	2816	2754
1967-68	10943	3492	2461	2326	2664
1968-69	11840	4000	2900	2364	2576

Source: 10, p. 39.

Table 12. Number of students in national teacher colleges.

Year	Total	Years of study				
		First	Second	Third	Fourth	Fifth
1959-60	3648	1824	1325	334	98	67
1960-61	5314	2157	1166	588	315	88
1961-62	4852	2428	1045	595	514	274
1962-63	5350	2675	1039	707	470	459
1963-64	5594	2797	1113	757	522	405
1964-65	5282	2641	963	653	584	441
1965-66	5696	2848	1114	637	554	543
1966-67	6314	3159	1255	862	550	492
1967-68	6760	3380	1294	979	639	468
1968-69*						

*Data not available.

Source: 10, p. 46.

Table 13. Illiteracy among persons fifteen years of age and older, 1961-63.

Country	Percent illiterate
Uruguay	9.7
Costa Rica	15.7
Venezuela	26.6
Peru	39.8
El Salvador	52.0
Ecuador	69.4

Source: 13, p. 408.

In 1958, the illiteracy rate was 38.4 percent. By the end of 1965, the illiteracy rate had dropped to 11 percent. All this achievement was the result of the literacy campaign undertaken by the Government after the 10 year dictatorship [4, p. 8].

The literacy program was carried out by 2,727 centers divided into ten classifications. By the end of 1965, 163,300 adults were receiving instruction under 43,552 teachers some 34,820 teachers were students of normal, high school, and of the last two grades in primary schools, who volunteered to work in their free time [4, p. 8].

The program calls not only for the teaching of reading and writing, but also follow-up with instruction on elementary subjects, to plant in the mind of thos people the desire for a wider education, and to put them in a position to find better jobs.

The amount of money allocated for education by the government was augmented to such an extent that the Ministry of Education came to spend the second largest amount of money of all of the governmental departments, following only the Ministry of Public Works.

During 1957-58, the dictatorship provided only 178 million bolivares, and with the democratic regime the budget for the Ministry of Education increased to 461 million bolivares for the 1959-60 period, 541 million bolivares for that of 1960-61 and 1,234 million bolivares in 1968 [1, p. 247].

Basic to improving the well-being of the teachers was the action to raise salaries. The social security system for teachers was also improved. Symptomatic was the increase in budgetary appropriations for the Institute of Insurance and Social Assistance for Ministry of Education personnel from 1.6 million bolivares, in 1957-58 to 6.2 million bolivares in 1959-64 [7, p. 35]. Data is not available for any year after 1964.

Not all the figures were good, it was one thing to provide new buildings. Getting boys and girls to attend classes, and keep on attending, was something else. Though Venezuelan law requires all children to attend elementary school, a recent study showed that nearly half of them quit school before finishing sixth grade.

Besides that, children who start school late and drop out early or repeat grades, reflect, in part, the average Venezuelan's indifference to schooling. But a more important reason is poverty. Even in relative well-off Venezuela, many families still are so poor that even the small amount a child can earn today means more than keeping him in school to earn more tomorrow. In cities and villages alike some boys of ten, eight and even younger, are selling newspapers and candies, shining shoes, or waiting on customers in stores. Their parents fail to see the long run advantages of education. Girls particularly, are given by their parents for domestic services. Women, until

recently, were thought to be second class citizens. Thus, they stayed away from school or left at an early age.

Given the underdeveloped condition of the country, it is still possible to be a somewhat successful man without higher education. As an example, a man with a third year high school education can still make his way up the socio-economic ladder.

The campesino, for generations, has seen his father and grandfather live working the soils and has no reason to believe that his son will be any different. The only way out, it seems, is the Church and the army, and even this requires a powerful and concerned *padrino*.[1] Much of this belief still prevails today especially among the less educated rural areas.

> School officials might help, and so might a campaign to sell parents on education. But the boys and girls of really poor slum families, have a point of view all their own. They stay out of school because they have no clothes fit to be seen in at school, because they don't even have shoes; or because, after missing school up to the age of twelve or thirteen, they are ashamed to sit in beginning classes with seven and eight year old classmates. [17, p. 15]

A special handicap for many slum youngsters is the lack of a man in the family. This often is the direct result of a lack of schooling in the older generation. The man from the country, untrained and unskilled, may find himself less fitted for a city job than his wife, who at least can sew or do housework. If she makes money and he cannot, he may start to feel useless and not worthy for the family. From that to walking out on the family can be a short step.

---

[1] An influential person who is willing to use his influence to support someone, usually a relative of his, to be employed for a certain office or to reach a certain position. A close English word is a patron.

In many cases, too, the couple live together and have children without being married. Then the family has no legal claim if the man decides to desert.

