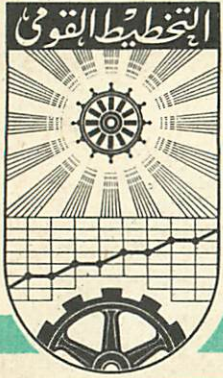


جمهورية مصر العربية



مَعْدَدُ المِطَاطِ القومى

مذكرة رقم ١١٥٧

العلاقة بين سعر الصرف والأسعار المحلية

اعداد

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أغسطس ١٩٦٦

العلاقة بين سعر الصرف والأسعار المحلية

- ١- تعنى هذه الدراسة بالاثار التى تترتب على تغيرات سعر الصرف بالنسبة للأسعار المحلية . وحتى يمكن الاستفادة من نتائجها فى استطلاع ما يمكن ان يترتب على الانتقال الى ما يعرف بالسوق التجارية للصرف ، حاولنا الاستناد الى بعض البيانات المتاحة عن الاقتصاد المصرى . حيث اختصر جدول مدخلات ومخرجات مستمد من بيانات خطة ١٩٧٠ / ١٩٧١ الى ١٢ قطاع ، وما يرتبط به من متغيرات اجمالية منسوبة الى اساس = مليون بالنسبة لقيمة الانتاج الكلى . وفى نفس الوقت افترض أن بعض المعاملات الخارجية كانت تتم بسعر صرف مخفض بحيث يودى تخفيض سعر الصرف بحوالى ٢٩٪ الى اضافة تخفيض يبلغ ١٧٪ الى تلك المعاملات وفى نفس الوقت تستبقى بعض المعاملات عند سعر الصرف الرسمى . ثم جرى حساب توازنات جدول التدفقات القومية وفقا لاربعة فروض .
- ٢- الفرض الاول هو تحمل القطاعات الانتاجية وقطاعات الطلب للتغيرات فى أسعار الواردات دون تغير اسعار مستلزمات الانتاج المحلية . وقد وجد ان ارتفاع أسعار الواردات بحوالى ٥٨٪ يستنفذ ٣٠.٦٪ من عوائد حقوق التملك . ومن جهة أخرى فان الارتفاع المقابل فى تحصيلات التصدير يضيف الى تلك العوائد قدرا أقل بسبب العجز فى الميزان الجارى الامر الذى يودى الى نقص صافى يبلغ ٣٥٪ أو ما يعادل ١٪ من قيمة الانتاج المحلى . ومعنى هذا انه رغم افتراض عدم تغير العجز بالعملة الاجنبية فان قيمته بالعملة المحلية سوف تتزايد .
- ٣- غير ان المشكلة الحقيقية ليست فى هذه الظاهرة الاخيرة بل هى فى تعديل معدلات الربحية تعديلا جوهريا . فكما يتضح من الجدولين (٢) ، (١٠) فان القطاعات التصديرية تحصل على أثر صافى موجب بينما القطاعات المهدية للواردات وقطاعات البنين الارتكازى والخدمات المحلية يرتفع فيها الاثر السالب للواردات ولا تصدر بها يعوض جانبها محسوسا فيه . ومعنى هذا ان الاثر الاول لتخفيض سعر الصرف هو

تعديل الربحية لصالح قطاعات التصدير على حساب قطاعات التعويض عن الاستيراد
فإذا شجع هذا تلك القطاعات على التوسع في التصدير ولو بخفض محدود فـ
الاسعار فان هذا لن يزيد متحصلات الدولة الا لو توفر شرطان : أولهما مرونة
الطلب العالمى بحيث يستجيب بالارتفاع لتخفيض السعر ، والثانى وهو الاهم ،
هو توفر طاقات محلية معطلة تزيد مباشرة من الانتاج للتصدير . وهذا امر غير وارد
بالنسبة للصادرات المصرية المعتمدة بالقدر الاكبر على الانتاج الزراعى المحدود .
ومن جهة أخرى مالم ترتفع الاسعار المحلية للمنتجات الاخرى فسوف ينكمش نشاطها
ويزداد الطلب على الاستيراد ، الذى تكون قد ارتفعت تكلفته . وتظهر خطورة
هذا بالنسبة لمستلزمات انتاج السلع التصديرية (مثلا قطاعات البنيان الارتكازى ،
والطاقة) بما يعرقل نمو الانتاج التصديرى .

٤- وتنسحب الآثار سابقة الذكر الى الاجل الطويل . فبقا الاسعار المحلية على حالها
وما يصحبه من تفاوت في الربحية يعمل على توجيه الاستثمارات الى القطاعات
التصديرية ، وعزوفها عن القطاعات الاخرى الامر الذى يؤدى الى تزايد الحاجة الى
الاستيراد . ومن جهة أخرى فان ارتفاع اسعار الواردات الاستثمارية يزيد من
تكاليف رأس المال وبالتالي التكاليف الجارية (أقساط الاهلاك) للمنتجات المحلية .
ويشير جدول (١٢) الى ان القيمة الحقيقية للمدخرات المحلية تنخفض بحوالى ١٨ ٪
وذلك لسببين أولهما انخفاض عوائد حقوق التملك والثانى ارتفاع تكلفة الاستثمار الذى
تموله تلك المدخرات . ومن الممكن ان يرتفع الدخل النقدى والحقيقى الحكومى
بسبب تزايد إيراداتها من الرسوم الجمركية طالما تبقى محسوبة على اساس قيمى .
ورغم تزايد مقدرة الحكومة على مواجهة الانفاق الجارى (رغم ارتفاع اسعاره) فانها
كثيرها من القطاعات سوف تصادف صعوبة في توفير الموارد اللازمة للاستثمار .

٥- يتضح مما تقدم انه سوف تنشأ ضغوط لرفع الاسعار المحلية ، سواء بسبب ارتفاع الاسعار المحصلة من التصدير بالنسبة للاسعار المحلية ، او بسبب ارتفاع اسعار البدائل المستوردة ، او للرغبة في الحفاظ على الايرادات في مواجهة ارتفاع التكاليف . ويؤدي ارتفاع الاسعار لتغطية الزيادات في المستلزمات المستوردة التي ارتفاع اسعار المستلزمات المحلية . ولذلك تستخدم نماذج المدخلات والمخرجات لحساب الآثار المباشرة وغير المباشرة . فنجد ان الزيادات الأولية بسبب الواردات والتي تصل الى ٦ ٪ من قيمة الانتاج المحلي يتبعها نصفها بتأثير الارتفاعات في المستلزمات المحلية ، اذا ما اريد ابقاؤها عوائد حقوق التملك على حالها ، باستبعاد الفوائض التصديرية التي تقل بسبب ارتفاع الاسعار المحلية مع عدم تغيير عوائد التصدير عما وصلت اليه .

