ON SOME MACRO-ECONOMIC INDICATORS OF HCMC IN 1995 AND THE PERIOD 1996-2000

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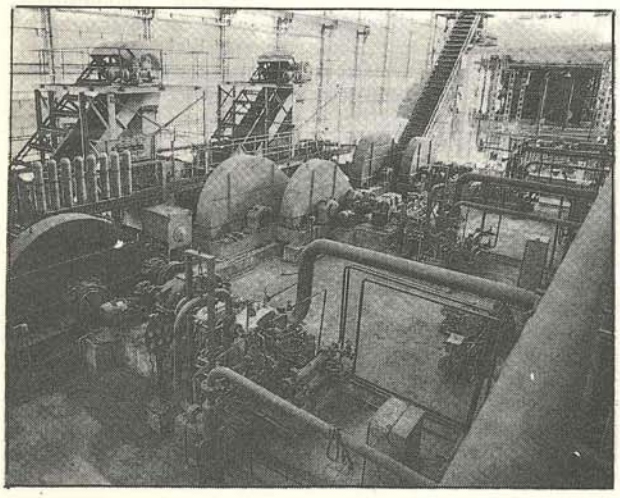


I. SOME INDICATORS

HCMC is a principal economic center of the country. Although it represents only 0.6% of the national area, 6.47% of the population and 7.36% of the labor force, HCMC has become an industrial, commercial, techno-scientific and cultural center of the country with good relations with other centers in the region and the world as well.

Research on main indicators in the SNA shows that in HCMC all 20 principal industries classified by Decree 153/CP dated Dec. 25,1992 signed by the Prime Minister are present in HCMC, from the industry of the smallest output: mining (getting sand, stone, gravel, lignite) to the bigger ones which produce around one-third of the national output (such as manufacturing, trading, hotel, restaurant, transportation, postal service, health care, etc.)

Although it can't avoid ups and downs experienced by the national economy as a whole, but the HCMC economy has come a long way for many five-year plans since 1986. The gross output of the city increased by 9.64% in the period between 1986 and 1990 (compared with the national average of 5.59% a year), and by 12% in the 1990-1994 period (the national average was 7.5%). In 1994, the city gross output amounted to VNĐ29.8 billion representing 18.88% of GDP and making an increase of 14.57% compared with 1993. The personal income of the city in 1994 was US$810 (according to the 1989 exchange rate: VNĐ1,912 to the US dollar), that is, 2.81 times as much as the national average although its population increased by 3.5% annually. The ratio of the gross investment to the gross output in 1994 was 32.07%.

The leading position and role of the city in the national economy is verified by the comparison between the city and the national economy in 1994.

In 1994, the city represented 34.89% of the national industrial output, 2.2% of agricultural output, 27.69% of retailed goods, 54.14% of export earnings, 27.34% of imports, 30.54% of transportation service,29,9% of banking and financial service; contributed 30% of budget revenue; and received 40% of foreign investment and projects.

The economic development in the city has helped improving the material and spiritual lives of townspeople. The consumption of domestic appliances increased by 180% annually. Of 100 households surveyed (including suburban ones), 65 ones had TV set, 62 ones had cassette player, 54 ones had motorbike, 74 ones had electric fan, 24 ones had refrigerator, 20 ones had the VCR... As for housing condition, the area per capital increased from $5m^2$ in 1990 to $7m^2$ in 1994.

Over 100,000 new jobs were created annually, and in spite of small outlay from the public treasury, the education and health care services made good progress in the past years. The illiterate rate was reduced to 1.5%, the number of bed in hospitals increased by 12% annually, and the number of persons who enjoy entertainment increased by 10-12%.

The improvement of people's living standards led to changes in city life. It is estimated that the growth rate of city economy will be 14-15% in the period 1994-1995, its gross output in 2000 will be twice as much as in 1994 and the personal income will be US$1,300 by the turn of the century.

In the situation which includes both advantages and difficulties, many problems of development should be solved in future. So the task of forecasting, or planning, is of great importance because it has profound effect on the making of economic policy at national and municipal levels.

