AN ECONOMIC POLICY FOR 1936*

1. INTERPRETATION OF THE PROBLEM

As the question submitted indicates we wish to ascertain whether a recovery in the domestic economic situation is liable to occur in this country as a result of certain causes and conditions which we will discuss later. The general expression "economic recovery" can be interpreted in various ways. In the following we will mean by this expression an expansion of employment unless otherwise expressly stated. Undoubtedly other interpretations are also possible. Several of these would lead to approximately the same conclusions regarding the question to be answered in this report. Employment was chosen as the symptom of economic recovery because, in my opinion, it is particularly important that employment should expand. In the present social system the highest employment possible is the best guarantee that prosperity will be as great as possible and as widespread as possible.[1] If we are concerned only that prosperity be as great as possible, the level of the consumption of consumer goods could be used to indicate economic progress. It is still possible, however, that consumption can be at a relatively high level but also be very unequally distributed between families.

The improvement in the economic situation discussed above, if it does occur, will be the consequence of either the conscious aim of certain governmental measures or of the economic actions of the private entrepreneurs. Apparently it is not the intention

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[1] This expression is somewhat inaccurate because usually it will not be possible to make prosperity both as great and as widespread as possible. I adhere to the existing terminology for convenience's sake because no great damage ensues.

of the Committee of our association to pay a great deal of attention to the method by which the improvement is to be achieved. The method which we will develop here makes it possible to analyse both of these cases. The most important point, however, is to determine whether an improvement which begins domestically will be able to continue, more particularly whether the need to maintain a favourable balance of payments is an obstacle. Accordingly the original cause of the revival is of less importance than the side conditions under which it can occur. It seems to me that the primary task of this report is to indicate the measures which, playing the part of a side condition, give the strongest support to the recovery once it has begun.

With regard to the first it is taken for granted that it consists of carrying out public works on a large scale, *e.g.* as is now taking place by means of the Working Fund but conceivably that "activating" can be accomplished by other methods; *e.g.* by means of a further wage reduction, by devaluation or by the state borrowing on a larger scale for its ordinary expenditures. Without commenting on their efficacy I just mention a few measures which have been recommended by others. Also these activating measures can be analysed by means of the method we will develop. A few examples will also be given. Furthermore the reader will be able to combine a number of cases himself with the aid of the tables.

In the question one side condition has already been imposed, *i.e.* that the export position does not improve. For convenience's sake I assume that it remains at the same level. However, we must outline exactly what we mean by the term future export position. I see two interpretations: In the first place that, at an unchanged price level of our export products, the demand for them abroad remains the same. This means that, if that price level is reduced, more products can be sold on the free markets. Another interpretation would be that the quantity of goods which can be sold abroad would be fixed and no larger sales would ensue in spite of improved competitive potentialities. This might be the case if all countries were alloted quotas for all export products without exception and those quotas could not be increased. Although this assumption seems unrealistic it will also be briefly discussed in order to illustrate the most unfavourable case. As a rule we will take the first of these two interpretations as starting point.

2. OUTLINE OF THE DIRECTION WHICH OUR INVESTIGATION WILL FOLLOW

The background of the question as asked by the Committee is probably the widely prevailing opinion that any measure creating a domestic upturn has the tendency to render the continuation of the improvement impossible. These objections against such measures are formulated in several ways; first, greater imports of raw materials are only possible through larger exports, otherwise they endanger the balance of payments and in consequence the credit system. Secondly: the domestic revival increases the price level at home and thus creates difficulties for the export industries. In answer to the first objection we propose the following alternative methods of ensuring the continuation of the improvement in the level of employment:

a) additional imports of raw materials are paid for by means of sales of gold and securities abroad; thereby maintaining free enterprise in production and trade at the existing level and also the existing gold parity of the guilder;

b) additional imports of raw materials are paid for by compulsorily limiting imports of finished products, either by quotas or by increasing domestic production efficiency to such an extent that certain domestic products become considerably cheaper and oust the foreign products. In this case the gold parity of the guilder will also be maintained;

c) additional quantities of raw materials are paid for, without any further compulsory measures in the field of trade or production, by reducing the gold parity of the guilder. We will assume this reduction to be around 25%.

In the following we now must investigate what will be the course of employment in each of the cases indicated above. Each case will be broken down into several possibilities. A number of problems arise in this connection which are summarized here for orientation's sake.

In the first place we must determine the optimum size of the measures above and the maximum length of time over which they must be extended. For example, how much gold will have to be sold and

how long a time period is this to be used? Or again: if by means of organized action on the part of the government it is possible to rapidly increase the efficiency of industry, how great an improvement in efficiency can then be reached? Also: if the imports of consumer goods are to be limited, how far can we go in this respect? When surveying this and similar questions a few characteristic differences between a, b en c immediately become obvious. The process in a) can only be continued for a limited period before the gold reserves and the funds which can be liquidated are exhausted. Gold sales of Hfl 100 million a year would, for example, be technically possible but under the present circumstances might create psychological difficulties. However, if the earning capacity of the Dutch industry would no longer be below that of foreign industry and accordingly there was not so much capital exported, then the other items could theoretically burden the balance of payments even more. Furthermore the unfavourable psychological effects would also be reduced and the balance of the current items might be considerably more unfavourable than now. Yet there are limits in all cases, and a yearly withdrawal of over Hfl 500 million more than at present through the current items of the balance of payments, should be considered impossible at present.

As far as the other measures are concerned: the maximum annual increase in the efficiency of industry as a whole would be 10% at the most. This was the average rise in efficiency in the United States under the pressure of a crisis year such as 1931.

Limiting the imports of finished consumption goods by more than 25%—with the substitution of domestically manufactured goods—should also be considered impossible.

These and similar considerations are taken into account, in the determination of some "constants" in section 5.

The second kind of problem which must be kept constantly in mind when carrying out the purpose of this report, are the problems connected with the repercussions of one economic variable on another. In other words, what will be the effect of our measures on the economic system as a whole. An example is the increase in prices resulting from a rise in employment. In this case we must study the repercussion of rising employment on prices. In just the same way there will be a repercussion of rising employment on wages; and of rising wages and

prices on the demand for consumer goods, *etc.*, *etc.* I consider this type of problem to be essence of the argument we are going to unfold here. The sum of such repercussions will give us the answer we seek and moreover will show us the course followed by the level of employment in each of the cases to be discussed.

We are dealing with a complicated subject. Complicated in two respects: In the first place with respect to time. The relationships between present variables and variables four months hence work along numerous different channels. All sorts of differing lag phenomena play a part in these relationships. Secondly, the subject is complicated even if we leave time out of the picture, because many different variables in the economic mechanism are interconnected. This doubly complicated aspect is one of the reasons why it is so necessary that, when economic theory is applied, experts in many fields should co-operate. Moreover it means that a great deal of study has to be "invested" in an analysis of the details. However useful and necessary this study of detail may be, we also need a general view, especially in this report. What we want to find out is the result of the complicated economic process. In order to get our general view, generalization is indispensable. The numerous phenomena have to be grouped in such a way that the picture can be viewed without obscuring its characteristic lines. The so-called macro-economic approach must be introduced where for example we do not consider each article separately but in groups such as raw materials, finished products, *etc.* As a matter of course every attempt to generalize or stylize is a venture. The artistry in the work of the social economist lies in this stylizing. Some attempts have been made which could not be handled, some proved to be unrealistic. We have to steer clear of these rocks. Stylizing is necessary however and the alternative is sterility. It almost goes without saying that the identity of those elements which play a major part in the current economic discussions should be preserved as much as possible.

Qualitative stylizing, *i.e.* the classification of people, goods, *etc.* in large groups is not yet sufficient. We also have to work with figures and stylize quantitatively. We must know by how many percentage points wages will go up as the price of consumer goods rises by one per cent. This has to be done if only because evaluating contrary

influences is not otherwise possible. Another example is the price increase argument which was already mentioned. Undoubtedly certain prices will go up during the upward phase of a domestic business cycle. Accordingly, the export industries will have to face difficulties. The question is whether these difficulties will reduce employment, immediately and later on, to a greater extent than the other causes will be able to increase it. An evaluation of these effects is necessary. In this connection a rough figure is better than no figure at all, but we must mention that it is a rough figure because this uncertainty remains. But if we only point out the uncertainties, we come not nearer to solving the problem. The latter is regrettably the customary manner of discussing this subject.

My conclusion points to the necessity of quantitatively stylizing the economic process. An initial attempt in this direction is presented in the following section. The space available does not allow me to say everything about this subject that ought to be said. Accordingly I will only be able to make an outline. Perhaps I may refer the reader to a pamphlet regarding this working method which will be published later. Perhaps I may also request an opportunity to clarify this subject in subsequent discussions.

3. THE QUANTITIES UNDER CONSIDERATION AND THEIR MEASUREMENT

It is desirable to break down the economic variables under consideration into three groups.

I. Physical Quantities

In this group we distinguish the following quantities which, preceded by their symbol, have been collected in the list given below. All quantities pertain to a period of one year.

a quantity of labour performed;
b labour performed for new investment;
u consumer goods finished (or other goods to the extent they were for export);
u'_x finished consumer goods consumed domestically;
u_A consumer goods exported;
u'_A consumer goods imported;

v'_A production equipment imported;
x'_A raw materials imported for consumer goods;
y'_A raw materials imported for production equipment.

II. PRICES (INDEX NUMBERS) OF:

p consumer goods in retail trade (cost of living) in guilders;
p_A export products at the frontier, in guilders;
q production equipment, domestically, in guilders;
p'_A imported consumer goods, in guilders (frontier);
q'_A imported production equipment, in guilders (frontier);
r'_A imported raw materials for consumer goods, in guilders (frontier);
s'_A imported raw materials for production equipment, in guilders (frontier);
l wage index figures (daily wage).[2]

III. VALUE FIGURES (IN GUILDERS)

U value of: Dutch production of consumer and export goods;
U' consumer goods, consumed in the Netherlands;
U_A exports;
U'_A imported consumer goods;
V'_A imported production equipment;
X'_A imported raw materials for consumer goods;
Y'_A imported raw materials for production equipment;
L wage income of labour;
E all remaining income, taken at the moment received;
Z same, at the moment when earned, together with non-distributed profits;
E' the part of E spent on consumer goods and services.
E'' the saved or hoarded part of E.

The units used for the measurement of the variables are the following:

[2] It is assumed that the length of working days does not alter and has not altered since 1923.

The monetary unit selected is Hfl 1,754 million which is the average of the total wage sum over the period 1923-1933. This has been used as far as possible as the basis for the calculations.

All prices are expressed in index numbers using 1923–1933 = 100 as basis.

Using both these principles, the units of all physical quantities are automatically determined, because a physical unit is typified by the fact that its value and its price are equal. A unit of every kind of goods is therefore the quantity whose price over the period 1923–1933 was equal to Hfl 1,754 million. The same applies to the labour unit.

The choice of these somewhat strange units gave certain advantages when carrying out the calculations.

The symbols indicated have furthermore been used to indicate the deviations shown by the variables concerned in respect of their trend values (linear trend over the period 1923–1933); those trend values themselves will be indicated with a horizontal bar above the symbol, *e.g.* $\bar{a}$.

Measuring the variables mentioned was obviously possible only in a general manner. In many aspects therefore our conclusions should be considered as provisional. In view of the available data, it is hardly possible to improve these figures, even though, for some of them, the gaps in the basic data are considerable. A number of cross-checks, however, gave me the impression that the model of Dutch economic life given hereafter is sufficiently accurate to give a more concrete shape to the discussions concerning the problem on which our country is now concentrating.

For the figures themselves and for a short description of the manner in which they were calculated, we refer the reader to Table I and its commentary.

The time path of each of the variables can be found in the graphs given in 1 (dotted line).

Finally we may remark that it was not determined *a priori* whether or not a certain economic variable ought to appear in this list. This was decided by asking whether the variable concerned was essential to explain the course of employment, either directly or indirectly. In this connection the following section should be consulted.

4. THE RELATIONS BETWEEN THE VARIABLES: THE ELEMENTARY RELATIONS

The economic variables included in the model are constantly changing, in a mutually interdependent way for the greater part. The changes in each of the variables are partly determined by non-economic and partly by economic influences. By the latter we mean only that the changes are determined as to size and direction by the changes in other economic variables. Thus the prices of consumer goods can rise 1 per cent owing to a bad harvest and 2 per cent owing to a rise in costs or a rise in the incomes of the consumers. The influences first mentioned we will call non-economic and, the last mentioned influences we will call economic. In general the non-economic influences will often have a random character, *i.e.* at times they will work in one direction and at other times in another direction, unpredictable and without regularity. If a non-economic influence can be indicated which does not meet these requirements of randomness, then it could, by way of exception, be classified with the systematic influences. For the reasons mentioned, however, the systematic influences will generally also be economic ones. In all discussions of economic policy, but particularly cyclical policy, it is more efficient to start with the assumption that only the systematic relations exist. Thus we obtain a picture, which, in the average over a longer period, will correspond well with reality. In this report we will follow this procedure.[3] Furthermore no attention will be paid to the influences which cause only seasonal fluctuations or very slow changes which are significant only at very long term (the secular movements). The elimination of these influences can take place, by approximation, by considering only the deviations from the trend[4] of all variables and trying to explain the movements which are shown by their annual averages. This has been undertaken in the following pages.

Viewed more closely from the theoretical angle, what really matters

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[3] For a further explanation of this train of thought I refer to my article "Quantitative Fragen der Konjunkturpolitik", *Weltw. Archiv.* November 1935, page 366.

[4] For a further comment on the significance of the trend in this I refer to my article "La détermination statistique de l'équilibre cyclique", *Revue de l'inst. Int. de Stat.* 1936, page 173.