٦- يصحب ذلك تزايد في موارد الحكومة المختلفة فيرتفع دخلها النقدي والحققي بل وتستطيع تحويل العجز الى فائض . ورغم الزيادة في عوائد حقوق التملك (النقدية والحققية) فان الاجور النقدية الثابتة تنخفض قوتها الشرائية بحوالى ١٠ ٪ الامر الذي يؤدي الى انخفاض الدخل التصرفي الحقيقي . وقد يؤدي هذا الى انكماش في الطلب الاستهلاكي ينصب اساسا على المنتجات المحلية نظرا لان تحسن الدخل العاليا يمكن اصحابها من تغذية الطلب على الواردات المرتفعة السعر . وفي نفس الوقت يؤدي تحسن موقف المدخرات الحكومية الى تقليل الانخفاض في القيمة الحقيقية للمدخرات المحلية الى ١٣ ٪ . ومع ذلك فقد يؤدي انكماش الطلب المحلي الى تناقص الموارد الحكومية مما يزيد من انخفاض المدخرات الحقيقية ، وبالتالي من صعوبة تمويل الاستثمار ، الذي تزيد تكلفته بسبب الزيادة في تكاليف مستلزماته المحلية .

٧- ومع ارتفاع الاسعار المحلية يسعى المنتجون لمزيد من الارتفاع في الاسعار ، فاذا افترضنا انهم يسعون لاستبقاء نسبة العوائد الى قيمة الانتاج عند مستواها الاصلي (أي تثبيت نسبة الربح الى التكلفة) فان هذا يضاعف ارتفاع الاسعار المحلية

تقريبا الامر الذى يترتب عليه تعميق الآثار السابق شاهدها فى الحالة السابقة ، حيث تتزايد فرص الحكومة لزيادة دخلها النقدى والحكوى وبالتالى مدخراتها بينما يودى ثبات الاجور النقدية الى انخفاض قوتها الشرائية بأكثر من ١٥ ٪ ، الامر الذى يزيد من انخفاض الدخل التصرفى الحقيقى . ويودى هذا لابقاء المدخرات الحقيقية اقل من مستواها الاصلى بحوالى ١٠ ٪ .

٨- وواضح ان نجاح المنتجين فى رفع الاسعار سوف يودى فى النهاية الى تغذية الدعوة الى رفع الاجور فاذا كان ارتفاع الاجور متناسبا مع الارتفاع فى مستوى الاسعار العام فان الاسعار ترتفع بنفس نسبة ارتفاع اسعار الواردات ، وتعود انواع الطلب الى الوضع الذى كانت عليه نسبيا قبل تغيير سعر الصرف ، فيما عدا بعض الفروق الراجعة الى تفاوت معاملة انواع الواردات المختلفة . فنظرا للمحافظة على تكاليف بعض السلع الاستهلاكية الاساسية ومستلزماتها فان الدخل الاستهلاكى الحقيقى يتعثر نوعا ما بينما تظل القيمة الحقيقية للمدخرات منخفضة نوعا . ويشير جدول (١٠) الى انه بوصول ارتفاعات الاسعار الى مداها ، تسهم زيادة الاجور بحوالى ٦٩ ٪ من الزيادة ، وزيادة عوائد حقوق التملك بحوالى ٢٠ ٪ بينما زيادة الواردات بحوالى ١١ ٪ فقط . ومعنى هذا انه مالم يحدث تغير جوهرى فى هيكل الطلب والانتاج فان الزيادة فى الاسعار بسبب تكلفة الواردات تنتهى الى اكثر من تسعة اضعاف نسبتها .

٩- ونظرا لان الوقت اللازم لاستجابة العرض المحلى يستغرق بعض الوقت ، حيث انه لم يكن ناشئا فى الاصل لكساد عطل طاقات المجتمع بسبب خلل فى العلاقات الخارجية ، فان ضغوط الاسعار يمكن ان تأخذ مداها قبل استجابة الهيكل الانتاجى . وعليه فانه فى حالة مثل حالة الاقتصاد المصرى يكون من المهم احداث تعديلات هيكلية تصحح الانحرافات التى تراكمت مع الزمن قبل استخدام الوسائل النقدية التوجيهية ، خاصة اذا كان تخفيض العطية سوف يتبعه

تخلص من قيود النقد الاجنبى . ويتطلب هذا التحرك فى عدة اتجاهات اولها تقييم المشروعات القائمة والجديدة بسعر الصرف الظلى ، وثانيها استخدام السياسة المالية (الضرائب والرسوم الجمركية) لاعادة توجيه الموارد نحو الاستخدامات المختلفة بالابعاد التى تتفق مع التوازنات الجديدة . ويراعى فى ذلك تفاسد احدث ضغوط داخلية تحدث حالة عامة من التضخم على النحو الذى يترتب على تغيير عام فى التكاليف كالذى يترتب على تخفيض سعر الصرف .

١٠ - ومن جهة اخرى فانه اذا كان من المقدّر ان تتغير معدلات الاجور والعوائد نتيجة لما يتوقع من انخفاض سعر الصرف عند اطلاقه ، فقد يكون من المناسب البدء بالسماح لها بالارتفاع التدريجى ، بما يتناسب مع التغير فى هيكل الاقتصاد المحلى فالمشكلة التى يواجهها الاقتصاد المصرى ترجع الى ضغط الانفاق الجارى العام ، ومع ذلك فان تخفيض سعر الصرف يضر الفئات الاجرية رغم ما يتخذ من اجراءات لحماية سلع الاستهلاك الاساسية . وطالما كان ذلك الانفاق بعيدا عن متطلبات التوازن ، ومجتاحا لموارد القطاع العائلى وللمدخرات ومن ثم الاستثمارات فان المكاسب التى قد تحققها الحكومة عن طريق ارتفاع حصيله الضرائب (غير المباشرة) وليس معدلاتها سوف يخفف الضغوط من اجل تخفيض الانفاق العام . ولن تقوى هذه الضغوط الا اذا انكمش الطلب المحلى فالانتاج المحلى وهذا عكس الهدف المطلوب . اما اذا اريد التركيز على سعر الصرف كسلاح ، فان هذا يقتضى استخدام سعر الصرف متعدد ، ولكن بصورة عكسيه لما يجرى التفكير فيه او العمل به . فالوضع الحالى يحايب الاستهلاك على حساب الاستثمار ، وهو فى نفس الوقت يتجاهل انه حتى مع بقاء سعر الصرف عند مستواه الرسمى المرتفع فان مستوى الاسعار المحلية مقاسا بالدولار شديد الانخفاض عن المستويات العالمية ، وبدلا من ان يفرض هامشا على التحويلات التى يدخلها السياح

فانه يمنحهم ملاوة تضاعف من انتفاعهم على حساب الفئات الاجرئية
وتبذل جانبا من اعانات دعم اسعار الضروريات . وبعبارة اخرى يجب
ان يسير التعداد في اتجاه تضيق فجوة الميزان قبل التفكير فى
احداث تخفيض للعملة المحلية يزيد من اتساع تلك الفجوة .