> Since 1958 the government has known about these things and has tried in several ways to correct them. One of the most important has been expanding the services of the Children's Council. This is a nation-wide agency set up to help underpriviledged children, including the large number who have been orphaned or abandoned. A needy child may get anything from shoes to psychiatric help from the council. [25, p. 116]

In summary, the Venezuelan government has been making efforts to get the nation schooled. Private institutions also have done their share, though they normally must charge tuition, and that fact automatically sends most students to public schools and universities.

An unusual program is Faith and Joy. This has been sponsored in large part by Venezuelan businessmen, whose money goes for classes in private school buildings under private school (usually Church) teachers. They have a program for all elementary grades especially for poor children.

In 1960, the government opened the National Institute of Education Cooperation in order to help fill the demand of industry for skilled workers. Then, when a survey showed that the reason why most of the unemployed could not get a job was their lack of skills, the National Institute of Education Cooperation came forward with a proposition to teach a trade, give free lunches, and pay them a small living allowance until their training was completed.

Educational System in Venezuela

The Ministry of Education centralizes the teaching activities of all public and private schools and coordinates the programs. Public

education at all levels is established and supported by the National Executive Committee (normally through the Minister of Education). At the same time, the states, the two federal territories, municipalities and other approved organized groups may establish and support elementary, vocational and handicraft schools.

Public education may be divided into the following levels:

1. Pre-school education;
2. Elementary education;
3. Middle education;
4. Higher education.

Pre-schools

Pre-schools or kindergartens are new in Venezuela and because of this they are limited in number. Some of the best are an integral part of normal schools or private schools. Age of pre-school pupils range from four to seven years. Attendance is not compulsory.

Elementary education of children is obligatory, beginning at age seven and extending for six consecutive years or grades. Youth between the ages of 14 and 18 who have not completed the six years of elementary education are expected to attend centers provided by the government for this purpose.

Elementary education

Until 1953, elementary education was divided into cycles of four and two years. Also there were formerly two curricula, one general or urban and the other rural. The latter emphasized agriculture, domestic science, and manual arts, and the training was not equivalent

to that offered in the general or urban curriculum. The new curriculum makes no distinction between urban and rural training in the general requirements except for the manual arts, in which the training is to be given according to sex. Home economics is for girls, and agriculture, especially conservation, is for boys [5, p. 10].

Middle education

Intermediate or middle education is divided according to different fields:

a) High school or secondary education
b) Military education
c) Industrial education
d) Teacher training
e) Nurse training
f) Social service
g) Practical agriculture
h) Commercial training
i) Art
j) Music

High school. Secondary education given in schools is officially called *Liceo*. A private secondary school is usually called *Colegio*. A Certificate of Elementary Education is required for admission.

There are two cycles. The first cycle has three years. The students acquire a general cultural background. The second cycle has two years. The students begin preparing for specialization in Humanities or Science. After finishing the second cycle, the student is awarded either a *Bachiller* in Humanities or a *Bachiller* in Science.

Military training. To be eligible for admission to military training a student must have earned a Certificate in the first cycle

of Secondary Education or must have completed the second year of normal (teachers) school education. One of the goals of the military school is to complete the secondary education of the "cadet" so that when he graduates as a second lieutenant he will also be awarded the degree of *Bachiller*.

Industrial education. The entrance requirements are: a Certificate of Elementary Education and 13 to 18 years of age.

They have a four year program for electricians, blacksmiths and locksmiths, cabinet makers, plumbers and brass workers, and mechanics.

Teacher training or normal schools. Entrance requirements: Certificate of Elementary Education and 14 years of age. The first two years are parallel to the first two years of secondary education. On completion of the four year program the student is awarded a Diploma of Elementary Teacher.

Nurse training. The Certificate of Elementary Education is required for admission. The school is under the direction of such agencies of the government as the Ministry of Public Health and Welfare, but is subject to the general supervision of the Ministry of Education.

In this school a one-year program is offered for those seeking only basic knowledge, and a three year additional program for those who desire the diploma of "Nurse".

Social service. The Certificate of Elementary Education is required for admission. The program is three years leading to a Diploma of Social Worker.

Practical agriculture. The Certificate of Elementary Education is required for admission. The training program is usually three years in length, at the end of which the successful student is awarded the Certificate of Agricultural Specialist.

Commercial training. The objective of this training is to supply personnel for administrative duties in agriculture, industry, commerce, and public service. The elementary school certificate is required for admission. The basic course in introductory business studies is two years in length. Its completion leads to a one-year course for commercial secretaries, or to a two-year course for the Diploma of Business Administrator.

School of art. Normally the Certificate of Elementary Education is required for admission. These schools offer a three-year course.

School of music. The Certificate of Elementary Education is required for admission. These should offer a three-year course.