TABLE I

SURVEY OF THE BASIC MATERIAL

Nr.	Description	Symbol	Unit	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
	Prices															
1.	Wages	$\bar{l} + l$	1923/33=100	103	100	99	99	99	100	102	103	102	99	95	91	
2.	Cost of living	$\bar{p} + p$	,,	107	109	109	103	103	104	103	99	93	86	85	86	84
3.	Prices of production equipment	$\bar{q} + q$	,,	122	114	106	108	101	101	102	98	91	80	72	71	68
4.	Export prices	$\bar{p}_A + p_A$	,,	120	120	121	110	108	109	110	100	81	62	57	56	25
5.	Import prices: finished consumer goods	$\bar{p}'_A + p'_A$	,,	107	117	122	115	114	114	111	100	82	64	55	53	47
6.	Import prices: finished production equipment	$\bar{q}'_A + q'_A$	,,	119	111	108	105	98	98	100	99	95	86	80	77	73
7.	Import prices: raw materials for consumer good	$\bar{r}'_A + r'_A$	,,	122	142	134	124	119	119	110	88	60	45	42	42	40
8.	Import prices: raw materials for production equipment	$\bar{s}'_A + s'_A$	,,	130	118	117	113	114	111	111	98	80	56	56	56	42
I.	World price level	$\bar{p}_w + p_w$	1926/30=100	106	107	108	102	102	103	101	92	79	68	63	60	60
	Physical quantities															
9.	Employment, total	$\bar{a} + a$	1923/33=100	88	91	94	98	101	107	111	113	107	95	94	96	
10.	Same, in investment works	$\bar{b} + b$	as $\bar{a} + a$	20.2	21.1	21.9	23.1	23.8	26.2	28.4	29.4	25.8	21.0	21.4	22.6	
11.	Total production	$\bar{u} + u$	Quantity which averaged 1923/33 cost Hfl 1,754 million=100	282	292	312	333	340	358	366	358	348	342	358	362	
12.	Export quantity	$\bar{u}_A + u_A$		62	79	85	91	100	104	103	98	93	77	72	73	73
13.	Consumption quantity	$\bar{u}' + u'$		221	229	230	235	242	249	253	262	270	271	274	264	
14.	Import quantity: finished consumer goods	$\bar{u}'_A + u'_A$		51	55	51	56	56	59	60	63	66	63	66	51	48
15.	Import quantity: finished production equipment	$\bar{v}'_A + v'_A$		6.9	7.3	10.3	12.8	14.8	18.7	20.6	19.4	14.1	11.1	11.9	12.1	11.6
16.	Import quantity: raw materials for consumer goods	$\bar{x}'_A + x'_A$		33	34	39	39	44	45	47	46	47	40	40	40	43
17.	Import quantity: raw materials for production equipment	$\bar{y}'_A + y'_A$		8.2	10.2	11.4	12.2	13.3	14.8	16.6	16.7	14.2	11.6	13.2	13.9	13.5
II.	Volume of world exports	$\bar{z} + z$	1929 = 100	70	79	84	86	92	95	100	92	86	75	76		

TABLE I (continued)

Nr.	Description	Symbol	Unit	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
	Value figures															
18.	Wage sum	$\overline{L} + L$	f. 17.54 mln	92	92	94	97	101	106	112	115	108	93	88	86	
19.	All other income, at the moment of earning, incl. non-distributed profits	$\overline{Z} + Z$	,,	201	210	208	203	213	224	215	196	158	150	155		
20.	All other income, at the moment of payment, incl. non-distributed profits	$\overline{E} + E$	,,	185	192	192	192	196	204	204	190	167	156	156		
21.	Part of aforementioned income spent	$\overline{E}' + E'$	,,	134	142	141	138	137	137	138	135	132	128	130		
22.	Part saved (incl. part put by) .	$\overline{E}'' + E''$	,,	23	26	29	43	40	49	37	46	32	13	12	10	
23.	Value of exports	$\overline{U}_A + U_A$	,,	74	95	103	100	108	113	113	98	75	48	41	41	38
24.	Value of consumption . . .	$\overline{U}' + U'$	,,	226	234	235	235	238	243	250	250	240	221	218	210	
25.	Value of imports of finished consumer goods	$\overline{U}'_A + U'_A$	,,	54	64	63	64	64	67	67	63	54	39	37	27	23
26.	Value of imports of finished production equipment . . .	$\overline{V}'_A + V'_A$	,,	10.5	11.2	12.1	12.6	14.0	16.8	19.7	18.7	14.3	9.1	8.9	8.2	7.3
27.	Value of imports of raw materials for consumer goods . . .	$\overline{X}'_A + X'_A$	,,	40	48	52	49	52	54	52	40	28	18	17	17	17
28.	Value of imports of raw materials for production equipment	$\overline{Y}'_A + Y'_A$	,,	10.6	12.1	13.4	13.8	15.2	16.4	18.4	16.3	11.4	6.5	7.4	7.8	6.4
III.	Income from enterprises operating abroad	$\overline{L} + L$	,,	17	27	37	42	39	37	33	27	21	14	12	10	

Short Commentary on Table I. Sources and Methods of Calculation:

No.

Prices

1. Average daily wage according to the State Insurance Bank.
2. Index of the cost of living, workers' families, Amsterdam.
3. Calculated from the new index figures for wholesale prices of the Central Bureau for Statistics and re-calculated 1923–'26 with the aid of the statistics of production and consumption (C.B.S.).
4. Calculated from a sample of Dutch exports, comprising about half of all exports.
5. Calculated from a sample of the Dutch imports of finished consumer goods.
6. Calculated from the new index figure for wholesale prices of the C.B.S. and re-calculated for 1923–'26 on the basis of import data.
7. Ratio of the value of imports of various raw materials for consumer goods based on a sample and the quantity index of the C.B.S. for imports of those raw materials.
8. Prices of metals and timber from the C.B.S. index figure for raw materials.

I. De Ned. Conjunctuur May 1936, page 18, with re-calculation according to Stat. Jahrbuch f.d. deutsche Reich, 1935, page 118*.

Physical quantities

9. Number of unit-workers according to the State Insurance Bank.
10. Same in building and metal industry.
11. Own calculation from the known production indices for man industry and a few agricultural series.
12. C.B.S. index figure for exports of manufactured and agricultural products (sample includes half the total exports).
13. Own calculation including about 2/3 of all consumption; by adding a constant term we have seen to it that the value of consumption (series 24), calculated similarly, is approximately equal to the product of the quantity and the index figure of the cost of living.
14. Calculated from the ratio of value and price (see 5); the latter was calculated from a sample of value and quantity.
15. Imports are weighted according to their price in a fixed year determined from a sample. The entire figure has been expanded to correspond to the total of all import production equipment during the period 1923–33.
16. Calculated in the same way as 14.
17. From value and price.

II. League of Nations figure for the period 1923/24, revised with figures borrowed from the source mentioned under I.

Value figures

18. Figures concerning insured workers subject to the accident law, the agricultural and the marine insurance law.

19. Calculated as follows: estimated national income of persons + estimated non-distributed income of enterprises — wage sum. The estimated national income is calculated from the taxed income with allowance for tax evasion and taking the incomes below the tax limit into account (the method of Bonger). The non-distributed income of enterprises is calculated from a sample of about 90 large enterprises, by comparison with paid-out dividends and gratuities, the latter being also known in total.
20. Deduced from 19 by subtracting the non-distributed incomes and by shifting dividends and gratuities one year.
21. Value of consumption, from which wage income has been subtracted.
22. Estimated from issues and mortgage loans.
23, 25–28. Own calculation from trade statistics.
24. See 13.
III. Calculated for the years 1931-1934 from the balance of payments figures for the Netherlands (Maandschrift C.B.S.); estimated for earlier years on the basis of Dutch East Indies balance of payments and dividends.

is not so much the ordinary (mathematically established) trend but a consecutive series of figures which I would like to call an "equilibrium development". The latter would then be characterized by two features; first, that it, just as the actual movement, satisfies the (dynamic) equations. This implies in the economic sense that it also is a possible time path (not conflicting with the reactions of the economic subjects, the institutional and other ties); and second that it runs as gradually as possible. I have given my thoughts in this respect more exhaustively elsewhere[5] and I refer the reader to this passage.

Here we may note in passing that in "quiet times" the difference between the equilibrium curve and the trend will not be very great. Since 1931, however, a few shifts have occurred in the economic world which have brought about sudden changes in several equilibrium positions. For this reason difficulties are encountered when attempting to determine the equilibrium situation in 1935 (see section 5).

The fact that certain influences determine the systematically and cyclically important changes of some economic variable, can be expressed in an algebraic equation. By way of documentation the equations which will be mentioned here are summarized in Table II. For the reader without mathematical background the following description is

[5] *Revue de l'Institut Intern. de Statistique*, July 1936.

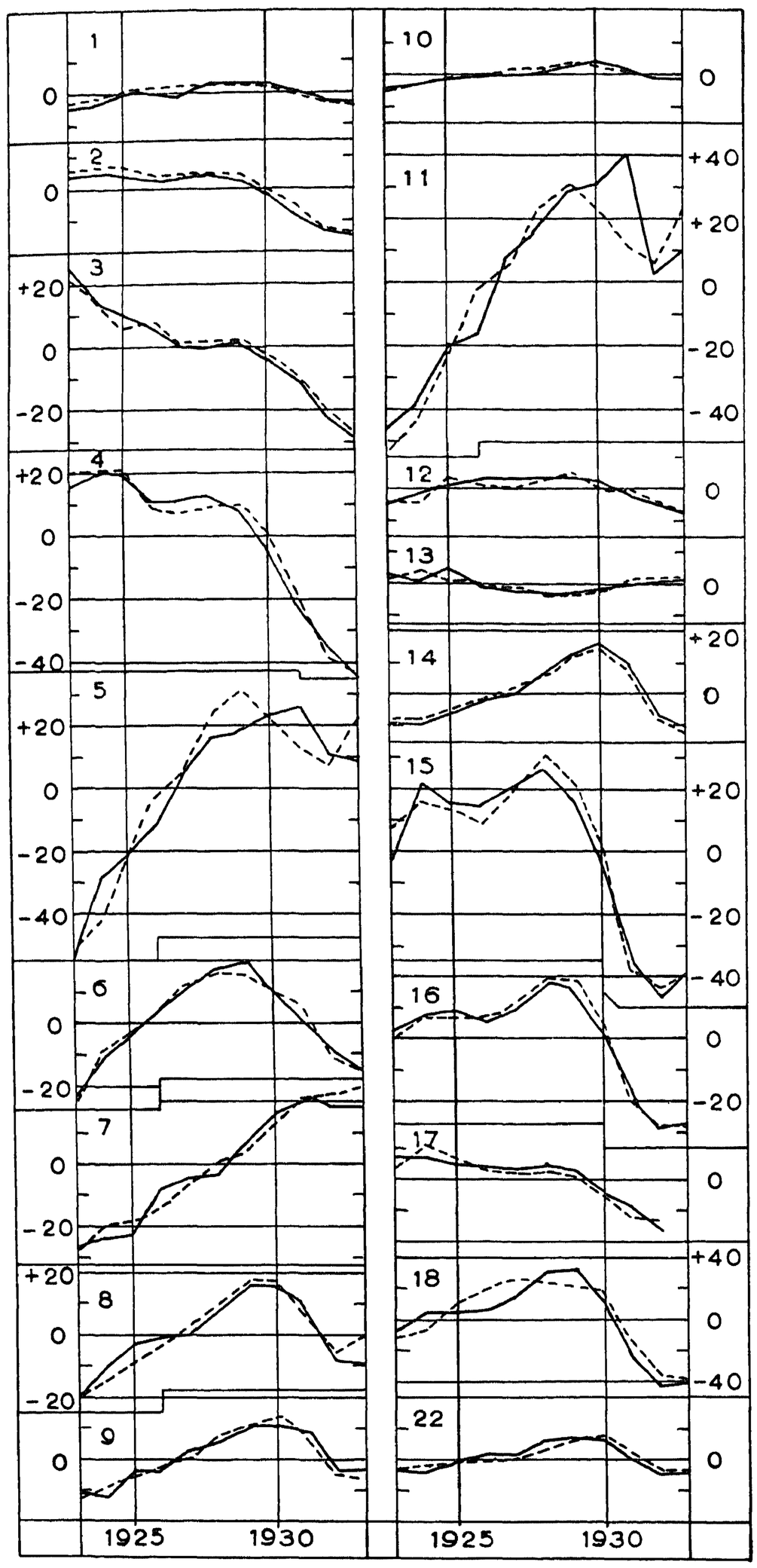

Fig. A. Survey of the result of the correlation calculations, to control the equations which establish the main economic quantities of the Netherlands ("Barometer" for the Netherlands, 1923–1933). The numbers correspond to the relative equations and figures.

given. In order to use sentences which do not prove too unreadable, the relationships have not always been expressed in a mathematically exact manner. The foremost aim has been to make them easy to understand. As the reader will understand, all criticism of the economic thinking in this report must be directed mainly at the assumptions which will be made in the next paragraph. The conclusions which will be reached and discussed in the later paragraphs follow logically from these assumptions. After the assumptions have been made and have been expressed mathematically in the form of equations, they are inserted, as it were, in the mathematical machine which immediately supplies the result.

Explanation of the Movement of the Price Quantities

(1)[6] Wages: It is assumed that the change in the wage level from year to year, is influenced by the changes in the cost of living and by the state of employment. A price increase will occasion a rise in wages and so will a state of above normal employment. It is moreover assumed that a price decrease will give rise to a wage decrease, just as will a subnormal level of employment. It is further assumed that the full effect of price changes on wages requires ample time to be felt (one year). The slowness of response of wages is well known.

Fig. 1 shows that the real movement in wages (the dotted line represents the change, from the previous year) as a percentage of the former wage level can actually be explained graphically by the top line which represents a combination of the two causes mentioned. The two lower solid lines represent the components of the top one. Thus the significance of each of the factors is shown separately. The middle one of the drawn lines represents, year by year, the price rise or drop from the level of the previous year; multiplied however, by a certain constant. In this case this figure is 0.27 as mentioned in the chart. This means that the wage increases and decreases on the average amount to only 1/4 of the price increases and decreases which cause them. The bottom line shows the employment situation multiplied by 0.16. The figures 0.27 and 0.16 which can not be determined *a priori* have been assigned arbitrary values in order to ensure that "things work out as well as possible", *i.e.* that the actual course of wages and the "calculated" course should correspond as closely as possible.

[6] The numbers preceding each part of this discourse correspond to the equations and to the corresponding graphs.

The significance of the equation discussed here for the entire line of reasoning is that, unless the contrary is expressly stated, it is always taken for granted that the price changes which occur lead a year later to wage changes of the indicated size. Furthermore when employment exceeds the value which is considered normal wages will rise, while a subnormal level of employment leads to wage decreases.