(II-5) Investment And Foreign Trade

Case	G.D.F.C.F.	Change in Stocks	Total Investment	Exports	Imports
0	62 092	8 841	70 933	92 787	112 852
I	73 038	8 841	81 879	143 760	177 631
II	79 482	10 135	89 617	143 760	177 631
III	83 887	10 970	94 857	143 760	177 631
IV	101 299	13 986	115 285	143 760	177 631

Change

I	+ 17.6	0	+ 15.4	+ 54.9	+ 57.4
II	+ 28.0	+ 14.6	+ 26.3	+ 54.9	+ 57.4
III	+ 35.1	+ 24.1	+ 33.7	+ 54.9	+ 57.4
IV	+ 63.1	+ 58.2	+ 62.5	+ 54.9	+ 57.4

Typed by:

M.S./A. Abd Elfattah

(II-3) Factor Shares And Consumption

Case	Wages And Salaries	Nonwages at Factor Cost	Public Consump- tion	Household Consump- tion	Total Final Consump- tion
0	283 125	269 413	173 645	400 997	574 642
I	283 125	258 911	189 826	403 318	593 144
II	283 125	311 379	196 138	444 303	640 441
III	283 125	349 442	201 538	474 005	675 543
IV	441 344	420 187	274 862	620 022	894 884
<u>Change</u>					
I	0	- 3.9	+ 9.3	+ 0.6	+ 3.2
II	0	+ 15.6	+ 13.0	+ 10.8	+ 11.5
III	0	+ 29.7	+ 16.1	+ 18.2	+ 17.6
IV	+ 55.9	- 56.0	+ 58.3	+ 54.6	+ 55.7

(II-4) Savings And Deficit

Case	Government Savings	Business Savings	Household Savings	Gross Domestic Savings	Deficit
0	- 6887	33 517	24 238	50 368	20 065
I	- 3069	32 334	18 743	48 008	33 871
II	20682	38 536	- 3 472	55 746	33 871
III	28685	43 082	-10 781	60 986	33 871
IV	- 13850	52 272	42 992	81 414	33 871
<u>Change</u>					
I	- 55.4	- 3.5	- 22.7	- 5.6	+ 68.8
II	x	+ 15.0	x	+ 9.6	+ 68.8
III	x	+ 28.5	x	+ 19.9	+ 68.8
IV	+ 201.1	+ 56.0	+ 77.4	+ 60.0	+ 68.8

Table (II): Macro Variables And Their Changes From Initial State

(II-1) Government Revenues

Case	Customs Duties	Other Indirect Taxes	Total Indirect Taxes	Share in Business Surplus	Direct Taxes - Transfers
0	44 965	28 007	72 972	38 202	55 584
I	71 109	28 007	99 116	36 853	50 788
II	71 109	30 574	101 683	43 922	71 215
III	71 109	32 853	103 962	49 104	77 157
IV	71 109	43 658	114 767	59 578	86 667
<u>Change</u>					
I	+ 58.1	0	+ 35.8	- 3.5	- 8.6
II	+ 58.1	+ 9.2	+ 39.3	+ 15.0	+ 28.1
III	+ 58.1	+ 17.3	+ 42.5	+ 28.5	+ 38.8
IV	+ 58.1	+ 55.9	+ 57.3	+ 56.0	+ 55.9

(II-2) G.D.P. and its Distribution

Case	Government Income	Business Retained Income	Household Disposable Income	G.D.P. at Market Prices	Value of Total Production
0	166 758	33 517	425 235	625 510	1,000 000
I	186 757	32 334	422 061	641 152	1,000 000
II	216 820	38 536	440 831	696 187	1,091 646
III	230 223	43 082	463 224	736 529	1,173 019
IV	261 012	52 272	663 014	976 298	1,558 830
<u>Change</u>					
I	+ 12.0	- 3.5	- 0.7	+ 2.5	0
II	+ 30.0	+ 15.0	+ 3.7	+ 11.3	+ 9.1
III	+ 38.1	+ 28.5	+ 8.9	+ 17.7	+ 17.3
IV	+ 56.5	+ 56.0	+ 55.9	+ 56.1	+ 55.9

ANNEX

Table (I): Cost Structures of Initial Productions
(Total = 1,000,000)

Sector	Domestic Inputs	Imported Inputs	Wage Incomes	Nonwage Incomes	Total
1	57 044	8 079	45 982	111 933	223 038
2	2 594	1 183	2 465	12 847	19 089
3	36 290	197	1 440	3 005	40 932
4	66 068	6 202	19 908	12 998	105 176
5	128 667	19 053	8 398	16 734	172 852
6	1 933	20 130	891	2 845	25 799
7	6 320	4 818	5 453	3 792	20 383
8	2 911	1 997	804	1 701	7 413
9	13 085	7 506	3 467	17 543	41 601
10	4 420	1 704	3 127	2 237	11 488
11	12 625	5 192	3 134	6 115	27 066
12	11 446	7 352	6 169	6 476	31 443
13	1 718	1 397	2 214	7 965	13 294
14	24 198	3 968	14 125	9 965	52 256
15	12 398	6 955	20 335	10 349	50 037
16	10 674	7 239	29 061	25 381	72 355
17	11 022	5 739	23 483	45 534	85 778
TOTAL	403 413	108 711	190 456	297 420	1000 000

through controls. However there should be an explicit assessment of such cases, and decisions should be taken case by case.

In other words what is needed is to move in two major steps : The first is to redress the present system of controls, so as to minimize the existing structural imbalances. An effective shadow rate of exchange may be used among the basic indicators. Indirect taxes and price relations can be adjusted to reallocate resources in an equilibrating manner. The second step would witness the elimination of exchange controls. The fluctuations in the exchange rate will be within narrow limits, and their overall effects will have a higher chance of equilibrating the exchange market. However, fiscal measures may be adopted to redress any undesirable sectorial differences. In any case fiscal measures have to precede exchange measures, since current expenditure is the component getting out of proportion. In the earlier stages of devaluation, the possible improvement in government revenues might weaken the pressure to get it back to normal. The contraction of such revenues may only occur if domestic demand and production slow down, which defeats the purpose.

indicates also the need of combining the exchange rate policy with appropriate fiscal policies. On the other hand if the new exchange rate is accompanied by release of controls which previously existed and helped to maintain formally the official rate, account has to be taken of suppressed demand. It is clear that if such demand manifests itself in some areas which were previously restricted, demand for imports may rise sharply, thus threatening the new exchange rate. The proposal of gradual extension of this latter, may help to even out the dislocations in the economy. However, there will be gradual pressures to raise prices and factor shares. The fact that the low rate will still make it profitable to deal in certain types of imports imply either one or more of the following :

- 1 - Demand could justify higher domestic prices. Import restrictions could be dropped and at the same time customs duties raised to bring in equilibrium in each market.
- 2 - Imports are inputs to some monopolized domestic products. There will be a possibility of shifting higher costs to the consumers, as far as conditions of limited supply permit. This again can be treated through customs duties, on a selective basis.
- 3 - Imports may be used (by existing or new firms) as substitutes for domestic products, with adverse effects on domestic production, at least in the short run. This may be a desirable step to force out inefficient firms which survived only under protection realized

cost of investment requirements, both domestic and imported, is greater than the rises in other types.

It is clear that further increases in prices would be called for. Such increases were considered as affecting nonwage incomes first. As a working hypothesis it was assumed that the new prices permit those incomes to maintain the same ratio to the value of output which existed in the initial state. As shown in Table (10), this leads to a rise in prices nearly equal to the increase happening in the previous two cases together. In spite of the rise in real nonwage incomes (deflated by consumers prices), household disposable income shows (Table 12) a further decline owing to the large decline in real wages. Government gains more in money and real (deflated by public consumption prices) income, enabling it to increase real savings. The rise in real business, real savings is offset by the further decline in household real savings. Thus gross real savings increase than in the previous case but remain about 10 % below the initial level. This case may be considered as an extension of the previous one.

Wage-earners will put increasing pressure to raise wage rates. As an ultimate case, wages would rise by the general price level. This practically brings all variables up by the full amount of devaluation. Real incomes may gain a little, if the essentials are going to remain maintained at the official exchange rate. Apart from this inflationary aspect nothing is to be gained out of the new exchange rate.