II. APPLICATION OF ECONOMETRICS AND CYBERNETICS TO THE TASK OF FORECASTING

In the socialism-oriented market economy, the commodity-money relation in the market will be coordinated with regulating relations through governmental policies and plans. In order to identify those relations, one can use various econometrical methods to analyze, estimate and forecast socio-economic variables and indicators by forming economic equations which express the relation between variables.

In order to carry out this task, the two following methods are usually used:

- Quantitative method: to use econometrical models and methods along with gathering and processing information by computer.
- Semi-quantitative method: based on principle balances and professional advice, economic plans could be made.

What mentioned below are results of studies based on the quantitative method being carried out in the period 1994-1995 and on numerical data gathered from 1989 to 1994.

III. THE SYSTEM OF RELATED EQUATIONS

In order to forecast certain general indicators by using the Ordinary Least Squares Method, we have built the system of equations of related economic indicators. However, be cause of a shortage of numerical data, we could only form the following equations:

1. Total capital at the end of period

$$K = (1-\rho) * k_{-1} + I$$

where K: Capital at the end of period
I: Assets accumulated in the period
ρ: Co-efficient of capital consumption

The capital at the end of period is the assets accumulated in the period plus the capital at the end of previous period after taking away the amount of capital consumption.

2. Gross output

$$\ln (X/L) = 1.1245 + 0.5031 * \ln (K/L) + 0.0237t$$

Or:

$$X = 3.0787e^{0.0237t} * K^{0.5031} * L^{0.4969}$$

Where K: total capital
X: Gross Output
L: employed labor,
with t = 1 (1989), e = 2.7182

The gross output, according to the Cobb-Doughlas function, depends on two indicators: total capital and employed labor in the period. e is Euler constant reflecting the increase in production value over time (t). We see that the increase in X after K (0.5031) is bigger than the increase in X after L (0.4969), that is, in the period 1990-1994, the increase in the total value of production is due to the increase in capital. Moreover, the coefficient of techno-scientific factor is 0.0237, that is, when there is no change in capital and labor employed, the value of output could increase by 2.4% annually because of the application of techno-scientific achievements.

3. Intermediary consumption

$$IC = -173.5021 + 0.5265 * X$$

Where IC: intermediary consumption
X: total output value

The intermediary consumption has a proportional relation with the total output value. The value of IC worked out by the above equation shows us how much the cost is in order to produce the total output value X in the period.

4. Gross investment (in current prices)

$$I = -2205.1132 + 0.3900 * Y,$$

Where I: gross investment in the period
Y: gross local output

The gross investment in the period can increase the total added value Y, so it is a function of Y.

5. Number of employed laborers in the period

$$\ln L = 1.5302 + 1.9127 * \ln Y - 1.1981 * \ln K$$

Or: $L = 4.6191 * Y^{1,9127} * K^{-1,1981}$

Where L: number of employed laborers (1,000 persons)
Y: gross local output (prices)
K: capital at the end of the period

The forecasted number of employed laborers in the year depends on the total output value added in the year and the total capital put in production in the year.

6. Total consumption

$$C = -404.9095 + 0.5997 * Y,$$

Where Y: gross local output (in prices compared with 1989)
C: consumption

The consumption depends on the total value added. The following formula helps us work out the personal consumption:

$$\text{Personal consumption} = \frac{C}{POP}$$

According to the HCMC Statistics Bureau, the growth rate in 1995 was 15.3%, the gross local output was VNĐ38,801.006 billion and the increase in population was 3.1%, then the personal consumption in 1995 was VNĐ351,495 per month (the officially planned rate was VNĐ352,295 a month).

7. Local export and foreign currency earnings

$$E = 645.8990 + 0.0512 * Y, \text{ where}$$

E: local export earnings
Y: gross local output

Export and foreign currency earnings (E) depend on total value added, the world's export turnover and export prices. However, because of the lack of needed data, we can only forecast E (million US$) lineally dependent on the gross local output (Y). In 1995, when Y was VNĐ38,801.006 billion, E was US$2,632.51 million increasing by 18.26% compared with 1994.