(2) PRICES OF CONSUMER GOODS FOR DOMESTIC CONSUMPTION (the cost of living). It is assumed that the prices of these goods are determined primarily by the following three factors:

A. the prices of consumer goods abroad;
B. the cost of domestic consumer goods and
C. the level of sales of consumer goods.

The latter factor is used to measure the strength of competition; when sales are high, competition will be relatively slight and accordingly prices will have the tendency to be on the high side. In the case of low sales the opposite will be the case. Here again, of course, it is not possible to know in advance what the extent of such an influence of sales on prices will prove to be. For this reason once again a coefficient has been mathematically determined which ensures as much conformity as possible to reality.

Costs (B), obviously, are not known exactly. Here, however, we are concerned with only the fluctuations in costs and not with their absolute level. Fluctuations have been estimated in a simple manner by adding together in certain proportions the price of raw materials for consumer goods, wages and a trend series (see the formula in Fig. 2). A trend series is a series of figures which rises or falls gradually and regularly with time: in our example it falls. This trend series serves to indicate the estimated influence of technical improvements *etc*.

In Fig. 2 the actual course of the cost of living has been represented graphically by means of a dotted line; the four solid lines represent the values of the cost of living and the three components of these values, calculated in the way just discussed. The components are A: 0.04 × the cost of the consumer goods[7] and C: 0.08 × the sales of consumer goods. From this graph we can see,

[7] Costs are $1/3\ (r'_A + 2\,l - 6\,t)$; if we multiply this by 0.45 then we obtain the amount indicated in the formula.

e.g., that the main influence can be attributed—according to our calculations)—to costs. The influence of foreign competition and domestic sales (as a standard for extra competition) is small.

(3,4). With regard to the prices of domestically manufactured production equipment and of export articles, similar hypotheses have been set up and calculations have been made. Thereby we found the following differences with consumer goods: the influence of foreign competition is much greater with the latter two groups. The influence of domestic competition measured in sales can be ignored in these cases. The influence of costs is as large in the case of production equipment as in that of consumer goods and is much smaller for export articles. The influence of costs, however, is in the case of the two kinds of goods first mentioned only about 0.5; that is to say that if competing prices are not altered only fifty percent of a rise or reduction in costs is passed on. How well our conclusions conform with reality can be seen in the Figs. 3 and 4 which have been set up in entirely the same way as the previous figures.

Explanation of the Movement of the Physical Quantities

In order to make a more or less systematic survey of the relations which are responsible for the immediate determination of the physical quantities, we will break down these relations into several groups. In the first place there are the four *sales equations* numbers (5) to (8).

Equation (5) states the fact that total production (which is assumed to be equal to sales) is equal to the sum of the production for the home market and the production for the foreign market.

Equation (6) expresses that *foreign sales* are determined by three factors:

A. the size of world exports z;
B. the foreign price level p_W;
C. the price level of export goods p_A.

As the reasoning used in this connection is approximately the same as in a corresponding analysis in "De Nederlandsche Conjunctuur" we may refer to it.[8] The solution attained can also be seen in Fig. 6. An elasticity of nearly 1.5 is found for total exports.

[8] *De Nederlandsche Conjunctuur*, May 1936, page 17.

Equation (7) (see Fig. 7) is an identity which relates to *domestic sales*. It is deduced from the identity: income spent on consumer goods = price × quantity of these goods. The income spent on consumer goods thereby consists of two parts: A) the total wage income L (where accordingly savings have been left out of consideration) and a part E' of the remaining income E. The full explanation of the domestic sales is not given in this way; it is partly shifted to be explanation of E', for which purpose equation (17) serves.

Finally equation (8) gives a rough idea of the main influence which effects the level of sales of *investment goods*. The volume of total

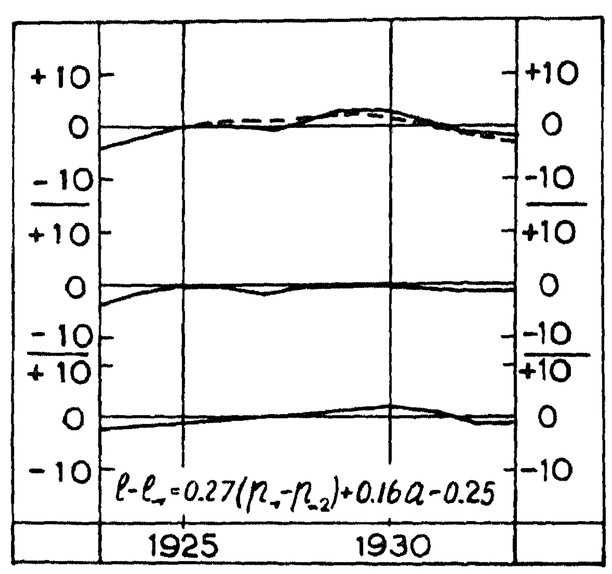

Fig. 1.

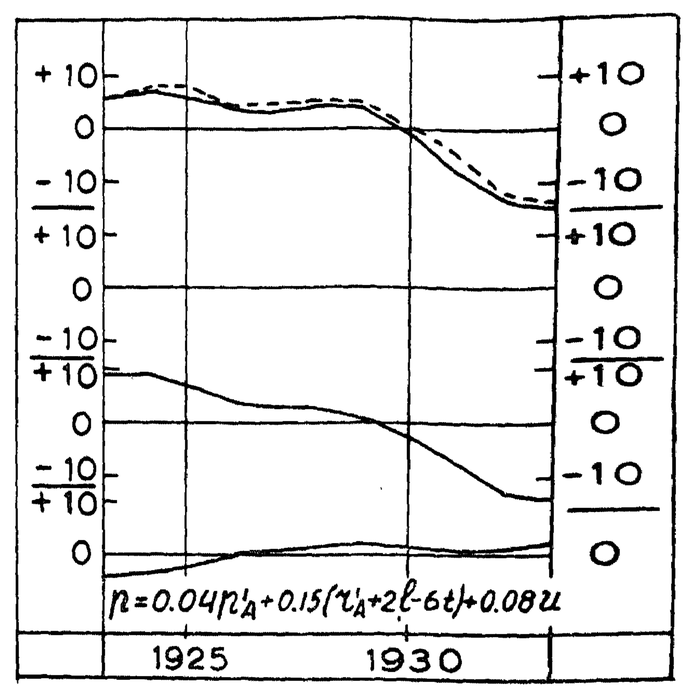

Fig. 2.

Figs. 1–4. Explanation and calculation of the movement of prices in the Netherlands. A broken line indicates the actual movement of the relevant variable. The solid line running through the broken one represents the calculated movement. This line is found by adding up the values indicated by the lines drawn underneath, which show the influence of the explanatory variables separately. The explanatory variables are given in the same order as in the formulae.

Fig. 1. Calculation of the annual increase in daily wages from the increase in the cost of living, and the level of employment.

Fig. 2. Calculation of the price level of consumer goods from the price level of imported consumer goods, production costs, and total sales.

sales (domestic production + imports) of production equipment changes mainly as a result of changes in the profit expectations, the latter (at least as far as their systematic part is concerned) are assumed to be parallel to the actual profits realized. In this equation a total lag of one year has been assumed, which can be interpreted as the sum of a psychological waiting period, a technical preparation period and a technical execution period. Domestic production is represented on the left side of this equation by the term $3\,y'_A$, which assumes that raw materials take up about 1/3 of the value during the basic period (which was used, as we know, as basis for quantity measurement).

This equation raises the question whether other variables are not also immediately partly responsible for the volume of investments.

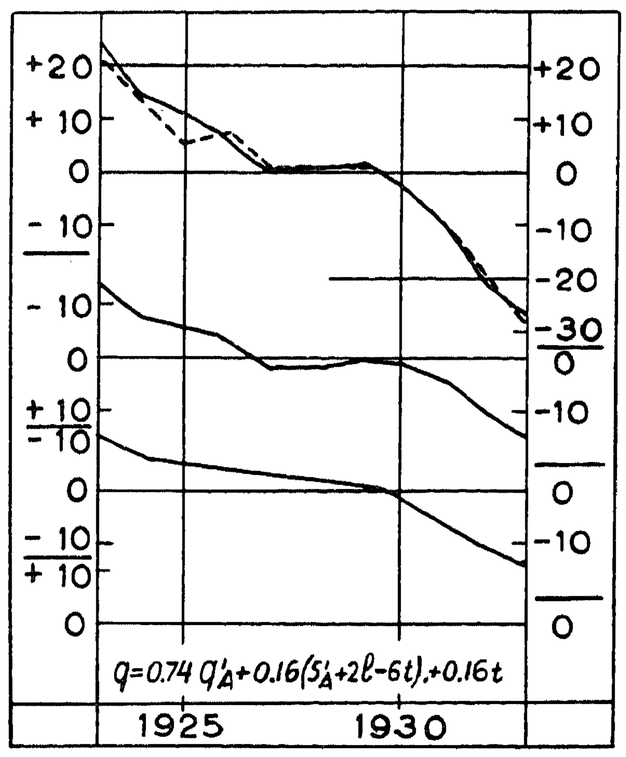

Fig. 3.

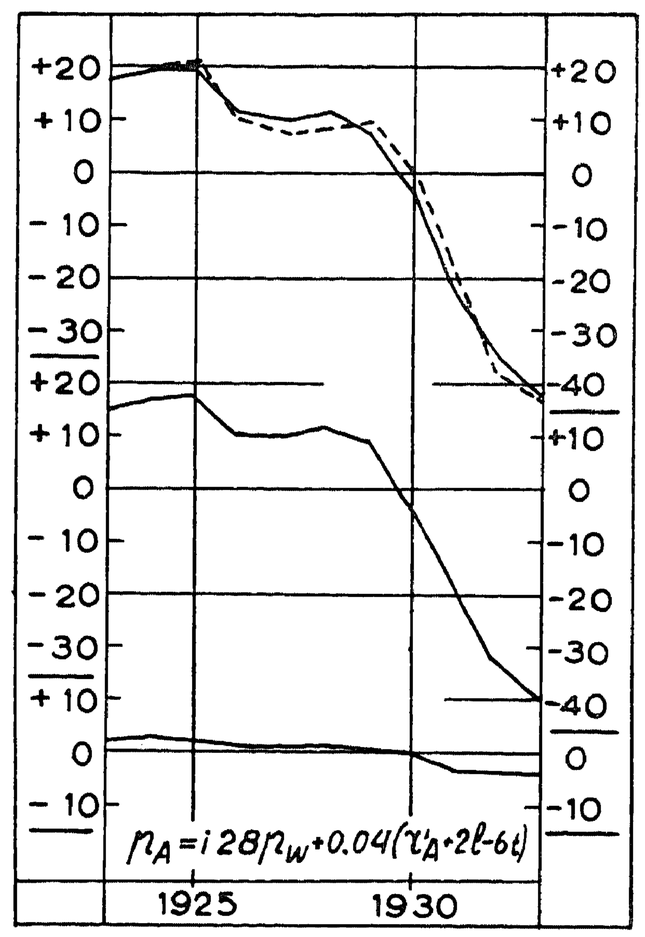

Fig. 4.

Fig. 3. Calculation of the price level of producer goods from the price level of imported producer goods, production costs, and a trend.

Fig. 4. Calculation of the price level of exports from the world price level and production costs. An explanation of the formulae used is given in the text.

It will undoubtedly be argued that the fact that new processes become known will exert a considerable influence on investment. This influence is not denied at all, but it is not considered to be one of the systematic influences. The fact that important new processes become known is related only in a very slight degree to the growth of economic variables and can often be considered as economically incidental.

Another factor which plays a part in determining the quantity of investment is, in the opinion of many, the rate of interest or the rates of interest at which money can be obtained. In this respect the following can be noted: In analysing the influence of the rate of interest on short-term loans, we find, by means of a statistical investigation car-

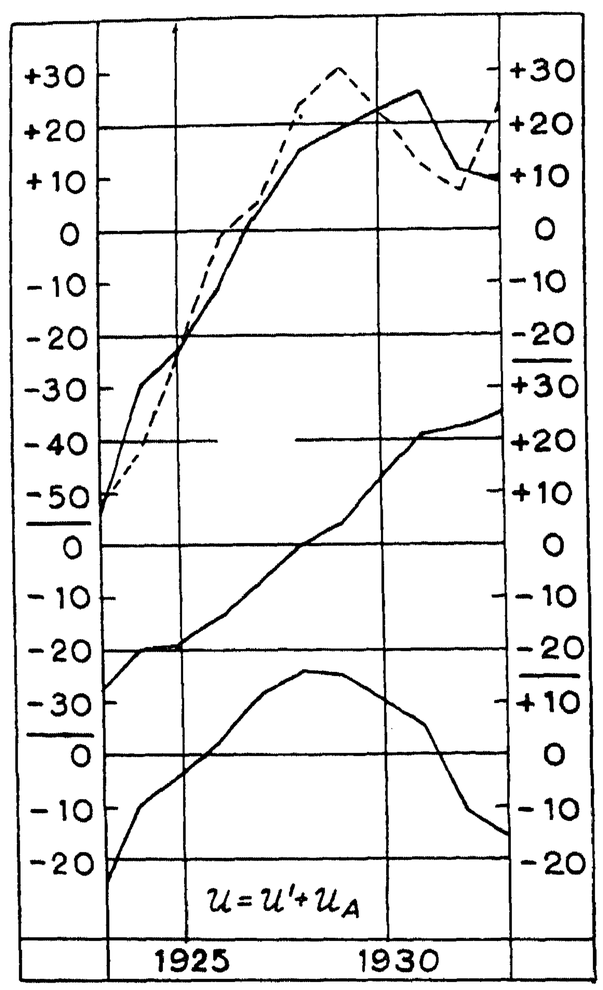

Fig. 5.