It may be mentioned that the above analysis could have equally applied to the case of a rise in some import prices. The analysis

sectors than import-substituting sectors. All these elements act in the direction of raising domestic prices.

If prices are adjusted to cover direct and indirect effects of the rise in intermediate inputs, this will add 50 % to the original increase in costs due to imports. The relative advantage of exporting sectors is reduced but is still there. They are therefore still tempted to raise domestic prices and shift more of their output to foreign markets. The rise in the cost of living outpaces the increase in disposable income, and household savings may become negative. This may lead to a smaller consumers' demand; and since the share of wage-earners falls relatively, the fall in demand may adversely affect home-produced goods rather than imports. Any improvement in government and business savings may therefore be eliminated. As may be seen from Table (12), the fall in real wages brings about a fall of 6.4 in real disposable income. The fall in real savings (savings deflated by investment price index) is still appreciable. This is due to the fact that the rise in the

Table (12): Incomes, Consumption and Savings in real terms;

Percentage changes from initial values

	Case I	Case II	Case III	Case IV
Government Income	+ 2.4	+ 15.1	+ 19.0	- 1.1
Household Income	- 1.3	- 6.4	- 7.8	+ 0.8
Wage incomes	- 0.6	- 9.7	- 15.4	+ 0.8
Nonwages (at F.C.)	- 4.5	+ 4.3	+ 9.7	+ 0.9
Savings	-18.2	- 13.3	- 10.3	- 1.5

IX - SUMMARY AND CONCLUSIONS :

We have tried to assess the effects of devaluation under certain restrictions of maintaining some transactions at the official rates, while others undergo partial devaluation owing to previous limited devaluation. The purpose was to find what motion is set into action owing to differences in relative prices.

It was found that, while exporting sectors realize some gains, other sectors suffer a loss unless they adjust their prices. Exporting sectors may increase their sales, provided they can procure their extra inputs (local as well as imported), and world demand responds to moderate price reduction. This also assumes existence of idle capacities. For other sectors, reduction of profits may adversely affect their activities. If their products are import-competitive, there will be a tendency towards raising domestic prices, taking advantage of the higher import prices. Again this assumes underutilization of existing capacities. Failing that, new capacities have to be installed, which will take some time. If consumption is to be maintained, savings have to go down in money and real terms. On the other hand, the cost of investment rises more than other types of demand. Besides reducing the saving rate in real terms, and increasing the value of the deficit, this has the further effect of increasing operating costs, hence future prices. Other effects, such the effect on the rate of interest, have to be investigated. In the meantime, resource allocation criteria will work more in favour of the exporting

In this table, as in similar ones given before, the first column should check with the first row. For the first column, each column of demand is multiplied by prices p_j ; and the sum is equal to the product of the column of domestic production by prices. The second column has been already obtained in the process of changing import prices. Wages are multiplied by the overall price index; and this is assumed to apply to all types of wages, including those arising in public consumption. For nonwages, we again multiply the initial values by sectorial prices. Their new value is found to bring up the total of the first row to the same value of total production in column (1).

In this case also, capital formation is higher in costs, both domestic and imported, while household consumption is the least affected. The significance of these changes may be visualized by considering the changes in macro-variables shown in Table (II) of the Annex.

It is clear that government stands to suffer more, and goes back to dissaving at double the initial value. The restricted increase in some consumers prices enables the household sector to generate relatively larger savings. In spite of this, the rise in the nominal value of investment exceeds that of savings, leaving deficit at the high level obtained before. Apart from these limited discrepancies, the present case is a reproduction of the initial position inflated by about 56 %. In other words, the economy will be back where it started, with a weaker currency. The justification of devaluation applies to the same extent; and a sequence of devaluations is highly likely to continue; which is the case in many actual experiences.

rates. In general, the import-substitution sectors face larger proportionate effects due to import prices, than exporting sectors. The overall rise in domestic prices absorbs the gains due to the change in export earnings. For some sectors, the net gain becomes negative, and they lead to a net negative effect for the production sector as a whole.

For final demand, the effects are of the same order of magnitude; as shown in Table (11).

Table (11): Effects of Devaluation, Case IV

	Domestic	Imports	Wages	Nonwages	Total
<u>Values of Main Variables</u>					
Production	626 940	170 186	296 889	464 815	1558 830
Household Cons.	608 097	11 925	-	-	620 022
Public Cons.	89 759	40 648	144 455	-	274 862
G.D.F.C.F.	75 318	25 981	-	-	101 299
Change of Stocks	13 986	-	-	-	13 986
Exports	144 730	-	-	- 970	143 760
TOTAL	1558 830	248 740	441 344	463 845	2712 759
<u>Ratios to Initial Values</u>					
Production	1.554 090	1.565 490	1.558 830	1.562 826	1.558 830
Household Cons.	1.553 674	1.241 641	-	-	1.546 201
Public Cons.	1.588 402	1.661 353	1.558 830	-	1.582 896
G.D.F.C.F.	1.600 569	1.728 007	-	-	1.631 434
Change of Stocks	1.581 948	-	-	-	1.581 948
Exports	1.559 809	-	-	-	1.549 355
TOTAL	1.558 830	1.576 129	1.558 830	1.559 562	1.560 525

The rise in prices is quite appreciable in this case. This may be also seen from table (10) where the consecutive effects are expressed as percentages of the overall change in each sector. For the economy as a whole 11 % of change is due to the direct effect of the change in import

Table (10): Percentage breakdown of direct and indirect effects

Sector	Direct Effects due to Imports	Indirect Effects due to		
		Inputs	Nonwages	Wages
1	1.1	2.3	11.0	85.6
2	6.8	3.8	31.2	58.2
3	0.6	4.0	11.2	84.2
4	7.2	9.9	11.0	71.9
5	1.8	5.0	11.4	81.8
6	80.6	1.2	11.2	7.0
7	26.0	7.8	14.0	52.2
8	30.5	6.5	18.7	44.3
9	20.5	6.0	32.7	40.8
10	16.7	7.7	15.9	59.7
11	20.6	13.5	24.5	41.4
12	25.4	10.9	19.2	44.5
13	11.6	3.0	28.7	56.7
14	8.6	11.1	14.8	65.5
15	16.4	5.8	11.6	66.2
16	13.0	2.9	11.7	72.4
17	8.0	3.1	17.6	71.3
TOTAL	11.0	5.4	14.6	69.0

change in import prices, while 69 % is due to changes in wages. As can be seen, the new set of prices is quite close to the rise in import prices, even for sectors (1) and (5) whose inputs were largely kept at official

Table (9): Effects of changes in prices and factor shares.