Higher education

The entrance requirement is a Bachelor's degree from secondary education with specialization in the field of intended university study. Teacher training colleges are included under this category. There are two such colleges in Venezuela which offer a Bachelor degree in education for a study course of four years.

Figure 1 is a diagram illustrating the educational system in Venezuela.

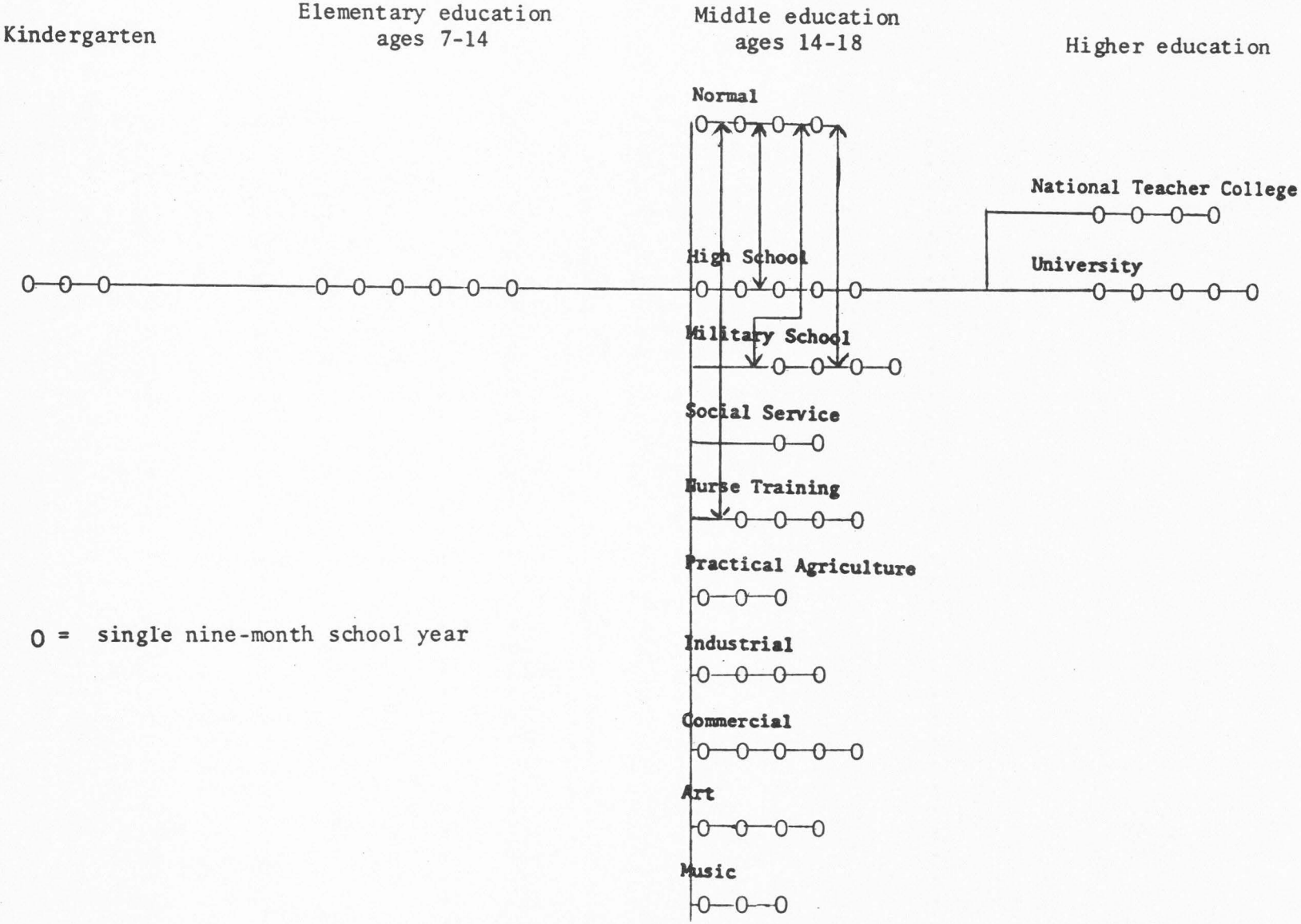

Figure 1. The education system in Venezuela

SUPPLY AND DEMAND FOR TEACHERS

Bearing in mind the general description of education and the educational system in Venezuela, attention is now given to an economic analysis of the forces influencing the supply of and demand for primary school teachers. A priori expectations about factors determining supply and demand for school teachers will be postulated. The supply of and the demand for teachers are the dependent variables. A set of independent variables is assumed to explain the variability in the number of teachers demanded during a certain period of time according to a relationship formulated in the model in the next part of the paper. A similar set is hypothesized to govern the supply of teachers.