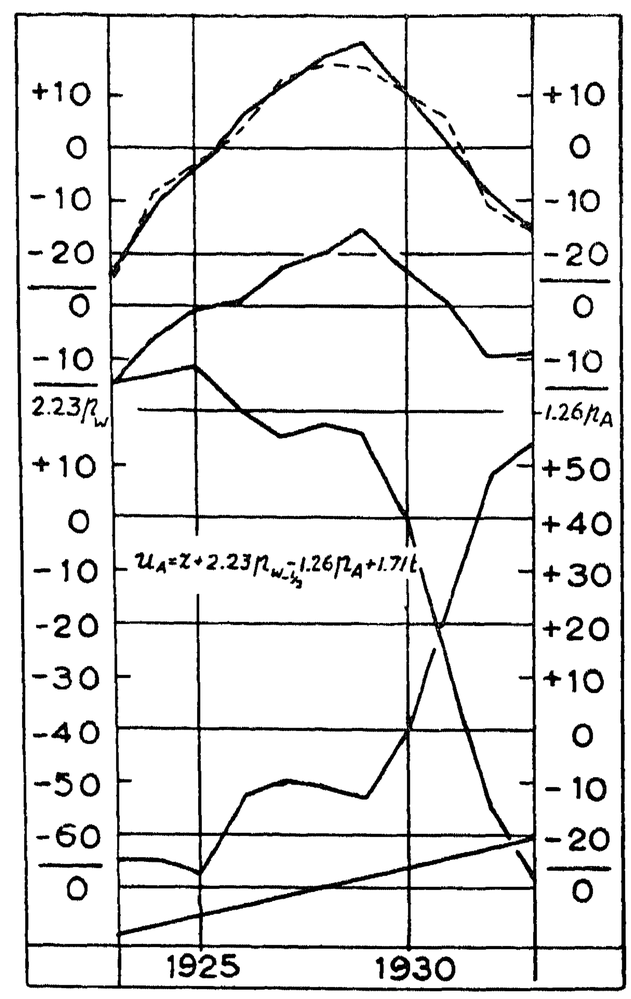

Fig. 6.

Fig. 5. Calculation of the production of consumer and export goods from domestic and foreign sales.

Fig. 6. Calculation of foreign sales from the volume of world trade, world price level, Dutch export price level and a trend.

ried out in the same way as for the other equations, that such an influence is very slight. This is a consequence of the relatively slight share which this type of interest cost represents in total investment costs. The same is found with regard to the rate of interest for long-term loans, a fact which can probably be explained by the slight amplitude of the fluctuations in this rate of interest. Finally, we might think of the funds that are absorbed by the enterprises through the issuing of shares. The "interest" which is obtained from this withdrawal of capital cannot be indicated accurately. We could say, however, that this capital is acquired the more "advantageously", the higher share prices

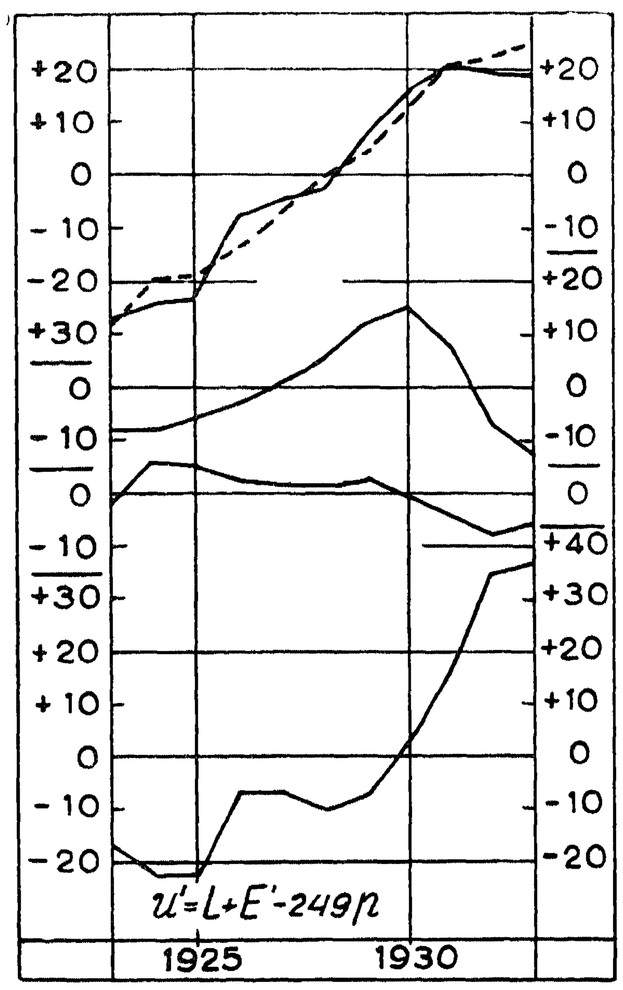

Fig. 7.

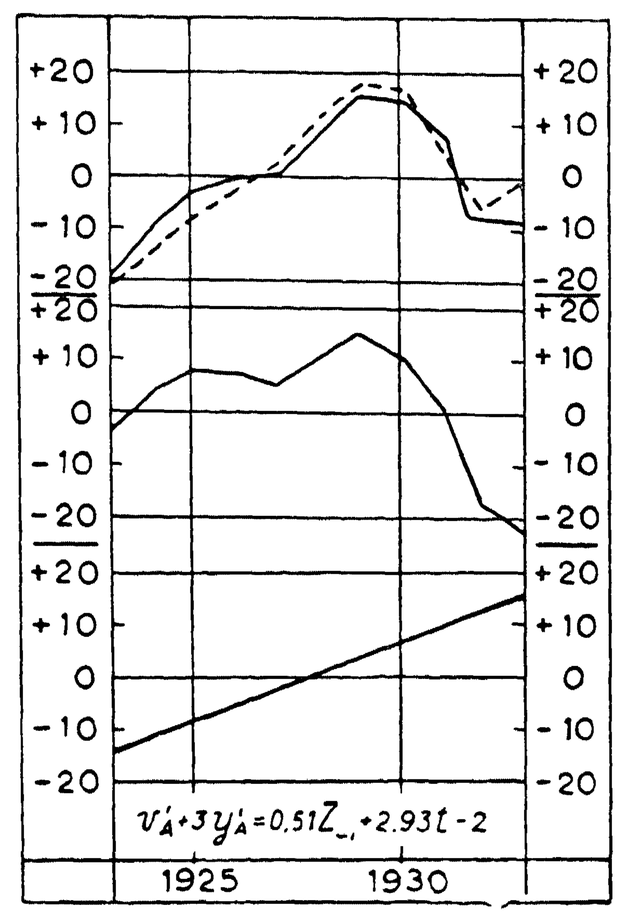

Fig. 8.

Fig. 7. Calculation of domestic sales from wage income, spent part of non-labour-income and price level for consumer goods.

Fig. 8. Calculation of investment volume from profits of the previous year and a trend.

(For a further explanation see the footnote to Figs. 1–4 and the text.)

are. High share prices, however, are always present when profits are high: there is a very strong parallelism between both these two variables. Therefore the influence of interest on the volume of investments cannot be separated from the influence of profits already mentioned. Accordingly the assumption which has been made with respect to this equation would seem acceptable to me. We can see from Fig. 8 that it is in reasonable accordance with the facts, if it is understood that we must add to the line which represents the influence of profit (the line $0.51\ Z_{-1}$) a so-called "trend component" (the bottom line in the Figure). This line should probably be explained by the slow technical and structural changes. These give rise to the fact that, given equal earning power, increasingly larger investment quantities will be required.

The second group of equations which explain the fluctuations of the physical quantities could be called *technical equations*.

Equation (9) gives the relation between the *quantity of labour a—b* which is used in all stages for the production of consumer goods, and the quantities of raw materials imported for consumer goods used for finished consumer goods. In this connection it has been assumed that perhaps 5 times as much labour is used for domestic products as for imported finished products. The result is shown in Fig. 9; we see that a good correlation is obtained if we approach *a—b* by means of the expression $0.2\ u'_A + x'_A$, and a trend component of very small significance.

Equation (10) gives a similar relation with regard to the *production equipment*. Only in this case, in view of the absence of retail trade it has been taken for granted, for simplicity's sake, that labour is required only to process raw materials (Fig. 10).

Equation (11) is a *technical relationship between raw materials and finished products in consumer goods*. The coefficients, which have also been found with the aid of correlation calculation, have a ratio which is quite acceptable: thus it would seem that about $2^1/_2$ times as much value is added to imported raw materials before they reach the consumer than is the case with finished consumer goods. The best correlation is obtained if the quantity of raw materials is multiplied by 4.35, and the quantity of products imported by the figure 1.72 which is about $2^1/_2$ times smaller. These figures moreover imply that the total value at retail prices is about 4.35 times as great as the

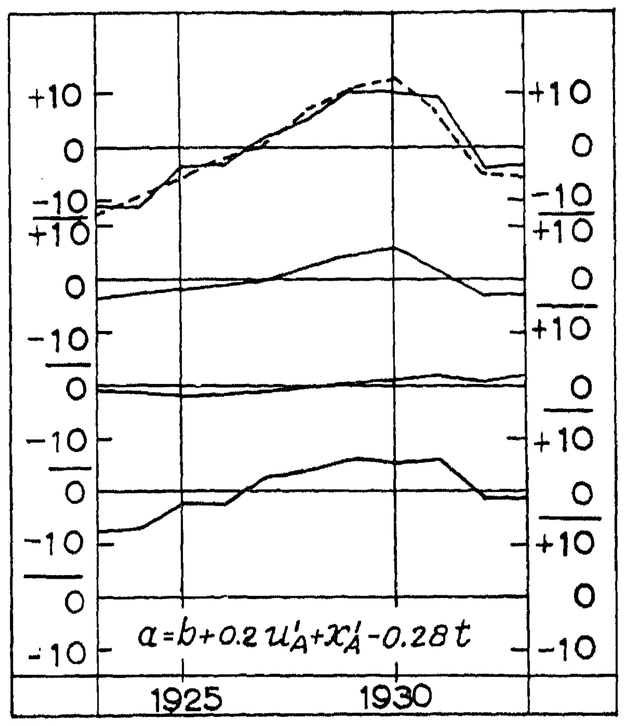

Fig. 9.

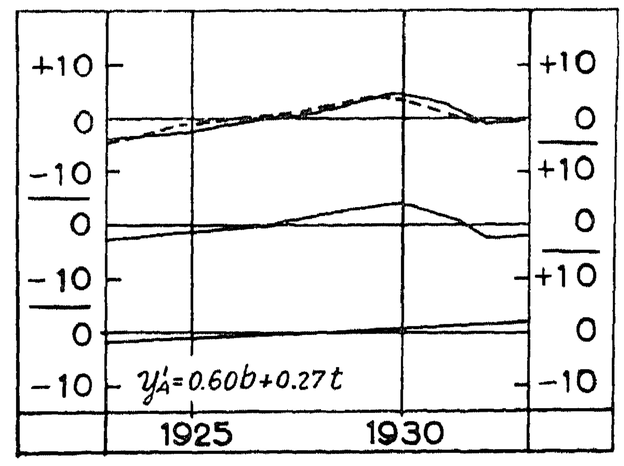

Fig. 10.

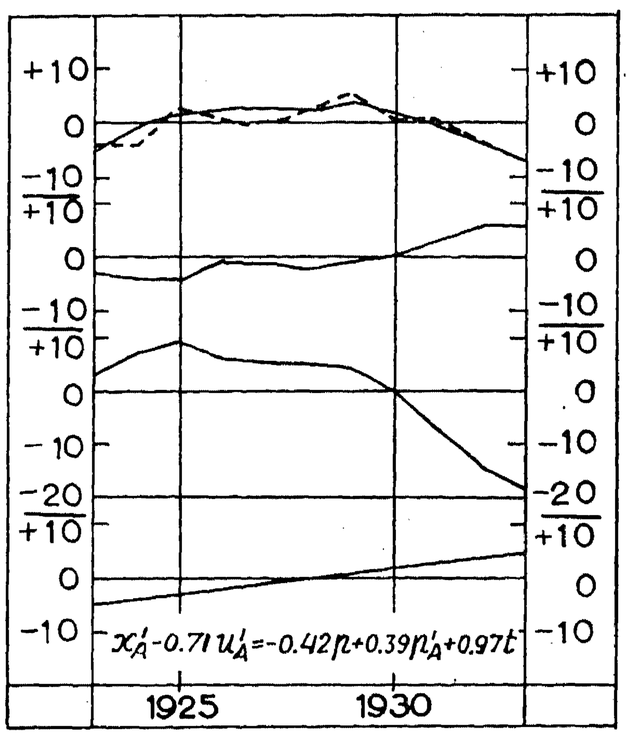

Fig. 12.

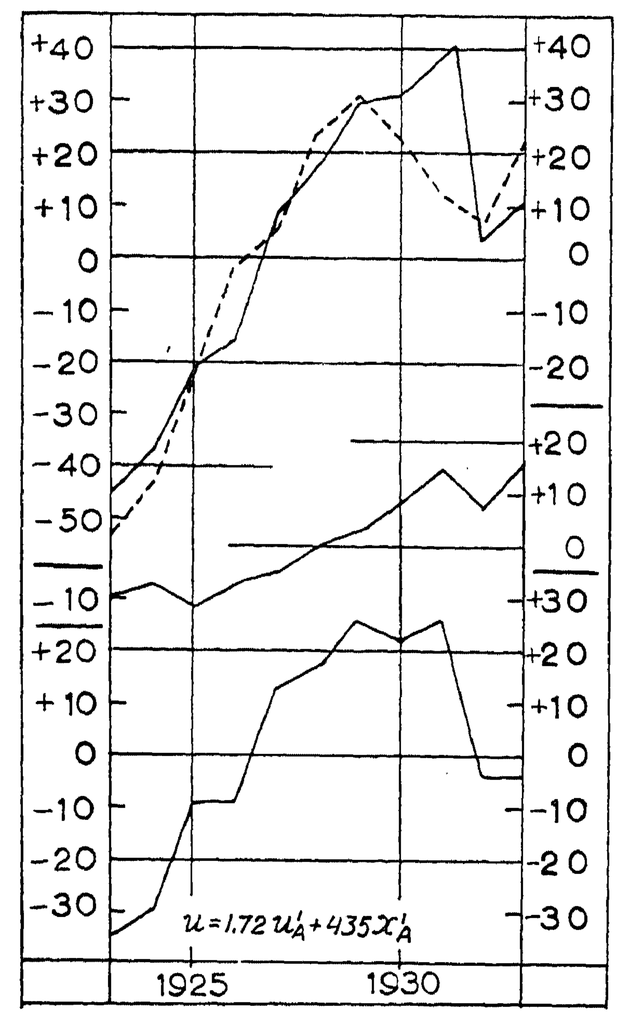

Fig. 11.

Fig. 9. Calculation of employment from "investment employment", imports of processed consumer goods, imports of raw materials for same and a trend.