8. Importation

$$(IM) = 690.5911 + 0.0290 * Y, \text{ where}$$

(IM): local importation

Importation depends on the demand in local market, personal income, prices of imports, exchange rate and import turnover of the previous year. However, the same lack of needed data forces us to treat IM as a function of Y. Thus, the forecasted importation in 1995 is US$1,815.820 million, increasing by 26.61%.

9. Budget revenue (in current prices)

$$(TNS) = -3,438.1990 + 0.5002 * Y,$$

Where (TNS) is the local budget revenue.

In studying the budget revenue, we usually take the ratio of the budget income to the total value added, therefore, we assume that TNS is a function of Y (in current prices). The local total budget revenue in 1995 was VNĐ15,970.06 billion, representing 41.16% of gross local output (this indicator in 1994 was 42.92% and the local budget revenue was VNĐ3,523.62 billion)

10. Unemployment rate

(TN) = -106.4410 + 0.0838 * (population),

Where (TN) is the number of the unemployed.

If we assume that the average increase in local population in 1995 is 3.1% (the birth rate is 1.5%) then the city population in 1995 is 4,839,500 persons. The unemployed will amount to 299,110 representing 6.2% of the city population.

11. The growth rate of gross local output (comparative price)

g= 6.1915 + 4.8925 * (lnt), where

g: the growth rate of gross local output

t: time, t=1 in 1990.

Based on the equation (11), the forecasted growth rate of the gross local output in 1995 is 14.96% (with t = 6). This result is suitable to the figure planned by the decision of the HCMC People's Committee. According to the HCMC Statistics Bureau, the local growth rate in 1995 in comparison with 1994 was 15.3%. Calculating based on this datum, we've got:

(11*) g = 6.1297 + 5.0009 lnt

Based on this equation, we could forecast that the growth rate in 1996 in comparison with 1995 would be 15.86%.

12. Labor force

(LF) = 1,263.8152 + 0.8341 (population)

(LF): labor force

13. Total value of goods sold in local market (current price)

(TMBR) = -10,817.4342 + 2.3767 * Y,

where (TMBR) is the total value of goods sold in local market.

(TMBR) depends on total consumption and income of the residents. Because of the lack of needed data about the local consumption, so we consider (TMBR) as a function of Y. When Y was VNĐ38,801.006 billion in 1995, the (TMBR) would be VNĐ81,400.917 billion.

14. ICOR coefficient

$$ICOR = \frac{I}{Y - Y_{-1}} \text{ or } ICOR = \frac{I}{Y_{+1} - Y} = \frac{I/Y}{g},$$

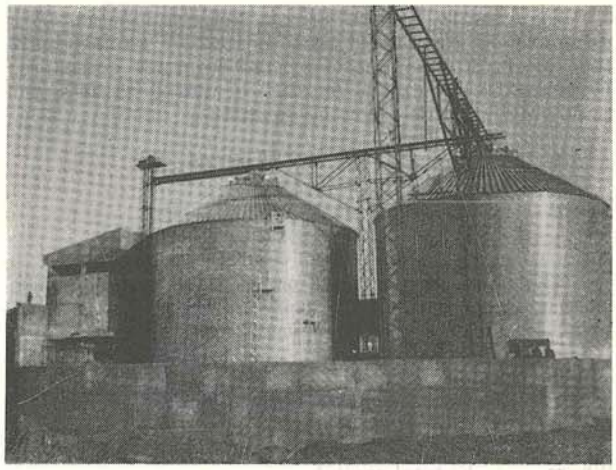
on the assumption that the investment is one year late.

The ICOR coefficient helps us find out the needed investment for producing one more unit of value added. Thus the ICOR is the ratio of investment in comparison with GDP to the annual growth rate.

15. Population

(POP) = 3,453.000 + 158.5833t

The forecasted population depends on t which is 1 in 1987. Thus, when t is 9 (in 1995), the population of HCMC in 1995 would be 4,880,250 people, in comparison with 1994, it increases by 3.97%. The working population is 2,806,774 representing 57.57%, the unemployed is 302,350 or 6.2%. The students in this school year include 855,967 persons. According to the HCMC Statistics Bureau, the increase in the city population in 1995 was 3.1%, that is, the population in 1995 was 4,839,514 persons, with the mean error of 0.84%.