Economic Model

The object is to attempt to apply the theoretical tools of a competitive market to determination of supply and demand for elementary school teachers in Venezuela. In a competitive model supply and demand for a product are ordinarily thought to be mainly influenced by prices of that product.

As far as school teachers are concerned this means that their respective supplies and demands are determined partially by salaries. Although the number of teachers available as well as the number hired has increased rapidly over time, the salaries increased only slowly.

In fact, a government salary scale is applied to teachers regardless of the continuous increase in their supply. Furthermore, many people are willing to work as elementary school teachers despite the salary level which is, on the average, lower than other government and non-government jobs. The summer vacation which elementary school teaching offers, as well as the short period of training required for it, may serve as explanations for this willingness to work at relatively lower pay. The existence of such compensating factors in elementary school teaching brings the estimations closer to a competitive one and gives some justification for our assumption. The model to be tested, therefore, hypothesizes that both supply of and demand for teachers are dependent on salaries paid.

In addition, the study hypothesizes that a set of other variables has an influence on supply and demand functions. These variables are presented in two sets: those relating to supply and those relating to demand. In this model we used time series observations.

The functional relationships have the general forms:

$$D = Y_{1D} = f(Y_2, X_5, X_6, X_7, X_8, X_9)$$

$$S = Y_{1S} = f(Y_2, X_1, X_2, X_3, X_4)$$

where:

Y_{1D} = dependent variable, number of teachers hired
Y_2 = average annual salaries of teachers
X_5 = operating expenses other teachers' salaries
X_6 = cost per student per year of schooling
X_7 = population between 5-14 years of age
X_8 = budget outlay
X_9 = trend variable

Y_{1S} = number of teachers available

X_1 = average salary in comparable government employment

X_2 = graduates from teaching schools previous year

X_3 = number of all qualified teachers minus number of hired teachers

X_4 = trend variable

Supply

In the supply equation the dependent variable, Y_{1S}, is the number of qualified teachers available for employment in elementary schools divided by the population. This number included for each year, all students in the high school, since those students comprise the potential supply of teachers, in addition to teachers already employed. In order to account for the effect of changes in population this number is divided by population each year. The independent variables in the supply function are as follows:

Y_2 - Average salary of teachers. This variable represents the mean value of salaries paid to elementary school teachers in each year. The salary units are Bolivares. (One U. S. dollar equals 4.50 Bs)

X_1 - Average salary in comparable government employment. Since the salaries in government employment are increasing faster than the salary of teachers, we expect that some teachers prefer to work with the government as clerks or secretaries, than as teachers. The salary units are in Bolivares.

X_2 - Graduates of teaching school previous year. A teacher graduate indicates his preference for teaching when he decides to major in education at an earlier period of time, it is naturally expected that teacher graduates would normally offer their services to the public schools. Therefore it is expected that the more teacher graduates there are this year, the more will offer their services to the school the following year.

X_3 - Number of all qualified teachers minus the number of hired teachers. This includes anyone who had not taught before but can meet teacher certification requirements

such as all students in high school plus the unemployed certified teachers. In essence, this is the excess of supply over the demand in any particular year.

X_4 - A trend variable expected to pick any variability in the model over and above the variability that the other independent variables explain. There may be a systematic increase or decrease in the levels of supply from one year to the next. The inclusion of this variable is supposed to pick up such tendencies.

Demand

In the demand equation the dependent variable Y_{1D} is the number of teachers hired divided by population. Included in this variable is the number of employed teachers who have graduated from teaching or normal school. The independent variables in the demand function are as follows:

Y_2 = Average salary of teachers. It is the first independent variable and refers to the average salary of teachers. The salary units are in Bolivares.

X_5 = Operating expenses other than teachers' expenses. In addition to the services of buildings, other facilities are used in the production of education. More teachers will be demanded if more of these complementary services are available. As a proxy measure of the availability of such service, the operating budget layouts minus teachers' salaries for each year is used. Data for this variable was not directly available and therefore a rough estimation procedure was followed. The International Yearbook UNESCO of 1967 and 1968 lists the operating budget outlays for different educational levels in Venezuela for the two years 1967 and 1968 as shown in Table 14. In other yearbooks of UNESCO the aggregate educational budget for the other years are given in one figure. In order to break these aggregate figures down and to show the budget outlay for primary education the ratio of primary education budget to aggregate budget was calculated for the years 1967 and 1968. These ratios were then averaged and the average ratio was used to calculate the budget outlays for primary education of the other years. From this figure the teacher salaries were deducted in order to get the other operating expenses.