Sector	Prices, p	Indirect Effects		Net Effects of Exports
		Total	Due to Wages	
1	1.518 059	.512 619	.443 639	.001 147
2	1.601 857	.560 585	.350 104	-.010 436
3	1.525 789	.522 584	.442 713	-.012 603
4	1.575 369	.533 970	.413 444	.007 550
5	1.466 673	.458 238	.381 856	.008 769
6	1.763 876	.148 449	.053 435	-.000 054
7	1.605 136	.447 667	.315 946	.000 306
8	1.588 024	.408 459	.260 219	-
9	1.637 241	.506 748	.259 897	.000 290
10	1.602 502	.502 057	.359 666	.000 519
11	1.620 805	.492 966	.256 768	.000 225
12	1.615 531	.459 327	.274 182	.000 699
13	1.604 482	.534 507	.342 984	-
14	1.596 049	.545 079	.390 375	-
15	1.597 907	.499 986	.396 059	.000 329
16	1.599 641	.521 889	.434 252	-.002 156
17	1.590 079	.542 992	.420 978	-.001 427
TOTAL	1.558 830	.497 355	.385 811	-.002 529

earners will be the group that suffers most. If we deflate wages by consumer price index, the drop in real wages will exceed 15 % compared to 10 % in case II. On the contrary, the real income of nonwage-earners rises by 8.7 % in place of 3.8 %. This would eventually justify a call for raising wage rates.

VIII - CASE IV : ADJUSTMENT OF PRICES AND FACTOR SHARES :

In Section II we have shown that if all inputs change proportionately with the value of output, then the change will occur at the same rate as that of imports. This needs no sophisticated analysis since it follows directly from the definition of technical coefficients. Let us adjust the assumption in a more meaningful form. Besides the changes in prices and nonwages of Case III, we add the assumption that wages change in all sectors at the same rate. This is taken equal to the general price level :

$$p = p \underline{x}^1$$

Multiplying this into the wage vector, we can replace (8) by:

$$\underline{p} (\underline{I} - \underline{A}) = \underline{q} \underline{M} + \underline{p} \underline{x} \underline{w} + \underline{p} \underline{V} \quad (10)$$

The product of the column vector $\underline{x}^1$ into the row vector $\underline{w}$ is the matrix $(\underline{x}^1 \underline{w})$, which is subtracted from the matrix in (q) to get the solution :

$$\underline{p} = \underline{q} \underline{M} (\underline{I} - \underline{A} - \underline{V} - \underline{x}^1 \underline{w})^{-1} \quad (11)$$

Obtaining this inverse we multiply it and calculate the set of prices given in column 2 of Table (9) :

As before, these values provide a basis for calculating the new set of macro-variables; which is given in Table (II) of the Annex.

This case shows points of similarity to case II. The increase in domestic prices is practically double that of case II. Indirect effects are about 65 % of total effects, and 73 % of them are due to the adjustment of nonwage incomes. The higher prices reduce the net gain out of exports. Further increases occur in government income. In the meantime the rise in public consumption is less than any other type of demand (mainly as a result of assumed constant wages). Hence government savings show another rapid increase. Household disposable is still the variable undergoing smallest increase. As a result of the rise in the cost of household consumption, household savings undergo a further decline. The increased business savings help to double the increase in the nominal value of national savings, which amount to 8.3 % of G.D.P. Fixed capital formation rises in value to 11.4 %. The higher value of G.D.P. reduces the ratio of deficit to 4.6 % in place of 4.9 % of case II.

If the increased consumers' prices and the accompanying dissavings lead to contraction of demand, the supply of such goods and the revenue of government would go down. These also have adverse effects on investments and the deficit may grow, unless investment drops faster. If exports could grow, this would mean a higher rate of importation. This may fit with the fact that nonwage incomes are relatively better off. Wage-

effects due to both sources of change. Further, deduction of price change obtained in case II gives the indirect effects due to change in nonwage incomes; column 4. Net export effects are obtained in the same manner as in Table (5), and given in the last column. Other effects are shown in Table (8) :

Table (8): Effects of Devaluation, Case III

	Domestic	Imports	Wages	Nonwages	Total
<u>Values of Main Variables:</u>					
Production	466 224	170 186	190 456	346 153	1173 019
Household Cons.	462 080	11 925	-	-	474 005
Public Cons.	68 221	40 648	92 669	-	201 538
G.D.F.C.F.	57 906	25 981	-	-	83 887
Change of Stocks	10 970	-	-	-	10 970
Exports	107 618	-	-	36 142	143 760
TOTAL	1173 019	248 740	283 125	382 295	2087 179
<u>Ratios to Initial Values:</u>					
Production	1.155 700	1.565 490	1.000 000	1.163 853	1.173 019
Household Cons.	1.180 603	1.241 641	-	-	1.182 066
Public Cons.	1.207 242	1.661 353	1.000 000	-	1.160 632
G.D.F.C.F.	1.230 554	1.728 007	-	-	1.351 011
Change of Stocks	1.240 828	-	-	-	1.240 810
Exports	1.159 840	-	-	1.163 853	1.549 355
TOTAL	1.173 019	1.576 129	1.000 000	1.285 371	1.200 658

Table (7): Effects due to changes in prices accompanied by changes in nonwage incomes.

Sector	Prices, P	Indirect Effects		Net Effects of Exports
		Total	Due to Nonwages	
1	1.074 420	.068 980	.057 218	.004 803
2	1.251 753	.210 481	.187 564	.072 264
3	1.083 076	.079 871	.058 728	.163 804
4	1.161 925	.120 526	.063 525	.007 644
5	1.084 817	.075 382	.053 273	.035 892
6	1.710 441	.095 014	.085 823	.000 260
7	1.289 190	.131 721	.084 505	.014 126
8	1.327 805	.148 240	.110 081	-
9	1.377 344	.246 851	.208 548	.006 739
10	1.242 836	.142 391	.095 958	.047 591
11	1.364 037	.236 198	.152 265	.007 077
12	1.341 349	.185 145	.118 161	.019 445
13	1.261 498	.191 523	.173 150	-
14	1.205 674	.154 704	.088 479	-
15	1.201 848	.103 927	.069 397	.007 489
16	1.165 389	.087 637	.069 904	.037 889
17	1.169 101	.122 014	.103 915	.037 451
TOTAL	1.173 019	.111 544	.081 373	.032 808

will rise to 31.4 %, and the foreign component will be 39.6 % of this higher value. As before the government has to provide for higher costs out of its budget, which forces it to adopt a strict fiscal policy or go into more deficit. Both the business and household sectors will be in a worse position. They may eventually contract their demand for investments, with immediate and long run effects on economic activity.

It seems logical, therefore, that the net immediate effect will be a call for higher income shares. Two special cases will be investigated in the following two sections.

VII - CASE III : ADJUSTMENT OF DOMESTIC PRICES AND NONWAGE INCOMES :

Let us assume that with the rise in domestic prices to meet increasing costs, nonwage-earners maintain their incomes in the same proportion to total value of output. In place of (2) and (6) we now have:

$$\underline{p} (\underline{I} - \underline{A}) = \underline{q} \underline{M} + \underline{w} + \underline{p} \underline{V} \quad (8)$$

and its solution :

$$\underline{p} = (\underline{q} \underline{M} + \underline{w}) (\underline{I} - \underline{A} - \underline{V})^{-1} \quad (9)$$

where $\underline{V}$ is the diagonal matrix composed of the coefficients of nonwage incomes, $\underline{w}$. This leads to the set of prices given in column 2 of Table (7). Deducting the effects of imports (Table 2), we obtain the indirect

in incomes the ratio of the new gap falls in domestic currency.

The question still remains: what forces are set in motion by these immediate effects.