Fig. 10. Calculation of imports of raw materials for the investment goods industry from the "quantity of investment labour" and a trend.

Fig. 11. Calculation of the production of consumer goods and export goods from the imports of finished consumer goods and the imports of raw materials for same.

Fig. 12. "Competition equation" for consumer goods. (See text; about equivalent to the calculation of the import ratio between raw materials and finished products from the ratio between domestic and foreign prices).

(For a further explanation please see the comments to Figs. 1–4 and the text).

value of the raw materials used in the manufactured products. With respect to imported goods, the value at retail prices is about 1.72 times as great as in the import value. It will perhaps give cause for surprise that we repeatedly speak of value here, while we are concerned with quantity indices. However, the average value over the entire period 1923–1933 is always meant. These figures are the ones which have been selected as a basis for the units in which the quantities have been measured.

Perhaps some readers will not find the correlation shown in Fig. 11 to be very satisfactory. It is indeed considerably smaller than in most other cases. This can be partly explained by the very large magnitude of the figures we are using (the average of the series u is over 300) which makes the relative errors not so very important. Furthermore the index u is fairly primitive, and a certain amount of deviation can easily occur through stock formation of raw materials.

The third group of equations we call the *competition equations*. They show how sales are distributed over the goods which are manufactured in this country and goods which have been imported. There is one for consumer goods and one for production equipment.

The first equation (12) states that the difference between the imported finished products and imported raw materials (converted into one single average quantity in order to make comparison possible) is inversely proportional to the Dutch price level and directly proportional to the price level of the imported consumer goods. A relation has not been assumed between the left side of this equation and the *difference* between both price levels because the p and the p'_A are not entirely comparable: the p is the index of the cost of living while the p'_A relates to the wholesale value of the articles imported (Fig. 12).

In the second competition equation (13) which relates to production equipment, this relation has been possible; the indices q and q'_A can thus be compared (Fig. 13).

Explanation of the Movement of the Value Variables

Equation (14) is nothing but an identity: the wage total is equal to the product of the wage rate and the quantity of labour performed. This would, written in full, have looked as follows:

$$\bar{L} + L = (\bar{a} + a)\,(\bar{l} + l)$$

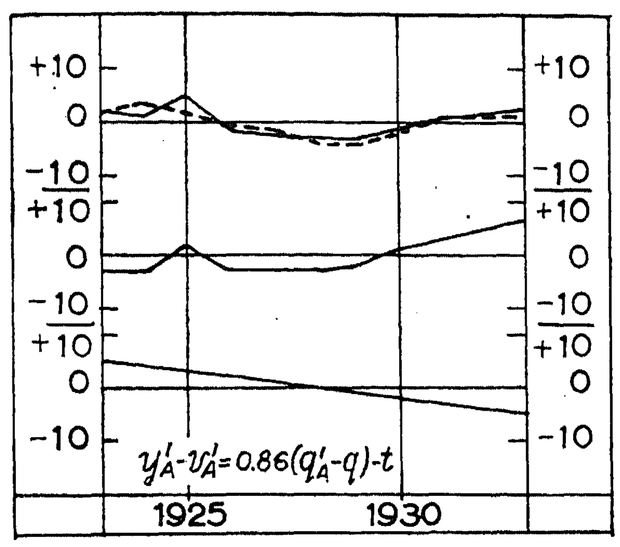

Fig. 13.

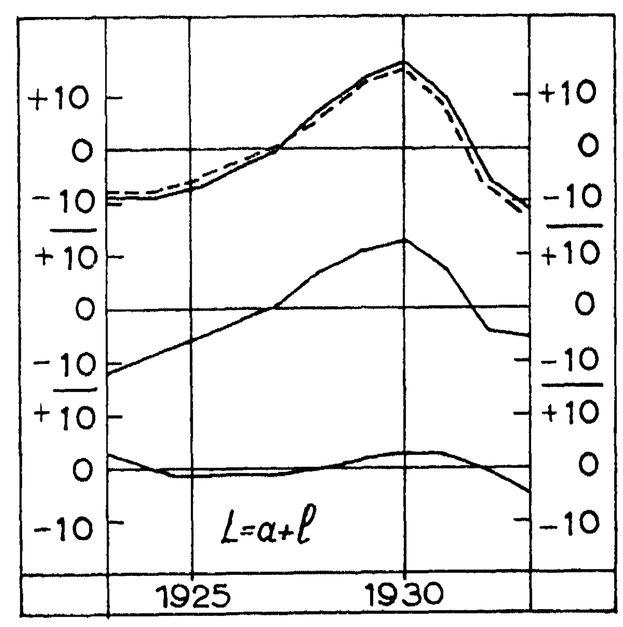

Fig. 14.

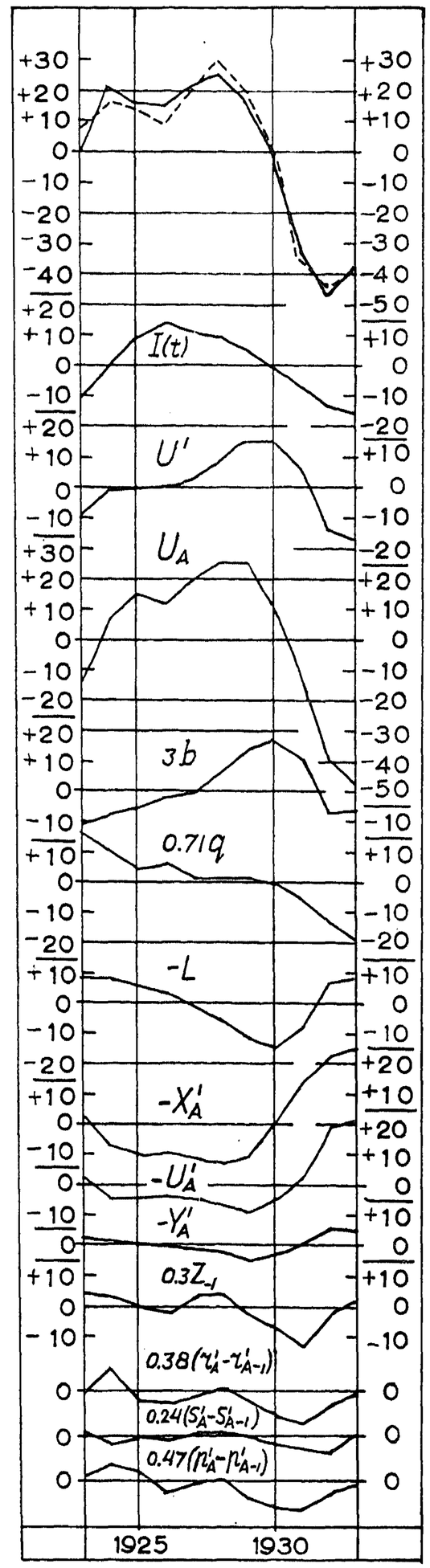

Fig. 15.

Fig. 13. "Competition equation" for production equipment (see commentary Fig. 12 and text).

Fig. 14. Calculation of total wages from employment and day wage.

Fig. 15. Calculation of profits (incl. other non-labour income) for the entire Dutch economy.

(Compare for a further explanation the commentary to Figs. 1–4 and the text.)

or elaborated

$$\bar{L} + L = \bar{a}\bar{l} + \bar{a}l + a\bar{l} + al.$$

As we find that the normal values of $\bar{L}$ and $\bar{a}\bar{l}$ also prove to be equal we are left with

$$L = \bar{a}l + a\bar{l} + al,$$

in which $\bar{a} = \bar{l} = 1$, because of the choice of the units, while al has been omitted as a term of the second order; thus equation (14) is obtained (Fig. 14).

Equation (15) indicates how *profit (including all other non-labour income)* is calculated. In this connection the entire economy of the Netherlands is considered as one unit. We find first of all in the formula the terms representing the joint "static" incomes I, which are drawn from enterprises operating abroad (incl. those in the colonies) and to which are added bankers' and shippers' services rendered to foreigners. In the second place we find the "static" terms which pertain to domestic enterprises. These reflect only the value of all products, from which has been deducted the value of all raw materials (including consumer goods imported in a technically finished stage). With respect to all these goods, it has been assumed that the quantity of manufactured production equipment shows fluctuations proportional to the number b but 3 times as intensively (as the labour factor in the value of production equipment can be considered to be about 1/3). In the third place we find in the formula for Z also a number of "dynamic" terms; these represent calculated income derived from price and quotation movements during the past year. Examples of such income components are, on the one hand, speculation profits (speculation both in goods and securities) and, on the other hand, fictitious income arising from calculations based on historical cost price. Moreover, it has also been taken for granted that the quotations of domestic securities run parallel to Z, whilst quotations of foreign securities have been assumed to run parallel to the world market prices of raw materials. The mutual relationships between these several parts of "dynamic" income are difficult to determine with correlation analysis, because the movements of Z and of the prices of raw materials were almost parallel during the period 1923 – 1933. It is remarkable that the difference between Z and the "static" terms should show so closely

the behaviour expected of the "dynamic" terms. This tendency, to a certain extent, renders the hypothesis of the dynamic terms acceptable, and even probable (equation Fig. 15).

An estimate of the relative influence of the dynamic terms for domestic or foreign income (*i.e.* whether speculation and calculation profits on raw materials and foreign securities on the one hand, or domestic securities on the other) has been attempted by trial and error in two ways. On the one hand rough estimates have been made of the size of the raw materials quantities on which these profits might have been made. It is almost impossible for these to be larger than half a year's consumption of imported raw materials for consumer goods and finished consumer goods, and one year's consumption with regard to imported raw materials to be used to manufacture production equipment. Therefore, they have been taken at that amount. The ratio of domestic speculation profits to speculation profits on foreign securities has been estimated in a very indirect manner. We find that if domestic securities were relatively important, Dutch economic life would show an extraordinarily heavy cyclical movement with a two-year period; but this has never been ascertained *de facto*. This is discussed further in section 5. However, if about 2/3 of the speculation profits on securities were obtained on foreign holdings, these heavy fluctuations would not be present. On this basis the ratio was assumed.[9]

The equations (16) to (18) relate to non-labour income and its utilization.

Equation (16) expresses the fact that total non-labour income actually earned shows the same fluctuations as Z, with two differences. The fluctuations are smaller (reservation policy), and they are somewhat delayed. (A period elapses between the "earning" of the income and paying the corresponding dividends, gratuities and interest). The delay averages about 4 months (the influence of the current year is 0.48, as against the one of the previous year 0.20) which is plausible when we think of the large number of small enterprises and of interimpayments and such like.

As far as the utilization of this income is concerned we have worked with a simple hypothesis. It is taken for granted that the amount of

[9] The concept domestic securities refers here to securities quoted exclusively domestically.

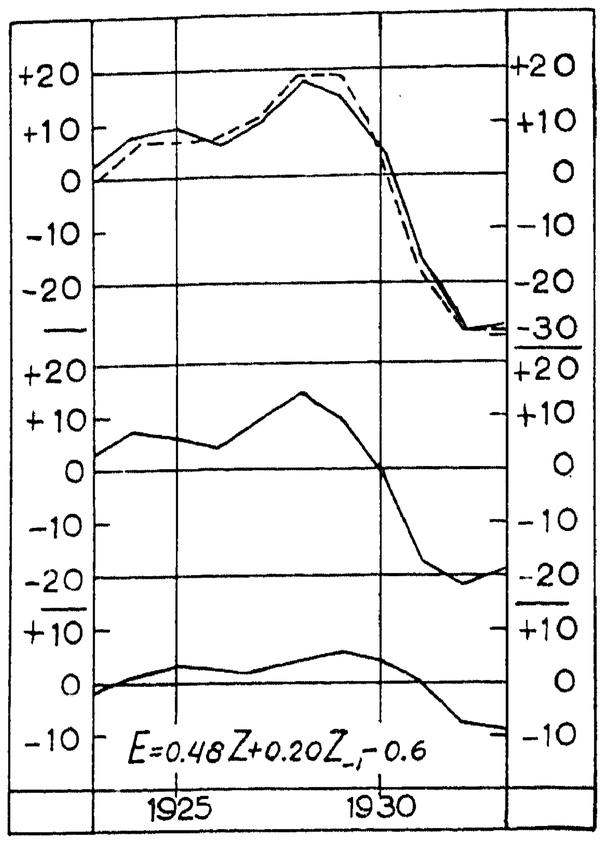

Fig. 16.

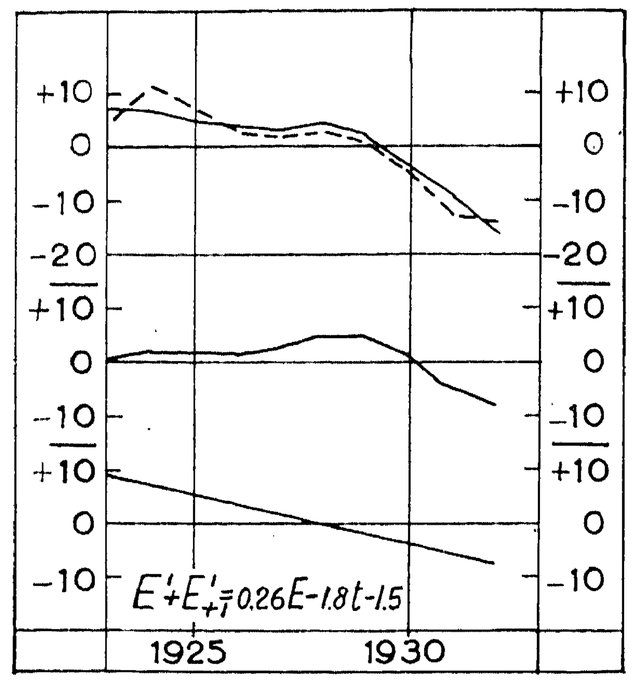

Fig. 17.