Table 14. Budget for education in 1967 and 1968 (Bolivares)

	1967	1968
Primary education	398,153,253	435,116,415
Secondary education	141,535,952	161,290,213
Teacher training	15,246,408	16,156,792
Craft education	119,230,586	138,168,323
National universities	262,011,345	302,531,000
Higher education	57,160,347	65,816,460
Administrative departments	110,680,532	113,966,071
Total	1,104,018,423	1,234,125,274

Source: 23, p. 473; 24, p. 543.

X_6 = The cost per year of schooling. This variable refers to the cost per year per student. The less the cost per year, the more students will be going to school, and the greater will be the demand for teachers. This variable was obtained by dividing the total budget outlay for primary or elementary education over the total number of students in elementary education for each year.

X_7 = Population between 5-14 years old. This variable influences the demand for teachers because a maximum limit is usually imposed on the number of pupils per class. Hence, it is expected that the greater this population is the greater the number of classes required and therefore the greater the demand for teachers will be.

X_8 = Budget outlay, i.e., the total budget that the Ministry of Education gives to the elementary education per year. The more money budgeted, the more buildings, students and, of course, teachers are demanded. Units are in Bolivares.

X_9 = A trend variable. This is included here for the same reasons as in the supply equation with the X_4 or trend variable.

Table 15 includes the data for each of the variables for the period 1959/60 - 1967/68.

Table 15. Time series data for the variables used in the demand-supply.[1]

Variables	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
Y_{1D}	0.047	0.052	0.048	0.049	0.049	0.049	0.050	0.050	0.050
Y_{1S}	0.182	0.209	0.210	0.225	0.239	0.255	0.267	0.282	0.296
Y_2	1104	1092	1068	1020	996	960	924	912	972
X_1	924	984	1032	984	1020	1032	996	1044	1092
X_2	1890	3571	3840	6211	9219	10509	9169	3348	1920
X_3	57039	69734	86024	101301	115647	131967	146196	164917	183798
X_4	1	2	3	4	5	6	7	8	9
X_5	114588	145254	171314	176461	190599	1966894	2396913	2805899	3242218
X_6	117	130	146	151	163	168	199	222	251
X_7	2343920	2415240	2744837	2383035	2995408	3112566	3233576	3357916	3485786
X_8	4085366	5066942	5817750	5970617	6283218	6563003	7798704	8991443	10036530
X_9	1	2	3	4	5	6	7	8	9

[1]Units of measurement for each variable are mentioned in the discussion of the model. See p. 32.

Sources: Y_{1D}: 10, t.2.1; 6, p. 38.

Y_{1S}: 10, tt.2.1, 4.2; 6, p. 38.

Y_2 : 2, pp. 2-3.

X_1: 11, p. 36.

X_2: 10, t.7.9.

X_3: 10, tt.2.1, 4.2.

X_6 : 10, t.1.2; 15, p. 34; 16, p. 353; 17, p. 359; 18, p. 363; 19, p. 379; 20, p. 380; 21, p. 397; 22, p. 426; 23, p. 473; 24, p. 543.

X_5 : 19, p. 379; 20, p. 380; 21, p. 397; 22, p. 426; 23, p. 473; 24, p. 543.

X_7 : 6, p. 38.

X_8 : 15, p. 341; 16, p. 353; 17, p. 359; 18, p. 363; 19, p. 379; 20, p. 380; 21, p. 397; 22, p. 426; 23, p. 473; 24, p. 543.

STATISTICAL ANALYSIS

Data

As shown at the bottom of the Table 15, the statistical data for this study were collected from different sources. The data was manipulated according to the requirements of the model as presented above. All value figures were deflated by the price index of Venezuela shown in Table 16.

Table 16. General price index for Venezuela. (1963-64 = 100)

1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
90	91	93	97	100	104	108	109	110

Source: 14, t.223.

The data have several shortcomings which reduce the reliability of the results obtained.

The salary figures do not reflect a clearly competitive situation in which salaries are set in the market for teachers but rather a manipulated level of salaries defined by government for all classes of teachers according to the government employment scale. The same applies to salaries of other jobs which could serve as substitutes to teaching. Also data are available for a very short period of nine years which is insufficient to yield reliable results especially

when used in regression containing five and six unknowns as we have in our supply and demand equations, respectively.

Regression Analysis

In order to estimate the parameters of the supply and demand functions empirically, some kind of regression analysis is necessary. If it is assumed that both the demand and supply functions are linear we can run two separate least square regressions on both the supply and the demand time series. The estimated equations obtained for supply and demand, respectively, are as follows:

$$Y_{1D} = .1102 - .00000135\ Y_2 - .00000000108\ X_5 - .000224\ X_6 - .0000000251\ X_7 + .00000000478\ X_8 + .00455\ X_9$$

$$Y_{1S} = .1664 + .000112\ Y_2 - .0000230\ X_1 - .000000724\ X_2 - .00000237\ X_3 - .0558\ X_4$$

Some appreciation of the significance of estimated coefficients is obtained through their t values. The t values as well as the t test results at .05 and .1 levels of significance are shown in Table 17.