- 1- The extra gain in the exporting sectors is smaller; but these sectors remain at an advantage with respect to the rest of the economy. With some minor modifications, the findings of case I may still be valid.
- 2- As a result of assumptions relating to the objective of maintaining living standards through restricting the rise in the costs of essentials, household consumption is the least affected both on the domestic and the imports sides. However, domestic products reflect higher effects than intermediate goods. The increase, being faster than income, may initiate some contraction in demand and/or a call for higher rates of income. We shall investigate the effects of the latter in the following two cases. The contraction of demand will depend on the relative elasticities. But since improvements of incomes go to nonwage-earners of the exporting sectors, the reduction in consumers' demand will be occurring mainly among producers in the other sectors as well as wage-earners. This will eventually lead to contraction of non-exporting sectors, and in government revenues from all sources.
- 3- Capital formation remains the most to suffer. Not only does it pay most for its imports; it also does the same for domestic requirements. If the former constituted initially 30 % of investment, the total cost

These changes lead to a new set of macrovariables which may be approximated and related to initial values as in the Annex, Table (I). According to our assumptions, the foreign balance, its components, hence import duties, are the same as before. As a result of the rise in prices, other indirect taxes rise proportionately. This assumes that all of them are ad valorem; on the other hand subsidies change also in the same manner. This last assumption is difficult to defend especially if subsidies are meant to stabilize users' prices. However, we need not go into these issues at this exploratory stage, since this will open the whole question of fiscal policy, and will require differentiation between domestic and imported subsidized items. The share of government in business surplus and direct taxes increase with the rise in nonwage incomes.

All types of domestic demand rise in their cost values. The big rise in government income enables government to turn its dissavings into savings; while the reverse occurs for households, whose income increases by less than the rise in the value of their consumption. On the other hand, business will be in a better position to raise their retained income. The final outcome is a 10 % rise in the value of national savings, which is outmatched by the larger increase in the value of investment. However, the savings rate (with respect to G.D.P.), which has fallen from the initial value of 8.1 % to 7.5 % in case I, is now 8.0 % only. G.D.F.C.F., which has nominally risen from 9.9 % to 11.4 % remains at the latter value. This implies an increase in the gap in Case I, arising from evaluating the same flows at new exchange rates. With the rise

exports which can be compared with the "external" values. Other types of demand can be similarly evaluated as shown in Table (6).

Table (6): Effects of Devaluation, Case II.

	Domestic	Imports	Wages	Nonwages	Total
<u>Values of Main Variables</u>					
Production	433 584	170 186	190 456	297 420	1091 646
Household	432 378	11 925	-	-	444 303
Public Cons.	62 821	40 648	92 669	-	196 138
G.D.F.C.F.	53 501	25 981	-	-	79 482
Change of Stocks	10 135	-	-	-	10 135
Exports	99 227	-	-	44 533	143 760
TOTAL	1091 646	248 740	283 125	341 953	1965 464
<u>Ratios to Initial Values</u>					
Production	1.074 789	1.565 490	1.000 000	1.000 000	1.091 646
Household	1.104 714	1.241 641	-		1.107 993
Public Cons.	1.111 700	1.661 353	1.000 000		1.129 536
G.D.F.C.F.	1.136 949	1.728 007			1.280 072
Change of Stocks	1.146 360				1.146 360
Exports	1.069 412			EE	1.549 355
TOTAL	1.091 646	1.576 129	1.000 000	1.149 731	1.130 641

Table (5): Direct and Indirect Effects of Changes in Import Prices,
related to Initial Values.

Sector	Prices, P	Indirect Effects related to		Net Effect of Exports
		Initial Output	Direct %	
1	1.017 202	.011 762	216.2	.005 517
2	1.064 189	.022 917	55.5	.024 611
3	1.024 348	.021 143	659.7	.209 153
4	1.098 400	.057 001	137.7	.089 914
5	1.031 544	.023 109	274.0	.040 865
6	1.624 618	.009 191	1.5	.001 488
7	1.204 685	.047 216	30.0	.018 018
8	1.217 724	.038 159	21.3	-
9	1.168 796	.038 303	28.6	.012 642
10	1.146 878	.046 433	46.2	.061 739
11	1.211 772	.083 933	65.7	.011 285
12	1.223 188	.066 984	42.9	.027 814
13	1.088 348	.018 373	26.3	-
14	1.117 195	.066 225	129.9	-
15	1.132 451	.034 530	35.3	.008 993
16	1.095 485	.017 733	22.8	.045 300
17	1.065 186	.018 099	38.4	.052 560
TOTAL	1.091 646	.030 171	49.1	.041 657

suffer from losses, this cannot be realized unless some rise in domestic prices occurs.

VI - CASE II : ADJUSTMENT FOR MAINTAINING VALUE ADDED :

In this case it is assumed that prices of domestic products rise to the extent sufficient to cover increased costs due to the rise in import prices. If $\underline{q}$ is the vector of price indices of imported inputs, while $\underline{p}$ is the vector of price indices of domestic products, equation (2) becomes

$$\underline{p} (\underline{I} - \underline{A}) = \underline{q} \underline{M} + \underline{v} + \underline{y} \quad (6)$$

Solving for $\underline{p}$:

$$\underline{p} = (\underline{q} \underline{M} + \underline{v} + \underline{y}) (\underline{I} - \underline{A})^{-1} \quad (7)$$

Obtaining the inverse of the technical (domestic) coefficients, familiar in input-output analysis, we obtain the price vector given in the second column of Table (5). Subtracting the import ratios given in Table (2) from the increases in prices, we obtain the indirect effects due to the rise in domestic inputs prices. We relate these to the direct (import) effects to obtain the ratios given in column (4) of Table (5). Exports are valued as before. But their domestic costs have risen due to higher domestic prices. We deflate them by these latter and estimate their "net" effect, i.e., the excess of deflated over initial values as ratio of initial sectoral output (last column). This leads to a smaller effect than what was obtained in Table (2). Alternatively, we multiply original export values in new price indices to obtain the new "domestic" value of

(4) If customs duties do increase at the rate indicated, they would compensate the decline in other sources of government income, and still leave another addition (12 %). Since this increase exceeds the increase in the cost of public consumption, government dissavings fall considerably. However, if demand for imports goes down, and if domestic activity contracts, this favourable effect may be wiped out.

(5) Both household and business savings diminish leading to an overall decrease in gross savings. In the meantime the cost of investment goes up. Normally the foreign component in investment is larger than in other types of domestic demand. This is reflected in the higher ratio of increase as compared with ratios for intermediate and final consumption. This has also the further effect of raising the ratio of foreign component from 24.2 % to 41.0 %. In fact if foreign component were 30 %, the increase in total cost will be 29.2 %, and the foreign component will be as high as 45.3% of this higher value. The resultant is discrimination against investment: Savings are reduced, cost of investment goes up, and with it the ratio of foreign component. The nominal rise in the rate of investment is from 9.9 % to 11.4 %. This does not affect investment in real terms, but add to the burdens of growth, to be reflected in higher future operating costs.