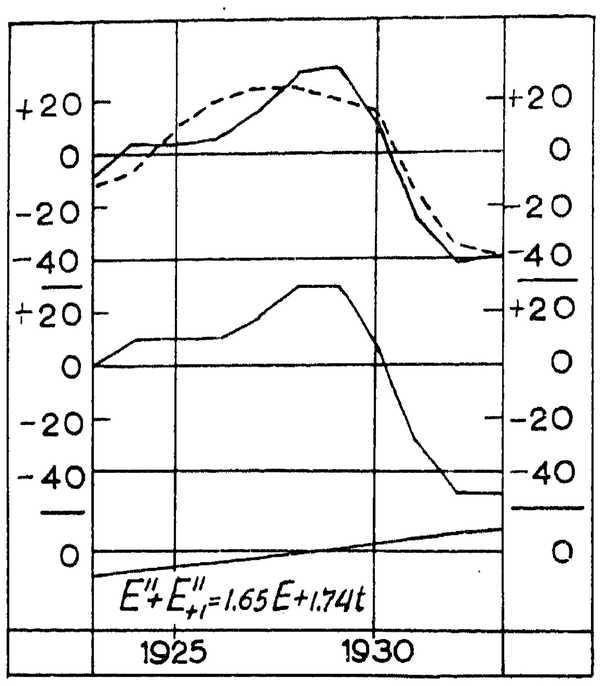

Fig. 18.

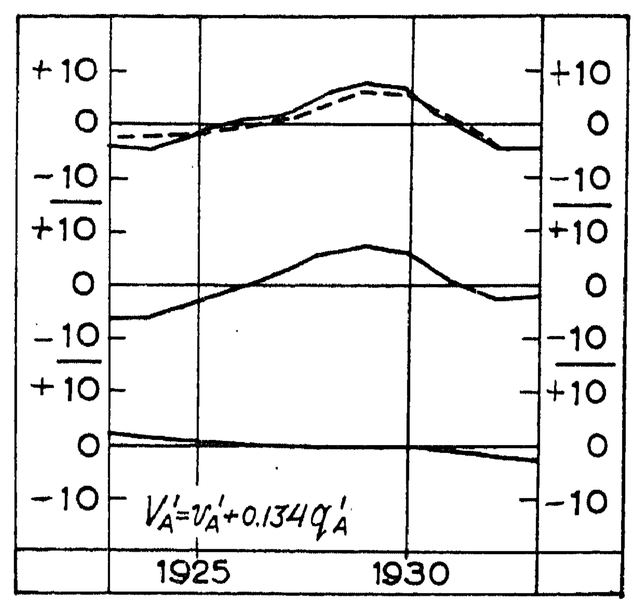

Fig. 19.

Fig. 16. Calculation of non-labour income (excluding the non-distributed profits) out of "profits" and the "profits" of the previous year.

Fig. 17. Calculation of the spent part of non-labour income out of the entire non-labour income (with six months' lag).

Fig. 18. Calculation of the part saved or hoarded in a manner analogous to the one shown in equation (17).

Fig. 19. Calculation of the value of imported production equipment from quantity and price.

(For further explanation compare the commentary to Figs. 1–4 and the text.)

income saved depends only on the amount of total non-labour income. The influence of the rate of interest has not been included because, in the first place, several influences which might be exercised by the rate of interest are conflicting and, in the second place, because the figures do not indicate the direction of the final influence. Naturally this part of the analysis is very rough and there is considerable need for detailed

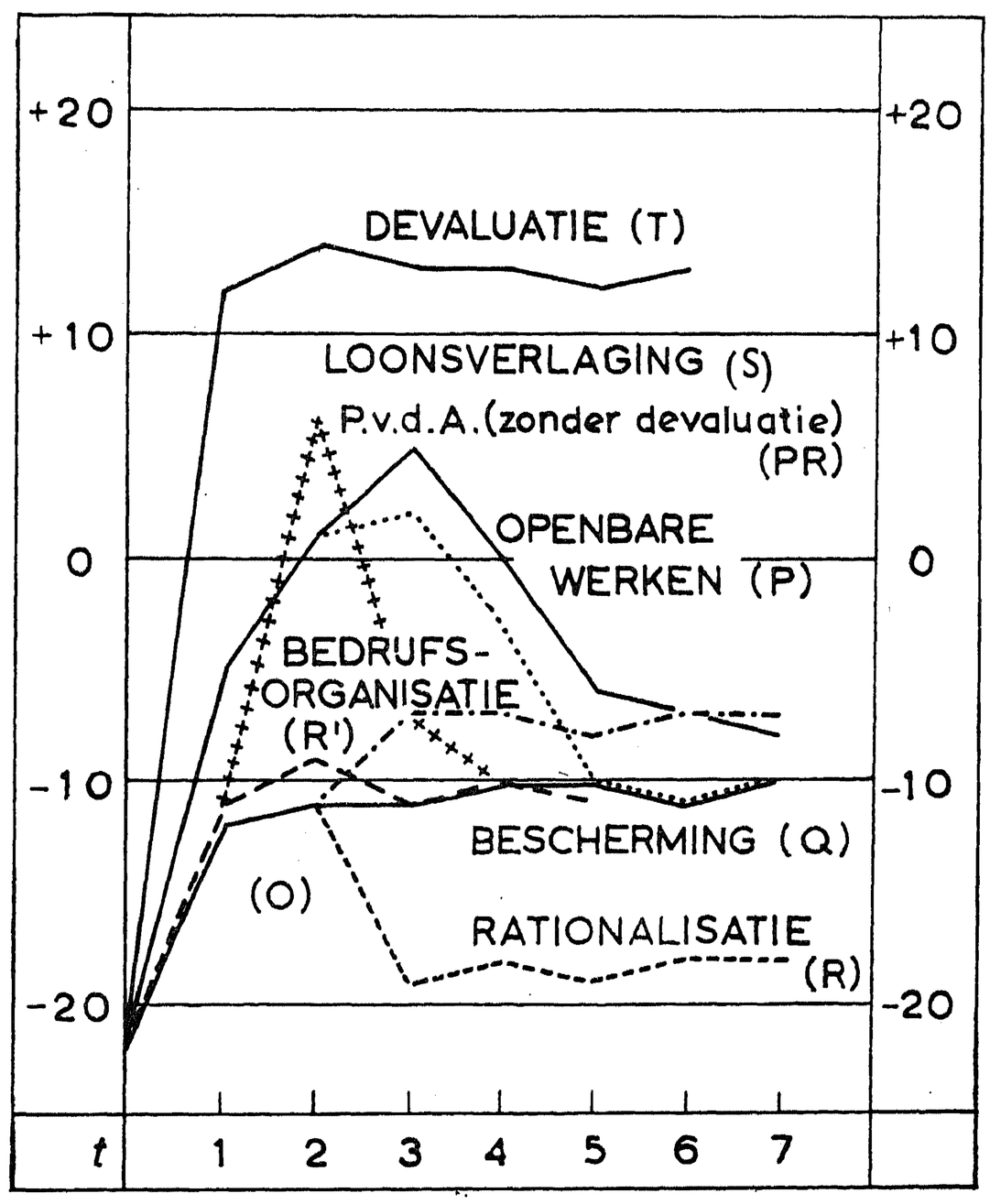

Fig. 20. Development of employment under different types of economic policy. The various policies are indicated by short and loose slogans or devices. A precise description (a definition) of these devices is given in the text (section 6) and in Table VI under the symbols indicated. Of course, the volume of the changes in employment depends upon the extent to which each of the measures adopted is applied. This is indicated and discussed in the text.

observations. Furthermore a lag of about six months[10] has been assumed between receipt of income and expenditure or savings.

The *expenditure equation* (17) and the *savings equation* (18) were originally determined separately by means of a correlation calculation. The coefficients thus found were slightly different from the values indicated here. The latter have been found by requiring that the sum of the coefficients for E appearing in both equations, should be equal to 2. This was achieved by a small increase in each coefficient (see Figs. 17 and 18).

The equations (19) and (20) up to (24) inclusive are all identities, illustrating the fact that the value of a certain kind of goods is equal to its quantity multiplied by its price. (These equations have also been expressed in linear form.) For four of the five product flows which have been studied, one of the three variables mentioned has been calculated with the aid of the other two (see the table concerning the manner of calculation). These equations thus are automatically fulfilled. With regard to the fifth goods flow (the one pertaining to raw materials imported for the manufacture of production equipment) we get a fair result (Fig. 19).

Equation (20) states that the value of all consumer goods is equal to the sum of wages and the spent part of the non-labour incomes. It could also in view of equation (7), be written in the same form as the five previous equations. It would then state that the value of the goods consumed is equal to the product of the quantity and the price of these goods.

5. THE RELATION BETWEEN THE VARIABLES: THE GENERAL PICTURE OF THE MOVEMENT

In the previous section we have recapitulated for all economic variables included in our analysis, the main immediate relations which cause the systematic changes in these variables. These relations could also have been summarized in a somewhat different manner. In section 4 an indication has been given of the other variables by which these economic quantities are directly influenced. One might also wonder on which other variables a given qyantity, *e.g.* wage, exercizes its influence. Then we have only to check in which equations wages appear

[10] The influence of this hypothesis however is very slight.

as (partly) determining factors. A glance at Table II shows this to be the case in the following equations:

2, 3, and 4 where wages influence prices as an element of cost; 14 where it influences the total wages (and therefore purchasing power).

Similar remarks could be made with regard to other variables. As economic reasoning is usually set up in this way, it seemed proper to me to demonstrate in this manner that there is no real distinction, in principle, between the method followed here and customary economic reasoning. There is only the difference that in this paper all relations are expressed in numbers and that only the chief immediate causal links (about forty) are included: these however are presented consistently!

The aim of this section is to step from the direct relations to the indirect ones, in order to find the result of a complete series of successive causal connections. This also takes place in economic reasoning. Moreover it is nothing but repeatedly applying the relations already mentioned in motley order. This process is complicated and, for the reasons already enumerated, will be done with the aid of mathematics. Let us put it in this way: the relations discussed in section 4 are now thrown into the mathematical machine and the result is ejected from the machine, more or less ready-made. The reader not versed in mathematics can be assured that this machine process is uninteresting, in so far that, economically speaking, nothing new is added. All economic premises are to be found in section 4 and economic criticism should therefore be directed towards that section. The non-mathematical reader will furthermore forgive me for discussing in this section a few more problems which, in my opinion, should not escape comment, in spite of the fact that they often sound more or less mathematical. The matters which follow here, however, cannot be omitted because they are in the nature of the problems we are dealing with here. The close relations we observe in an economy, between such a large number of variables, brings some need for a strictly logical arrangement, which naturally resembles some of the techniques applied in physics of complicated "systems". If they are given a starting impetus in certain points they show strange wave-like movements.

The economic model shows a certain similarity. If the initial situation is given, all subsequent systematical movements can be cal-

TABLE II

SURVEY OF THE ELEMENTARY EQUATIONS

1. $l - l_{-1} = 0.27\,(p_{-1} - p_{-2}) + 0.16\,a.$
2. $p = 0.04\,p'_A + 0.15)\,r'_A + 2\,l - 6\,t) + 0.08\,u.$
3. $q = 0.74\;q'_A + 0.16\,(s'_A + 2\,l - 6\,t)$
4. $p_A = 1.28\,p_W + 0.04\,(r'_A + 2\,l - 6\,t).$

5. $u = u_A + u'$
6. $u_A = z + 2.23\,(p_W)_{-0.25} - 1.26\,p_A.$
7. $u' = L + E' - 2.49\,p.$
8. $v'_A + 3\,y'_A = 0.51\,Z_{-1}.$
9. $a = b + 0.20\,u'_A + 0.98\,x'_A.$
10. $y'_A = 0.69\,b.$
11. $u = 1.72\,u'_A + 4.35\,x'_A$
12. $x'_A - 0.71\,u'_A = -0.42\,p + 0.39\,p'_A$
13. $y'_A - v'_A = 0.86\,(q'_A - q).$

14. $L = a + l.$
15. $Z = I + U' + U_A + 3\,b + 0.71\,q - L - X'_A - U'_A - Y'_A +$
$0.24\,[s'_A - (s'_A)_{-1}] + 0.38\,[r'_A - (r'_A)_{-1}] + 0.47\,[p'_A - (p'_A)_{-1}] + 0.3\,(Z - Z_{-1}).$
16. $E = 0.48\,Z + 0.20\,Z_{-1}.$
17. $E' + E'_{-1} = 0.26\,E_{-1}.$
18. $E'' + E''_{-1} = 1.74\,E_{-1}.$ boarding
19. $U_A = u_A + 0.88\,p_A.$
20. $U' = L + E'.$
21. $U'_A = u'_A + 0.58\,p'_A.$
22. $V'_A = v'_A + 0.13\,q'_A.$
23. $X'_A = x'_A + 0.41\,r'_A.$
24. $Y'_A = y'_A + 0.13\,s'_A.$

culated with the aid of the described system of equations. Thus, as we have already seen, a systematic movement is one which is created without new outside disturbances. The non-systematic movements must be superimposed. They will usually not take place in a previously determined direction. As stated already, I limit myself, in accordance with general usage, to a study of the systematic movements.

The initial situation which has to be taken as a basis for a study of

the further movements of the system should, however, be known in such a way that we know—or at least approximately know—how large in this situation the deviations are, shown by a number of variables, from their equilibrium value. It is not sufficient that we know the value, expressed in the normal manner, we should also know how far it is above or below the equilibrium value. For all "external" quantities introduced we should know, in the first place, the following:

p'_A the price level of the consumer goods imported;
q'_A the price level of the production equipment imported;
r'_A the price level of the imported raw materials for consumer goods;
s'_A the price level of imported production equipment;
p_W the world price level in general;
z the size of world exports;
I the incomes from enterprises operating abroad, *etc.*

Moreover we should also know the deviation from equilibrium values for a few of the internal variables. Not of all, because there are relationships which we should not forget. Those internal variables which have to be known can be determined only after all purely simultaneous relations have been eliminated.

The reader is requested to assume that this has taken place according to the rules of mathematics.

This elimination takes place after the numerical values for the external variables have been supplied. This greatly simplifies the calculations.

Determining the equilibrium values on which our analysis is based does not take place without some arbitrariness. This arbitrariness, however, is not very serious with regard to the validity of the conclusions of this report.

Generally speaking the equilibrium value can only be determined when we know the relations applying at the moment of observation. The relations which we have taken as starting-point, however, are the relations which applied, on the average, during the years 1923-1933. With regard to a large part of the relations this will still be approximately true. In others some shifts have occurred.[11] These have resulted, at the same time, in a change of the equilibrium position.

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[11] I have assumed that this affected only the constant term and not the coefficients of the equations concerned. Taken strictly this will be the case only if a number of the govermental measures to cope with the present slump were again removed.