Table 17. t test results on basic model.[1]

Demand		t test		Supply		t test	
Variable	t values	.05*	.1**	Variable	t values	.05*	.1**
const.	6.730	*	**	const.	.726		
Y_2	-0.169			Y_2	-1.142		
X_5	-1.893	*	**	X_1	+1.192		
X_6	-3.524	*	**	X_2	-0.133		
X_7	-5.477	*	**	X_3	+.799		
X_8	+3.637	*	**	X_4	-.714		
X_9	3.999	*	**				

[1]With 8 degrees of freedom t test at point .1 = 1.397 and at point .05 = 1.86.

Although some of the t values are statistically significant, the whole model does not seem to give very strong results. The coefficients are extremely small which renders the two equations impractical for policy recommendation purposes.

The very small coefficients, however, may be a consistent result with what might be expected from lack of competition in the educational field.

All coefficients of the demand equation, except Y_2, the average salary asked by teachers, statistically significant (Table 17). The insignificance of the average salary variable should not be surprising. This result is consistent with the observation that the salaries data reflect salary levels set by the authorities and not determined in a strictly competitive market. This result may be interpreted to mean that the salary levels which teachers settle for or accept, have no influence on demand for teachers.

No coefficient in the supply equation is statistically significant at either the .05 or the .1 level. The insignificance of these coefficients may be due to a nonrepresentative or a misspecified model.

A possible misspecification is that the "attraction variable" X_1, should be the number of openings the government has in elementary education rather than the average comparable salary in government employment. Information on the number of job openings in elementary schools, however, is not available, hence there is no way it can be included.

Since all the supply variables, except the trend variable were hypothesized according to economic theory, and since no other variables appear to be better substituted for the included ones, it is necessary to give special attention to the trend variable.

The trend variable is included in the model in order to indicate whether there is any tendency that either the demand for or the supply of school teachers would increase or decrease over a period of time due to some other influences not specified in the model and independent of the included variables. In order to find out if such a tendency exists it is possible to remove the trend variable from both equations and see if the remaining variables would yield a much different result and in which direction. The larger the difference in the results of the two formulations, the greater is the importance of the misspecified or nonincluded variables. The same model has been run again without the trend variables. The t values of the coefficients are listed in Tables 18 and 19 below, together with the coefficients obtained from the first output for comparison purposes.

Table 18. t values and test results of the demand coefficients.[1]

First output Trend variable included				Second output Trend variable excluded			
Demand		t test		Demand		t test	
Variable	t values	.05*	.1**	Variable	t values	.05*	.1**
const.	+6.730	*	**	const.	+3.389	*	**
Y_2	-0.169			Y_2	-1.075		
X_5	-1.893	*	**	X_5	--.4669		
X_6	-3.524	*	**	X_6	-.926		
X_7	-5.477	*	**	X_7	-1.476		**
X_8	+3.637	*	**	X_8	+1.581		**
X_9	3.999	*	**				

[1]With 8 degrees of freedom t test at point .1 = 1.397 and at point .05 = 1.86.

Table 19. t values and test results of the supply coefficients.[1]

First output Trend variable included				Second output Trend variable excluded			
Supply		t test		Supply		t test	
Variable	t values	.05*	.1**	Variable	t values	.05*	.1**
const.	+.726			const.	2.477	*	**
Y_2	-1.142			Y_2	-1.023		
X_1	1.192			X_1	.428		
X_2	-.133			X_2	-.492		
X_3	.799			X_3	4.825	*	**
X_4	-.714						

[1]With 8 degrees of freedom, t test at point .10 = 1.397 and at point .05 = 1.86.

Table 18 shows that only the constant term coefficient is statically significant when the trend variable is not present at the .05 level. Furthermore, only the constant term and the average salary variables maintain the same signs as in the first output. Thus, the constant term is significant and the salary variable is not. Again, this is in line with the interpretations presented above regarding the ineffectiveness of the salary level on the demand for teachers. But in the new form the remaining variables have become insignificant. This may be an indication of the importance of other variables not included in the model, whose influence is picked up by the trend variables. In other words, this may be interpreted as a misspecification in the demand equation. Therefore, the trend variable seems to be necessary in the demand equation since it helps to make the equations more specific.

Table 19 indicates that in the second form the constant term of the supply function has become significant, the salary variable remains insignificant. The exclusion of the trend variable causes X_3, the number of qualified teachers minus the number of employed teachers, to change its sign and become significant. The same changes take place at both the .05 and the .1 levels. This is clearly an indication that the absence of the trend variable from the supply equation is an improvement.