IV. SOME RESULTS OF FORECAST

1. Indicators worked out

No	Indicators	Unit	1994	1995	Growth rate 95/94
1	Price index/ compared with 1989 prices		3.9421	4.2395	7.54
2	Population average	1,000 persons	4,694.000	4,839.514	3.10
3	Labor force	1,000 persons	2,603.653	2,772.711	7.49
4	Gross local output	VNĐ billion	7,549.000	8,704.006	15.3
5	Gross investment	VNĐ billion	2,421.820	3,201.584	32.23
6	Capital at the end of period	VNĐ billion	11,163.33	13,026.315	16.68
7	The employed	1,000 persons	1,698.000	1,863.471	9.74
8	The unemployed	1,000 persons	289.000	298.980	3.45
9	Unemployment rate	%	6.160	6.178	
10	Gross value of production	VNĐ billion	15,505.61	18,011.130	16.15
11	Running cost	VNĐ billion	7,956.610	9,377.135	117.85
12	Consumption	VNĐ billion	730.743	957.844	31.07
13	Savings	VNĐ billion	1,685.314	2,244.743	33.19
14	Export Earnings	US$ million	2,226.000	2,505.282	12.54
15	Importation	US$ million	1,434.150	2,151.424	50.01
16	Labor efficiency.	VNĐ million/person/year	4.446	4.671	5.06

2. Indicators planned for the period 1996-2000 (data collected in 1995)

Indicators	Unit	1995	Forecast 1996 - 2000		Growth rate 1996-2000	Comparison with GDP (%)
			1996	2000		
Population	1,000 persons	4,808.534	4,952.790	5,574.508	3.00	
Labor force	1,000 persons	2,746.983	2,867.195	3,385.687	4.26	
The employed	1,000 persons	1,855.586	1,983.262	2,403.407	5.31	
Gross local output	VNĐ billion					
* 1989 price		8,704.006	10,009.607	17,506.865	15.00	
* Current price		38,810.500	44,874.288	90,990.076		100.00
Industrial output	VNĐ billion					
*1989 price		3,641.352	4,326.039	8,174.381	17.55	
* Current price		14,306.911	16,977.021	33,153.204		36.44
Agricultural output	VNĐ billion					
*1989 price		285.288	307.530	418.489	7.96	
* Current price		1,179.843	1,381.697	2,682.162		2.95
Gross Investment	US$ million	12,500.000	15,301.195	33,364.749		36.67
Exportation	US$ million	2,525.500	2,903.160	5,204.337	15.55	
Importation	US$ million	2,486.400	2,525.381	4,688.212	13.52	
Value of goods sold in local market	VNĐ billion	85,177.216	100,790.356	218,048.970		
Students	1,000 persons	844.482	867.287	964.943	2.70	
Personal consumption per month	1,000 persons	371.036	422.343	784.487	16.15	

Notes:
- Data used for forecasting:
. GDP growth rate is 15% annually
. Increase in population is 3.00% a year
. Rate of capital amortization is 12%
- The per capita GDP in 1994 was VNĐ1,608,200, or US$841 (1989 price), in 1995 was VNĐ1,810,100 or US$947 and will amount to VNĐ3,140,500 or US$1,643 by 2000. Thus the targets set forth by the HCMC People's Committee is feasible in the 1996-2000 period if the annual growth rate is 15% and population increases by 3% a year.
- If the GDP deflator forecasted for 1995 is 4.2395, the average consumption in 1995 would be VNĐ351,400, while this figure publicized on papers was VNĐ352,300.

What mentioned above are results of our research carried out in cooperation with the HCMC Service of Planning and Investment and the HCMC Statistics Bureau. In spite of certain shortcomings (lack of needed data) we hope those errors in forecast are acceptable.

Using computer, we could adjust the equations and results if needed data are collected later, and moreover, we could forecast indicators of the next decade ■