We can now do two things. Either continue to measure in the old way but then add (additive) terms to a few of the equations which indicate the shifts. This shift presumes that all quantities for the year 1935 are already known, which is not the case, especially not with Z, E, U' and a few other quantities. It is also possible to start measuring from the new point of equilibrium in that case; the latter has to be determined by estimation. We have proceeded in this way here. The state of equilibrium assumed thereby is the situation which the writer —usually on the authority of others—assumes would be established as cyclical equilibrium by the present "data", if the forces at work had a sufficiently long period of influence.[12]

We now assumed that, at present, the following deviations from this new equilibrium are dominant (in the units assumed earlier for each quantity).

p'_A and q'_A	prices of imported finished products: —5 %;
r'_A s'_A	prices of imported raw materials: —10 %;
p_W	world price level: —5 %;
z	volume of world trade: —5 (*i.e. ca.* —5 %);
I	incomes from enterprises working abroad—10 (*i.e.ca.* 25 %).

We repeat, however, that with respect to the conclusions reached in our further argument it is not serious if these values should be chosen somewhat differently.

In accordance with the premises of the problem propounded, these quantities have been taken as constant figures. Furthermore, as stated, all variables have been eliminated which can be eliminated with the aid of simultaneous relations (relations in which no influence of the past is at work; *i.e.* where no lag has been assumed). This gives the possibility of expressing all internal quantities in the simultaneously prevailing wage rate as well as the 4 values of internal quantities which were applicable at earlier dates, namely the wage rate, the cost of living, the "profit" of the previous year, and the cost of living of two previous years. The equations obtained are those given in the following table (see Table III).

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[12] We can also interpret in this way, at least in a number of theoretically important cases, the definition of equilibrium development given earlier. This is not the place to elaborate on this, however.

Nr		Coefficients of the terms with:											
		l	l_{-1}	$(p_{-1}-p_{-2})$	Z_{-1}	O	P	Q	R	R'	PR'	S	T
*25	$p=$	3.12	— 2.77	— 0.75	—0.08	— 1.65	— 3.90	— 2.75	— 2.35	— 6.85	— 9.1	12.15	+ 3.0
26	$q=$	0.32				— 5.3							
27	$p_A=$	0.08				— 6.8	— 6.8	— 6.8	—11.8	—11.8	—11.8	— 6.8	+32.8
28	$a=$	6.25	— 6.25	— 1.69								+31.2	
29	$b=$	—0.10			0.184	0.094	+ 5.17	0.094	0.094	0.094	5.17	0.094	+ 1.0
30	$u=$	35.2	—34.66	— 9.36	—1.02	+ 0.64	—27.46	—13.36	53.94	— 1.36	—29.46	172.2	— 13.0
31	$u_A=$	—0.10				— 2.58	— 2.58	— 7.58	— 1.28	— 1.28	+ 3.7	— 7.58	— 9.4
32	$u'=$	35.3	—34.66	— 9.36	—1.02	+ 8.22	—24.88	— 5.78	55.2	— 0.08	—33.18	181.0	— 3.6
33	$u'_A=$	8.51	— 8.25	— 2.23	—0.243	+ 1.27	— 5.43	—15.63	12.07	— 1.13	7.83	42.5	— 10.3
34	$v'_A=$	0.206			0.127	— 0.195	+ 3.20	— 0.195	— 0.195	— 0.195	+ 3.20	— 0.195	— 2.1
35	$x'_A=$	4.75	— 4.69	— 1.27	—0.14	— 0.36	— 4.16	+ 3.14	15.64	0.14	— 3.66	23.14	1.1
36	$y'_A=$	—0.07			0.127	0.065	3.565	0.065	0.065	0.065	3.565	0.065	0.7
37	$L=$	7.25	— 6.25	— 1.69								+31.2	
*38	$Z=$	44.4	—43.6	—11.8	—1.37	—24.6	—50.3	—53.6	31.4	—52.9	—78.6	1.6	56.0[2]
39	$E=$	21.3	—21.0	— 5.7	—0.46	—11.8	—24.1	—25.7	15.1	—25.4	—37.7	+ 0.8	26.9[3]
*40	$E'=$	35.8	—35.3	— 9.5	—1.22	+ 4.1	—34.6	—13.6	49.4	—17.1	—55.8	179.4	3.9
41	$E''=$	[4]											
42	$U_A=$	—0.03				—13.56	— 8.56	—13.56	—11.66	—11.66	— 6.66	—13.56	+ 19.4
43	$U'=$	43.1	—41.5	—11.2	—1.22	+ 4.1	—34.6	—12.6	+49.4	—16.1	—55.8	211.1	3.9
44	$U'_A=$	8.51	— 8.25	— 2.23	—0.243	— 1.63	— 8.33	—18.53	9.17	— 4.03	—10.73	39.6	4.2
45	$V'_A=$	0.206			0.127	— 0.865	+ 2.63	— 0.865	— 0.865	— 0.865	+ 2.63	0.865	+ 0.33
46	$X'_A=$	4.75	— 4.69	— 1.27	—0.14	— 4.46	— 8.26	— 0.96	11.54	— 3.96	— 7.76	19.04	9
47	$Y'_A=$	—0.07			0.127	— 1.225	2.275	— 1.225	— 1.225	— 1.225	2.275	— 1.225	3.3

[1] The purpose of the method of writing used in this table is that the first equation for case O reads: $p = 3.12\,l - 2.77\,l_{-1} - 0.75\,(p_{-1}-p_{-2}) - 0.08\,Z_{-1} - 1.65$; for case P the last term is replaced by -3.90, *etc.* [2] First year 78.0. [3] First year 37.6
[4] The values of E'' can be calculated more simply by another method, by using E' and E.

If we select from this table the equations shown with an asterisk in addition to the numbers (16) and (17) (Table II) of the original system, then we have five equations with five variables (Table V), whilst the remaining equations of Table II only serve to determine the other variables out of those five variables.

From this we find that, in order to know the further systematic movements of the system, we have to assume as given the values of a few quantities during the two years previous to the base year. The figures assumed in this report are mentioned below, together with some explanations.

TABLE IV

ASSUMED INITIAL VALUES

Variables	p_{-2}	p_{-1}	l_{-1}	l	Z_{-1}
Initial values	+2	+2	+18	+16	—40

When determining these values the following considerations have been taken into account. It is assumed that foreign countries are again just about in cyclical equilibrium, for which assumption there are several indications. Furthermore the price and wage figures when introduced into equation (1) should yield a reasonable figure for a and when introduced in (2) they should give a reasonable figure for u. In any case there is a certain arbitrariness in the choice which does not greatly affect the validity of the conclusions reached.

Once these values have been assumed, by means of repeated application of the equations of Table V, we can calculate the entire further development of the variables E', l, Z, E and p while with the aid of equations (26) to (47) we can find all other variables.

In Table V we have given an example of such a calculation; it is the case which would occur if no further measures of economic-political nature were taken or enforced by circumstances and, as will always be done in what follows, by applying the fictitious assumption that external circumstances will not change.

In the following part of this essay we will now show that the development which would occur in the case of certain other kinds of economic policy, can be calculated by making some relatively small changes in the formula equipment. Before we deal with this aspect, however, a few remarks

Table V

The 5 Equations with Five Variables Which Successively Determine Each Other, the Given Initial Values, and the Development of the Calculations in a Concrete Case.

$E' = 0.26\, E_{-1} - E'_{-1}$ . . . . . from equation (17), Table II
$35.8\, l = E' + 35.3\, l_{-1} + 9.5(p_{-1} - p_{-2}) + 1.22\, Z_{-1} - 4.1$ . . . . . from equation (40), Table III
$Z = 44.4\, l - 43.6\, l_{-1} - 11.8(p_{-1} - p_{-2}) - 1.37\, Z_{-1} - 24.6$ . . . . . equation (38), Table III
$E = 0.48\, Z + 0.20\, Z_{-1}$ . . . . . equation (16), Table II
$p = 3.12\, l - 2.77\, l_{-1} - 0.75(p_{-1} - p_{-2}) - 0.08\, Z_{-1} - 1.65$ . . . . . equation (25), Table III

Survey of the processes relevant in case *O*. The several columns are simply calculated successively once the italicized figures are known. These are the data indicated in Table IV as required.

Year	$t-2$	$t-1$	t	$t+1$	$t+2$	$t+3$	$t+4$	$t+5$	$t+6$
$0.26\, E_{-1}'$ for E_{-1} see previous column				— 8	— 7	— 8	— 7	— 7	— 7
$-E'_{-1}$,, E_{-1} ,, ,, ,,				+ 9	— 1	+ 8	0	+ 7	0
E'			— 9	+ 1	— 8	0	— 7	0	— 7
E'			— 9	+ 1	— 8	0	— 7	0	— 7
$35.3\, l_{-1}$ for l_{-1} see previous column			+634	+563	+493	+ 430	+356	+282	+203
$+ 9.5\,(p_{-1} - p_{-2})$,, $p_{-1} - p_{-2}$,, ,, ,,			0	— 4	0	— 9	— 16	— 20	— 8
$1.22\, Z_{-1}$,, Z_{-1} ,, ,, ,,			— 49	— 55	— 44	— 55	— 43	— 52	— 44
-4.1			— 4	— 4	— 4	— 4	— 4	— 4	— 4
$35.8\, l$			+572	+501	+437	+362	+286	+205	+140
l		+ *18*	+ *16*	+ 14	+ 12	+ 10	+ 8	+ 6	+ 4
$44.4\, l$			+709	+620	+541	+449	+355	+255	+173
$-43.6\, l_{-1}$ for l_{-1} see previous column			—784	—698	—610	—532	—441	—350	—251
$-11.8\,(p_{-1} - p_{-2})$,, $p_{-1} - p_{-2}$,, ,, ,,			0	+ 5	0	+ 11	+ 20	+ 25	+ 9
$-1.37\, Z_{-1}$,, Z_{-1} ,, ,, ,,			+ 55	+ 62	+ 49	+ 62	+ 48	+ 59	+ 49
-24.6			— 25	— 25	— 25	— 25	— 25	— 25	— 25

TABLE V (continued)

Year	$t-2$	$t-1$	t	$t+1$	$t+2$	$t+3$	$t+4$	$t+5$	$t+6$
Z		*— 40*	— 45	— 36	— 45	— 35	— 43	— 36	— 45
0.48 Z			— 22	— 17	— 22	— 17	— 21	— 17	— 22
0.20 Z_{-1} for Z_{-1} see previous column			— 8	— 9	— 7	— 9	— 7	— 9	— 7
E			— 30	— 26	— 29	— 26	— 28	— 26	— 29
3.12 l			+50.0	+43.6	+38.1	+31.6	+25.0	+18.0	+12.2
—2.77 l_{-1} for l_{-1} see previous column			—50.0	—44.3	—38.7	—33.9	—28.0	—22.2	—16.0
—0.75(p_{-1} — p_{-2}) ,, p_{-1} — p_{-2} ,, ,, ,,			0.0	+ 0.3	0.0	— 0.7	— 1.3	— 1.6	— 0.6
—0.08 Z_{-1} ,, Z_{-1} ,, ,, ,,			+ 3.2	+ 3.6	+ 2.9	+ 3.6	+ 2.8	+ 3.5	+ 2.9
—1.65			— 1.6	— 1.6	— 1.6	— 1.6	— 1.6	— 1.6	— 1.6
p	+ *2*	+ *2*	+ 1.6	+ 1.6	+ 0.7	— 1.0	— 3.1	— 3.9	— 3.1
$p - p_{-1}$		0	— 0.4	0	— 0.9	— 1.7	— 2.1	— 0.8	+ 0.8

should be made regarding the nature of the movements which have been found. These movements differ for the various variables of the system. They include monotonic movements and cyclical movements of various lengths and degrees of damping, as could be expected on the basis of general theories regarding this subject. All these different kinds of movements jointly form what could be called the mechanism of the "domestic business cycles" of the Netherlands. These "domestic business cycles" are fictitious to a certain extent: they are the cycles which would occur if nothing changed abroad—an assumption used in this report but not supported by experience. Accordingly a direct empirical check is not possible.

Among the most distinctive characteristics of these "domestic business cycles" we find the following:

a) frequent very short fluctuations lasting about two years;

b) the longer movements in general are not periodical, but move toward a new state of equilibrium. The latter could be expressed in a terminology which might sound more familiar to economists, *i.e.* by saying: with regard to the "domestic business cycle of the Netherlands" as found with our imperfect technique (and accordingly to be considered as provisional) a mechanism as assumed by Schumpeter applies. This author also considers a slump as only a period of readjustment leading to a new state of equilibrium after a strong impulse, the depression as the new state of equilibrium from which society emerges only after a new impulse (*e.g.* of a technical nature).

Not too much importance should be attached to this fact however. The structure of the problems we are concerned with here is such that results of this kind (whether a movement develops periodically or in an asymptotic manner, and how long the period may be) are relatively unreliable. The reason for this is that the calculations involved — the advance calculation of the systematic movement over a period covering perhaps 10 years from a given initial point —actually implies a tremendous extrapolation. A slight change in some coefficients is sometimes enough to turn a periodical into an aperiodical movement and *vice-versa*, of which the first parts almost coincide but whose further development increasingly diverges. The most reliable part is, of course, the extrapolation for the first few years, which is sufficient for the problem now being availed. This extrapolation gives us infor-

mation regarding the direction in which business cycles will develop during the first few years if no disturbing factors arise.

We should like to mention here that the mechanism is most sensitive to changes in the coefficient in the term $Z - Z_{-1}$ in equation (15). When this coefficient is chosen considerably larger than we have now done (this would, through corresponding reduction of the other coefficients, not reduce the correlation of this equation), then very heavy "explosive" fluctuations take place. As the latter are not observed, I have concluded that the coefficient now selected is the right one (compare section 4).

6. THE CONSIDERED ALTERNATIVES OF ECONOMIC POLICY AND THE RESULTS OF THE CALCULATIONS

As stated previously, the formulae developed in the preceding sections may be used, with relatively small alterations, to calculate the developments to be expected in the case of another economic policy. This method is a little rough but, nevertheless, it gives indications of the direction of the effects of a certain policy. Moreover we should remember that this rough method takes into account at least as large a number of factors as can be considered in any line of reasoning.

The economic policies are studied either separately or in combination with each other, in accordance with the suggestion made in section 2.