(6) It is clear therefore that if favourable adjustments should occur, domestic products have to replace imports, whenever they are competitive. Since outputs directed towards domestic uses were seen to

- (1) Exporting industries become more profitable. They may be tempted to increase their sales even if this calls for some reduction in their prices quoted at the new exchange rates. This requires a highly elastic world demand, and at the same time existence of possibilities to increase supply. In the short run this assumes existence of unutilized capacities. Their utilization means availing the necessary inputs, whether imported or domestic. This means that the limiting factor would be the capacities of intermediate sectors, and the capacity to import. If capacities are fully utilized (whether direct or intermediate), some time has to elapse until new investments materialize. Until that time, domestic prices are likely to move upwards. As will be shown later a part of the increase is due to the increased costs of investments. On the other hand intermediate sectors may not expand unless their prices are adjusted upwards to face their increased costs.
- (2) The other sectors, which are mainly substituting for imports, suffer from losses. If prices do not rise, these sectors will decrease their activities, which means an increasing demand for imported substitutes. Alternatively, they raise prices taking advantage of higher import prices.
- (3) Infrastructural and services sectors may, under the impact of losses, contract their activities, thus limiting the whole economic activity.

imports for final uses. Doing that we obtain total imports which include 71 109 import duties. Since the increase in import values plus duties is realized at the account of nonwage incomes, we have to reduce their value given at the bottom of Table (1) by 61 475, and raise it by the increase in export value, 50 973. This is summarized in Table (4)

Table (4) : Effects of Devaluation, Case I

	Domestic Inputs	Imports	Wages	Nonwage	Total
Production	403 413	170 186	190 456	235 945	1 000 000
Household Cons.	391 393	11 925	-	-	403 318
Public Cons.	56 509	40 648	92 669	-	189 826
G.D.F.C.F.	47 057	29 981	-	-	73 038
Stock Change	8 841	-	-	-	8 841
Exports	92 787	-	-	50 973	143 760
TOTAL	1000 000	248 740	283 125	286 918	1 818 783

The original deficit of 20 065 increases as a result of devaluation to $177\ 631 - 143\ 760 = 33\ 871$, unless quantities change. We have to investigate the effects of the above changes on the macro variables of the economy. These may be approximated as in Table II of the Annex.

The above data express the immediate effects. They are expected to initiate certain movements in the economy:

**Table (3): Effects of Changes in Import and Export Values on
Initial Nonwage Incomes.**

Sector	Initial Nonwages related to Initial Output.	Ratios to Initial Nonwages	
		Import Change	Exports-Imports
1	.501 856	.010 840	+ .000 612
2	.672 993	.061 326	+ .369 398
3	.073 398	.043 666	+3.083 340
4	.123 577	.335 006	+ .588 775
5	.096 811	.087 129	+ .367 975
6	.110 288	5.580 181	-5.428 097
7	.186 050	.846 380	- .684 225
8	.229 419	.782 695	- .782 695
9	.421 694	.309 450	- .263 862
10	.194 714	.515 859	- .060 550
11	.225 945	.565 797	- .480 520
12	.205 969	.758 386	- .520 413
13	.599 136	.116 793	- .116 793
14	.190 690	.267 292	- .267 292
15	.206 823	.473 453	- .413 286
16	.350 796	.221 644	- .058 877
17	.530 833	.088 704	+ .031 181
TOTAL	.297 420	.305 709	- .035 310

V - CASE I : NO PRICE CHANGE :

If domestic prices are kept constant, the effects of changes in exchange rates have to be reflected on nonwage incomes (profits). Let us therefore use Table (1) to calculate the ratios of nonwage incomes to output. To this we relate the effects given in Table (2), to obtain the ratios of Table (3). According to the given input structure, the change in imported inputs reduces the nonwage incomes of various sectors by ratios which exceed, in many cases 30 % or even 50 %. On the whole the ratio is 30.6 %; and if we exclude sector (1) (Agriculture) it will be as high as 48.4 %.

Taking exports in consideration, the effects on the different sectors differ greatly. The impact on agriculture is practically neutral. For mining and crude oil the gain is 37 %, and could have been higher, had we not considered a part of its export earnings at official rates. The same applies to Sector 3 (cotton), though the gain here is over 300 %. The other two major exporting industries (textiles and food) net gains are quite appreciable. For the remaining sectors (except services), the net effects are negative, and in many cases they exceed 50 % the initial nonwage incomes.

It should be observed that imports are considered including customs duties. The negative total effect should not be considered representing the balance of payment, since we also have to include

It may be recalled that the above changes include those due to proportionate changes in customs duties. We have therefore to adjust them according to the same pattern. This gives us the structure of change in the value of imports c.i.f. We assume that exports of sectors 2 and 3 up to an amount equal to imports maintained at official rate will be also kept at this latter. On the other hand the value assumed to have been moved from the previous to the new parallel rate is supposed to have been met by an equivalent amount of exports. The remaining part of exports (which is less than the remainder of imports, with the full amount of deficit) is changed by the full 79 %. For sector 17 it is assumed that 40 % increase by 17 % while the rest change by the full 79 %. The remainder is distributed proportionately over the other sectors. Results are again related to sectoral outputs, column 3 of Table (2), adding up to 5.1 % of initial value of domestic production.

The resultant changes are shown in the last column of Table (2). For the major exporting sectors (the first five sectors and the last) the net effects are positive, while the rest face a decline in earnings. This means that devaluation may benefit exporting industries, though not necessarily every firm in them. But for sectors directed towards satisfying domestic demand (import substituting or infrastructure) the effect is negative. We have to investigate the impact of such combined changes on domestic prices.

Table (2) : Effects on Initial Sector Values of Changes in
Imported Inputs and Exports

Sector	Change in Imports	Change in Exports	Exports less Imports
1	.005 440	.005 747	+ .000 307
2	.041 272	.289 874	+ .248 602
3	.003 205	.229 516	+ .226 311
4	.041 399	.114 158	+ .072 759
5	.008 435	.044 059	+ .035 624
6	.615 427	.016 773	- .598 654
7	.157 469	.030 169	- .127 300
8	.179 565	-	- .179 565
9	.130 493	.019 224	- .111 269
10	.100 445	.088 655	- .011 790
11	.127 839	.019 268	- .108 571
12	.156 204	.049 015	- .107 189
13	.069 975	-	- .069 975
14	.050 970	-	- .050 970
15	.097 921	.012 444	- .085 477
16	.077 752	.057 098	- .020 654
17	.047 087	.063 639	+ .016 552
TOTAL	.061 475	.050 973	- .010 502

so as to equate total domestic production to one million. The structure of production is given in Table (I) of the Annex. The last column of that table gives the values of $x_j = X_j / \sum_1 X_1$. Applying other prevailing parameters we obtain the macro-variables for the initial period (0), given in Table (II) of the Annex.

IV. CHANGES IN VALUE OF FOREIGN TRADE :

Let the new parallel market rate exceed the official rate by 79 %, and the preceding parallel rate by 17 %. We assume that the imported products of sectors 1,2,10,15,16 and 17 move from the official to the new rate. For the other sectors we assume that in the above data, 20 % of products were already valued at the preceding rate, thus rising by 17 %, while the remaining 80 % rise by the full 79 %, thus giving a weighted average increase of 66.6 %. To safeguard basic necessities, it is assumed that most of imported inputs of agriculture, some of those to food industries and to final consumption would remain at official rates. For the remaining items of final demand, the values treated at the 17 % change, amount to 20 % of household consumption, 15 % of public, and 10 % of investment. As mentioned before, these estimates are arbitrary, and not to be taken as implying any actual or decisional values. Relating the sum-total of these changes to the initial values of output, we obtained the effects as ratios per sectoral output. Multiplying these ratios by x_j we obtain the overall increase in the value of total domestic production, 6.15 %, as a result of import prices.

experience. But the whole exercise has to be considered as numerical examples of the theoretical analysis. In particular we shall assume that already in the above input-output table a part of transactions was carried out at the 50 % parallel market rate. Further we shall neglect the special treatment that could be given to imports through bilateral agreements. Finally we assume that customs duties increase proportionately in all cases; i.e., they are computed at an ad valorem basis. In particular this is applied to sector 6 (tobacco) to stress the effects on sectors whose major inputs are imported.