Observing the combined results it is found that the whole model is improved, as far as the t values indicate, by the exclusion of the trend variable. At both the .05 and the .1 levels the constant terms of both equations are significant. In both equations the salaries are not significant. At least at the .1 level, two variables in the demand equation, X_7 and X_8, are still significant. An additional variable in the supply equation is also made significant at both levels. The new equations obtained in the second model are:

$$Y_{1D} = .09411 - .0000242\ Y_2 - .000000000223\ X_5 - .000129\ X_6 - .00000000988\ X_7 + .00000000468\ X_8$$

$$Y_{1S} = .1319 - .0000252\ Y_2 + .0000389\ X_1 + .000000225\ X_2 + .000000791\ X_3$$

The significant variables of the new equations do not all have the expected signs. If only the variables that, in addition to being significant, have the expected sign, are included, the following are obtained:

$$Y_{1D} = .09411 - .00000000988\ X_7 + .00000000468\ X_8$$

$$Y_{1S} = .1319 + .000000791\ X_3$$

Only X_7, population between 5-14 years of age, has an unexpected sign. As the number of people in this age group increases, demand for teachers is expected to increase. The negative sign of X_7 implies a reversal of this relationship. The budgetary outlay, X_8, has the right sign. The same applies to X_3. But the same can not be said about all the coefficients in this second formulation. The coefficients of Y_2 have the expected signs in both equations in the first output while only in the demand function of the second output in the right sign obtained. Signs of both X_5 and X_6 of the demand equations remain unchanged in both outputs. Signs of all variables in the supply equation other than the constant terms were reversed. The new sign of X_1 is expected and while that of X_2 is not. The sign of the coefficients in both outputs are listed and compared in Table 20.

Table 20. Comparison of the signs of coefficients of the first and second outputs.[1]

Demand	First output	Second output	Supply	First output	Second output
const.	+	+	const.	+	+
Y_2	+	+	Y_2	+	-
X_5	-	-	X_1	+	-
X_6	+	+	X_2	-	+
X_7	-	-	X_3	-	+
X_8	+	+	X_4	+	
X_9	+				

[1]A sign that is consistent with the expected sign of any coefficient is listed positive, otherwise it is listed as negative.

The equations given by both models are rewritten here to facilitate reading Table 20.

First model:

$$Y_{1D} = .1102 - .00000135\ Y_2 - .00000000108\ X_5 - .000224\ X_6 - .0000000251\ X_7 + .00000000478\ X_8 + .00455\ X_9.$$

$$Y_{1S} = .1664 + .000112\ Y_2 - .0000230\ X_1 - .000000724\ X_2 - .00000237\ X_3 + .0558\ X_4.$$

Second model:

$$Y_{1D} = .0941 - .0000242\ Y_2 - .000000000223\ X_5 - .000129\ X_6 - .00000000988\ X_7 + .00000000468\ X_8.$$

$$Y_{1S} = .1319 - .0000252\ Y_2 + .0000389\ X_1 + .000000225\ X_2 + .000000791\ X_3.$$

It may be noted that the small sizes of the values for the regression coefficients continues to imply little relevance for policy purposes.

The correlation coefficients among all the variables used in this study are shown in Tables 21 and 22 from the first and the second outputs, respectively. These coefficients show the direction and intensity of variation between any two of these variables. It is expected, therefore, that the two tables would be the same. Hence, not much information can be obtained from these coefficients.

The only difference between the two tables is the presence of the trend variable in Table 21. As we examine the correlation coefficients between this variable and each of the other variables we find that it is highly correlated with all the variables of the model except Y_{1D}, the demand for teachers, and Y_2, previous year graduates of teacher's schools. This does not add much to our

previous analysis of the model still yield better indications of the true demand and supply situation.

Table 21. Correlation coefficients from the first model.

	Constant	Y_{1D}	Y_{1S}	Y_2	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
Constant	0	1	2	3	4	5	6	7	8	9	10	11	12
Y_{1D}	1	1.000											
Y_{1S}	2	.415	1.000										
Y_2	3	-.260	-.901	1.00									
X_1	4	.314	.808	-.584	1.000								
X_2	5	.026	.186	-.452	.0273	1.000							
X_3	6	.311	.993	-.899	.805	.158	1.000						
X_4	7	.323	.994	-.914	.800	.196	.999	1.000					
X_5	8	.315	.920	-.822	.668	.0178	.923	.917	1.000				
X_6	9	.334	.967	-.814	.807	-.0314	.978	.970	.923	1.000			
X_7	10	.230	.972	-.920	.806	.257	.985	.988	.867	.943	1.000		
X_8	11	.366	.969	-.814	.833	-.0306	.975	.969	.911	.997	.945	1.000	
X_9	12	.323	.994	-.914	.800	.196	.999	1.000	.917	.970	.988	.969	1.000

Table 22. Correlation coefficients from the second model.