P) The execution of extra investment projects during a three year period, starting in year $t + 1$, whereby it has been taken for granted, just as in the Labour Plan, that some additional exports (*ca.* 6 %) can be negotiated to pay for the increased imports of raw materials.

Q) The limitation of imports of finished consumer goods.

R) An increase in labour productivity combined with price reduction and without an increase in the production of capital equipment.[13]

R') A reduction of prices without changes in labour efficiency and without wage reductions.[13]

S) A non-recurrent reduction in the wage rate (in year $t + 1$).

[13] It has been assumed that this begins at first in the year $t + 3$, in order, in combination with the case *P* to obtain as true as possible a picture of the complex of measures proposed in the Labour Plan.

T) Devaluation of the guilder, with reprisals on the part of foreign countries.[14]

These different cases correspond, either alone or in combination, with a number of measures which are recommended to combat the depression. We will have to ascertain here whether they are capable of causing a domestic revival without laying too heavy a burden on the balance of payments. Various of these cases can be effectuated along entirely differing lines. Thus for example, the policy mentioned under *P* can be realized both by the community through public works and by private individuals. The latter case is an automatic result of an increase in productivity as meant under *R* when such an increase is possible only by means of an addition to capital equipment. In the same way the price reduction mentioned under *R'* may be the result of greater efficiency in the management of enterprises (possibly business concentration)—for this reason this case has been mentioned immediately after *R*—but *R'* can be reached just as well by reducing monopolistic prices, *etc.*

In this first summary we have not yet discussed the necessary magnitude of the policy measures or instruments. This cannot always be done in an immediately understandable form. It will be done in Table VI and has also been done in the right half of Table III. By way of introduction it should be mentioned that in general the measures have been assumed to be executed to the maximum degree deemed possible. We have commented on this aspect in section 2.

In the terminology of our equations each of the cases *P* to *T* may be very roughly approximated by additional terms, taken as constant, to some of the elementary equations, and also to the derived equations of Table III. In Table VI these changes in the elementary equations are indicated and briefly explained, while the result, after elimination of irrelevant variables, has been stated in Table III. Making use of the method described in Table V now enables us to calculate the successive movements in each of the economic quantities for each of the cases. A number of these figures has been collected in Table VII; most of these figures are shown graphically in Fig. 20. We see that in Table VII, those shifts in the balance of payments are also given which correspond to the cases under consideration. Thus equipped we are

[14] Calculations were made with more and less intense reprisals.

now able to draw a few conclusions regarding the central problem of this report.

O) We find then in the first place that the starting point indicated in Table IV, in the case of a free working of the forces, leads to a (depressive) state of equilibrium which would give 11 to 12 points more employment.

Although the free forces would depress wages further, this would give relatively little gain in employment. The non-labour incomes (in money) also would show little change. The balance of payments will not change its position greatly as far as the current items are concerned.

P) On the basis of such a situation a revival could take place when (as assumed in case *P* and also taken as starting-point of this report section 2), an increase of production for investment starts, either on the part of private persons or on that of public bodies. Case *P* corresponds more to the latter case since no technical improvements in the production process have been assumed. The balance of payments will be influenced somewhat unfavourably during the years of revival; this influence, however, remains within relatively narrow limits (see our commentary in section 2). After the investment period terminates, employment drops again to the initial level. (This is due to the fact that no change in labour productivity has been assumed, and also to the circumstance that the simplifications which we have used, *a priori* eliminate the presence of more than one equilibrium position. This is of lesser importance, however, as far as the reasoning of this report is concerned.)

PR') A more classical revival could take place if a motive for new investment should arise due, for example, to a new invention; or if a technological improvement should come to us from abroad. The development would more or less coincide with the course followed by line *PR'* if there were a particularly strong reason for investment. A similar impulse at a point of time fixed by human will would occur if the combination of measures mentioned in the Labour Plan should be carried out without devaluation. Then a lasting improvement in employment above the previous cases would take place; this improvement would, in the case of a reduction in prices by 5 %, be about 3 to 4 %. The balance of payments will in this case also be influenced unfavourably but also within restricted limits.

TABLE VI

THE TERMS ADDED TO THE ELEMENTARY EQUATIONS IN THE CASES OF VARIOUS ECONOMIC POLICIES

Case	Nr of the equation	Size of extra term on right-hand side	Brief motivation
P	8	+ 14 (during three years)	Due to this addition the investment volume is about Hfl 250 million larger (guilders of 1923/33) than would be invested on the basis of the previous year's profits.
Q	12	—15	This means that in the competition between the imports of raw materials and that of finished products an "artifical" shift is introduced which causes about 30% of the imports of finished products to be replaced by domestic products.
R	2	—5	Because of these changes, the same quantity of consumer goods could be obtained with about 10% less labour and prices would drop by about 5%. Extra capital formation does not take place (equation 8 does not contain an extra-term).
	9	—10	
R'	2	—5	The same price reduction takes place as with *R*, but no reduction in the quantity of labour in the production of one unit product.
S	1	—5 (during one year)	This implies an extra reduction in wages of 5%, to be applied once.
T			In this case it is simpler to indicate that a number of (external) quantities assume another value *e.g.* that all prices in foreign markets rise by 30 points. That is to say $p_A = p'_A = q'_A = +25$, $p_w = r'_A = s'_A = +20$. Moreover I goes up 20 points and therefore $I = +10$. At the same time it is assumed that owing to foreign reprisals exports will be 18 points lower than they would have become otherwise. Therefore in equation 6 an extra term of —18 is introduced on the right side.

Q) Restriction of imports of finished products has in itself few consequences as far as employment is concerned. A further analysis of the calculations shows us that this is due to the fact that rising prices of products exert a counteracting force: owning to this sales possibilities are limited. In this case the balance of payments shows a very favourable change, and when used in combination with *P* it is capable of considerably reducing the unfavourable influence on the balance of payments.

R) Increasing labour productivity without new production of capital goods (for brevity's sake we could say efficiency rise) together with the normal but not completely adequate price reduction has an unfavourable influence on employment. This is to be attributed, in view of the further analysis of the figures, to the fact that the improvement in sales possibilities which arises due to the price reduction is more than offset by the loss of employment due to the rise in efficiency. Here therefore no compensation theory is applicable. If the increase in efficiency is coupled to new investments then employment is increased while those new investments are being made.

In this case the balance of payments shows a slightly more favourable aspect than in case *O* which means that the combination of *P* and *R* gives a very slightly more favourable balance of payments than *P* alone.

R') More favourable in respect of employment is, as was already mentioned in passing above when discussing the combination *PR'*, a price reduction which is not the consequence of expanded labour productivity but of either a reduction in monopolistic prices or increased management efficiency. Actually this depends mainly on the fact that the smaller remuneration of these groups does not mean a reduction of equal size in the purchasing power in the consumer goods market; part of the reduction in these incomes leads to less saving and that is, in times of depression, no drawback as far as employment is concerned. From this it follows that we decidedly must think of a reduction in the income of the well-paid independents; a reduction in the incomes of the distressed peasants or middle-classers would not have the calculated effect in this case. The balance of payments is, in this case, again more unfavourably influenced, although not to a considerable extent and not beyond the acceptable limits.

TABLE VII

THE COURSE OF DEVELOPMENT OF A FEW IMPORTANT ECONOMIC VARIABLES IN THE CASE OF VARIOUS ECONOMIC POLICIES, AS CALCULATED IN THE MANNER DESCRIBED IN THE TEXT (ASSUME A CONSTANT EXPORT POSITION)

EMPLOYMENT. (1 point a little less than 1% of the employment assumed as normal)

Policy	year t	$t+1$	$t+2$	$t+3$	$t+4$	$t+5$	$t+6$	$t+7$	Brief indication of the nature of the policy[1]
O	—22	—12	—11	—11	—10	—10	—11	—10	"Free forces"
P	—22	— 5	+ 1	+ 2	— 3	—10	—11	—10	"Public works"
Q	—22	—11	— 9	—11	—10	—11			"Protection"
R	—22	—12	—11	—19	—18	—19	—18	— 8	"Efficiency rise"
R'	—22	—12	—11	— 7	— 7	— 8	— 7	— 7	"Business concentration"
PR'	—22	— 5	+ 1	+ 5	0	— 6	— 7	— 8	"Labour Plan without devaluation"
S	—22	—11	+ 6	— 7	—10	—10	—11		"Wage reduction"
T	—22	+12	+14	+13	—13	+12	+13		"Devaluation with reprisals"
T'	—22	+19	+21	+20	+21				"Devaluation with strong improvement in the Dutch Indies"

[1] The reader is warned not to interpret these brief indications without consulting the text.

BALANCE OF PAYMENTS (current items; changes in the initial position; 1 point = *ca.* Hfl 17.5 mln)

Policy	t	$t+1$	$t+2$	$t+3$	$t+4$	$t+5$	$t+6$	$t+7$
O	— 2	— 2	— 2	— 1	— 1	— 1	0	+ 2
P	— 2	— 9	—18	—20	—10	— 7	— 4	— 2
Q	+10	+ 6	+ 6	+ 9	+ 8	+ 9		
R	— 2	— 2	— 1	0	0	+ 1	+ 2	+ 2
R'	— 2	— 2	— 1	— 5	— 6	— 6	— 4	— 3
S	— 2	— 3	—28	—22	—13	— 2	0	
T	+24	—17	—19	—21	—21	—18	—19	
T'	+44	— 8	—11	—14	—14			

S) An average wage reduction across the board of 5 % immediately stimulates a strong revival in employment. This is followed, however, after a few years by a drop which leads to the same level as the initial one. It is remarkable that during this revival the balance of payments is influenced most unfavourably.

T) Much more favourable consequences for employment ,as well as for the non-labour incomes, will occur if a devaluation takes place. The difference is striking. It would have been even greater, if we had not assumed severe reprisals on the part of foreign countries at such a strength that in consequence *ca.* 20 % of exports, or around 100 % of the improvement to be expected in exports without reprisals, is cut off. Our attention is drawn to the fact that in this case the balance of payments, after one very favourable year, then becomes more and more unfavourable. The latter obviously occurs less strongly when, as can be seen in the series of figures T' added to the table, it is assumed that the incomes I from enterprises working abroad, interest, *etc.* go up more strongly than was assumed in Table VI. For case T' it has been assumed that $I = +30$, which is fairly high. The unfavourable result will obviously be less extensive than when the percentage of the devaluation is chosen at a lower figure than the one assumed here (*ca.* 25 %). This is not unreasonable either in view of the adaptation already achieved. Here also, a combination with the method of import restriction would have a favourable effect on the balance of payments.

7. RECAPITULATION; WHAT DOES EXPERIENCE ABROAD TEACH US?

The foregoing has demonstrated that our problem is of a most complicated nature. Even with the great simplification used in the commentary, it was necessary to build up an apparatus for systematizing our thoughts in order to evaluate the various influences which make themselves felt. Only a systematizing of the relations such as is attempted here can, in my opinion, lead to fertile discussion. It is hardly conceivable that mutual understanding and further progress are possible without an accurate localisation of the sources of differences in opinion.

In the meanwhile, nevertheless, a number of phenomena have been neglected in this scheme, such as the influence of the rate of interest

on the volume of investments, the influence of stock fluctuations on production, *etc.*

Furthermore there still exists a lamentable lack of the exact information required to do a good job in the analysis outlined here.

Owing to this lack of information, as well as to the parallelism between a number of series, a few of the coefficients in the elementary equations are uncertain. Of some, however, it can be said that, in a first approximation, this does not endanger the conclusions.

A further uncertainty is occasioned by the extrapolation of the calculations into the future. In particular the length of the cycles is an unreliable figure.

Once we take these reservations into account, conclusions can be drawn only with the greatest circumspection. Nevertheless I am of the opinion that these conclusions are considerably more solidly established than many conclusions already published regarding these problems.

The conclusions reached here are that, with a constant demand function and an unchanged price level abroad, a fairly considerable domestic revival of employment can be achieved by means of devaluation. Clearly lesser revivals can be achieved by reducing wages, carrying out public works or by reducing prices without reducing wage rates. A further deterioration of employment is reached if only the productivity of paid labour is increased without producing additional capital goods. Hardly any improvement of employment is attained if our only policy is to apply protection by hampering imports of finished consumer goods.

The balance of payments is most favourably affected by restricting imports of finished consumer goods, most unfavourably by a wage reduction and strong devaluation. In the remaining cases the balance of payments is changed very little. On the basis of the arguments enumerated in section 2, however, a certain deterioration in the balance of payments is acceptable, particularly since the earning-power position of Dutch trade and industry would show less extensive arrears with regard to foreign countries, in the case of devaluation.

The first question put to the readers therefore is answered in the affirmative in this report. A domestic revival is even possible in somewhat differing ways. From the tables various combinations can be

compiled which lead to the desired result without taxing overmuch the balance of payments. Among the separate measures moderate devaluation (*e.g.* 20 %) has the most favourable result. The most favourable combination would be a combination of a moderate devaluation, some protection and a number of measures mentioned in the Labour Plan (public works, increase in efficiency through business concentration and cyclical policy).

The second question, which relates to the lesson we should draw from the experience of others, cannot be dealt with exhaustively here due to lack of space. Superficially when reading this report it might be thought that nothing of foreign experience has been used. Indirectly, however, this has partially taken place: a number of the equations which have been utilized has also been investigated with regard to other countries and it has often been found that the result of these investigations made our findings for the Netherlands seem plausible. Thus far, therefore, this experience has proved useful. We have to be careful, however, with comparisons between countries. At the present stage of the investigation it cannot yet be said whether small structural differences might not prove to result in large differences in reaction to certain measures. Striking examples could be given of the great influence which may be exercised by a moderate structural change. For example, a change in the export dependency of a country may greatly affect the results of wage policy.[15] For this reason it is dangerous to use experience gained in one country when judging the policy followed by other countries. For example, because the policy of extensive public works in Sweden has had no unfavourable consequences for the capital market, this policy has been proven possible, but it has not been proven feasible under all circumstances. The balance of payments difficulties due to its policy of creating employment through public works prove nothing about the results of such a policy in the Netherlands and so on. Only a further development of the engineering skill of econometrics will help in this respect in my opinion.

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[15] This problem has been discussed more extensively in my "*Fondements mathématiques*". There we find that there is a "critical export percentage" with regard to this problem. For a country which has a smaller export percentage, wage rigidity is better during structural depressions, and for a country with a higher export percentage wage flexibility is preferable.