	Constant	Y_{1D}	Y_{1S}	Y_2	X_1	X_2	X_3	X_5	X_6	X_7	X_8
Constant	0	1	2	3	4	5	6	7	8	9	10
Y_{1D}	1	1.000									
Y_{1S}	2	.415	1.000								
Y_2	3	-.261	-.901	1.000							
X_1	4	.314	.808	-.584	1.000						
X_2	5	.0256	.186	-.452	.0273	1.000					
X_3	6	.311	.993	-.899	.805	.158	1.000				
X_5	7	.315	.920	-.822	.668	.0178	.923	1.000			
X_6	8	.334	.967	-.814	.807	-.0314	.978	.923	1.000		
X_7	9	.230	.972	-.921	.807	.257	.985	.867	.943	1.000	
X_8	10	.366	.969	-.814	.833	-.0306	.975	.911	.997	.946	1.000

SUMMARY AND CONCLUSIONS

In this study a general background on Venezuela with special emphasis on the educational system and education, was presented. Statistical information on schools, teachers and students for elementary education in the country was also provided.

A discussion of supply of and demand for elementary school teachers followed. Factors affecting supply of and demand for teachers were hypothesized and incorporated in an econometric model. Time series data were collected and regression models were run for the supply of and demand for teachers: one with and another without trend variables. Both solutions were statistically analyzed and a t test was applied to all parameters. The results of the two formulations were compared and the difference attributed to the trend variables evaluated. The estimated parameters obtained from the two formulations were also compared with the expected results from economic theory.

The following conclusions can be drawn:

1. The supply and demand functions have very small coefficients which reduces drastically the applicability of this model to practical situations. Coefficients of both equations indicate that both supply and demand respond only slightly to changes in the hypothesized explanatory variables. This is a general conclusion which applies to both the first and the second formulations.

2. Both equations in both formulations showed that the demand for and supply of elementary school teachers are independent of the salary demanded by or offered to teachers. Other variables seem to be more important in explaining the variability of supply and demand.
3. The solution obtained from the first formulation, with the trend variables included, gave more significant demand coefficients and less significant supply coefficients than the second solution, obtained by excluding the trend variables. In general, the solution obtained from the second formulation gave more significant coefficients and more signs of coefficients consistent with economic theory.
4. The basic reason why supply and demand functions were non-responsive to the salary variable seems to be the absence of a free market where salaries are to some extent influenced by competition. Salaries of teachers in Venezuela do not change in response to changes in supply and demand conditions, not even in an upward direction. The government has a scale of salaries which applies to all teachers with the same qualifications over a period of time which is at least intermediate. The assumption of this study, that there are some advantages and fringe benefits in government employment which may influence supply and demand, does not seem to be a realistic one.
5. There may be other reasons for the nonsignificant results obtained. These may include the short period of time covered in the time series, the small number of degrees of

freedom in the model, the rough estimates used and the suspected nonreliability of some data.

Of course, these conclusions deal with just the particular statistical formulations studied. Other models might be more appropriate even with about the same variables included. For example, a simultaneous supply-demand equilibrium model could be used where the number of teachers employed would be a common variable in both functions instead of having the number hired in the demand and the number available in the supply equation. The number available, as used in this work, includes the potential graduates of high schools. This definition would imply a continuing disequilibrium in the "market" for teachers. For when supply is defined to include at each current price the number of potential (or future) teachers it would ordinarily mean a surplus supply at any particular time. The number of teachers trained or being trained, each year would tend to exceed the number of jobs. This excess is expected to be greater, the larger the number of trainees at schools. In other words, the supply of teachers, as defined above, has an inherent deficiency which tends to create disequilibrium. The larger the number of trainees each year, the greater this tendency and the less applicable the adopted definition of supply and hence, the model. But an inspection of Table 10 shows that an initial high rate of teacher training has fallen off rapidly in recent years, and the disequilibrium may be in the process of correction (p.13). It may, therefore, be possible to conclude that a better specification of the supply function in a simultaneous model is a difficult matter.

The demand equation may be too difficult to specify in terms of nearly any set of variables. Further research needs to be done on the distinction between demand for teachers as factors of production and as end products or finished goods. If this distinction were better conceptualized, an appropriate formulation of the demand equation might suggest itself.

As a final point, one might consider whether or not demand is mainly a function of economic variables. It is very possible that the demand results obtained here are really raising this question. If demand is not a function of economic variables then only the supply function could be specified.

At any rate, future work needs to deal more thoroughly with the conceptual model, before proceeding to statistical analysis.

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