The initial values are given in Table (1), which is propogated

Table (1) : Initial Values of Output and Demand.

	Domestic Inputs	Imported Inputs	Wages	Non wages	Total
Production	403,413	108,711	190,456	297,420	1000,000
Household Cons.	391,393	9,604	-	-	400,997
Public Cons.	56,509	24,467	92,669	-	173,645
G. D. F. C. F.	47,057	15,035	-	-	62,092
Stock change	8,841	-	-	-	8,841
Exports	92,787	-	-	-	92,787
TOTAL	1000,000	157,817	283,125	297,420	1738,362

III - THE INITIAL STATE :

For purposes of numerical illustration, we have used an input-output table derived from the 1970/71 plan estimates. The table was aggregated into the following 17 sectors :

- 1- Agriculture.
- 2- Mining, quarrying and crude oil.
- 3- Cotton ginning.
- 4- Spinning, weaving and clothes.
- 5- Food and drink.
- 6- Cigarettes and cigars.
- 7- Wood, paper and printing.
- 8- Leather and rubber products.
- 9- Chemical and oil products.
- 10- Mineral products.
- 11- Metallic and basic metals.
- 12- Engineering and other industries.
- 13- Electricity.
- 14- Construction.
- 15- Transportation and communication.
- 16- Trade and banking.
- 17- Other services.

Other parameters (e.g., tax rates, savings etc.) will be freely determined, though they are taken as close as possible to recent Egyptian

- 2- Domestic prices are changed to the level that would keep wages and nonwage incomes unaffected. This would take care of changes in import prices, and the resulting changes in domestic inputs prices.
- 3- Both domestic prices and nonwage incomes increase proportionately in each sector, so as to maintain the adjusted v-coefficients.
- 4- Besides the last changes, wage rates change in all sectors at a rate equal to the change in the general price level of domestic production.
- 5- As a special case of the last assumption let us assume a general change $q_j = q$ as would result from a general devaluation. Further, let all other input elements change by the same index p_j of the sector's price. Then equation (2) becomes:

$$p \underline{A} + q \underline{M} + p \underline{W} + p \underline{V} = p$$

Since $q = q \underline{i}$, then $q \underline{M} = q \cdot \underline{i} \underline{M} = q \cdot \underline{m}$. The solution is :

$$p = q \cdot \underline{m} (\underline{I} - \underline{A} - \underline{W} - \underline{V})^{-1} \quad (5)$$

Substituting from (4), we find that

$$p = q \cdot \underline{i}$$

which means that all prices would change by the same rate as the general rate of change of imports. Thus a devaluation by 10 % would mean an overall increase in domestic prices by 10 %, which would leave the economy where it were. This indicates the importance of existence of points of differing response to import prices in the economy.

$$\underline{1} = (1) \quad (\text{unity vector; i.e. sum})$$

$$\underline{w} = (w_j),$$

$$\underline{v} = (v_j)$$

$$\underline{m} = (m_j) = \underline{1} \underline{M},$$

$$\underline{x} = (x_j / \sum x_j)$$

$$\underline{p} = (p_j),$$

$$\underline{q} = (q_j)$$

Using the vector $\underline{x}$ of proportionate distribution of production, we can calculate the general price index: $p = \underline{p} \underline{x}$

Equations (1) may be expressed as follows

$$\underline{1} \underline{A} + \underline{m} + \underline{w} + \underline{v} = \underline{1} \quad (2)$$

$$\text{or, } \underline{1} (\underline{I} - \underline{A}) = \underline{m} + \underline{w} + \underline{v}$$

which gives the initial unit price indices as :

$$\underline{1} = (\underline{m} + \underline{w} + \underline{v}) (\underline{I} - \underline{A})^{-1} \quad (3)$$

If we define the diagonal matrices

$$\underline{W} = \begin{bmatrix} s_{1j} & w_j \end{bmatrix}; \quad \underline{V} = \begin{bmatrix} s_{1j} & v_j \end{bmatrix}$$

we may express this alternatively as follows :

$$\underline{1} = \underline{m} (\underline{I} - \underline{A} - \underline{W} - \underline{V})^{-1} \quad (4)$$

If we introduce changes q_j in import prices we may calculate the corresponding changes in domestic prices p_j as solutions of equations similar to the above, according to assumptions with respect to effects on each of the elements of (2). These are:

- 1- Domestic prices are kept at their initial values. This means that nonwage incomes are reduced by an equivalent amount.

II - THE MODEL :

Let us start by an input-output table expressed in initial prices. For any column we have :

$X_{ij} = a_{ij} X_j$ = cross-deliveries from domestic production.

$M_{ij} = m_{ij} X_j$ = deliveries from imports.

$M_j = \sum_i m_{ij} X_j = m_j X_j$ = total imported inputs

$W_j = w_j X_j$ = wages and salaries.

$V_j = v_j X_j$ = gross non-wage incomes.

q_j = price index with respect to initial prices of imported inputs into sector j.

p_j = price index with respect to initial price of the output of sector j.

As is the case in input-output tables in value terms, the sum of column coefficients is equal to unity :

$$\sum_i a_{ij} + m_j + w_j + v_j = 1 \quad (1)$$

We define the matrices :

$$\underline{A} = [a_{ij}]$$

$$\underline{I} = [s_{ij}] \quad (\text{the unit matrix})$$

$$\underline{M} = [s_{ij} \ m_j] \quad (\text{diagonal import matrix})$$

and the row vectors,

have to be observed. The first is the lapse of time needed by the gestation of new projects. During that period, increased domestic (and foreign) demand will manifest itself in prices. If this pushes a rise in factor incomes, the final outcome may be going back to where every thing started but at a less favourable rate of exchange. A series of devaluations may follow, as many recent experiences prove. The second factor is that the importation of investment goods at higher prices would reduce the rate of saving in real terms, hence the rate of investment. Mean while, the higher cost of new capital goods would entail higher production costs, due to the increase in depreciation allowances, and to the rise in profit margins in absolute terms, even if their rates remain constant.

In other words, if the foreign imbalance is due to (or accompanied by) production constraints, devaluation is more likely to affect domestic prices rather than adjust aggregate demand. The most serious problem is the significance of the pattern of price change with respect to the criteria of resource allocation governing new investments. It is necessary therefore to investigate the effects of such price changes before deciding on what might turn into a spiral of devaluation and inflation. For this single aspect of devaluation we confine the present paper. We shall use data obtained from studies on the Egyptian economy for purely illustrative purposes. Policy implications are investigated, but there is no claim for policy recommendations, which would require analysis of other aspects of the problem.

Such a policy is tantamount to practical devaluation of the pound. It rests on classical thinking which considers the change in the relation between domestic and external prices as a promoter to exports and deterrent to imports, thus helping to close the foreign exchange gap. This may be expected in cases where disequilibrium is demand rooted, and wherever price elasticities play an important role. In particular the effects may be felt in the export market if the relative cheapness of national exports gives them a comparative advantage to sell more. However, in the short run this is realized only if idle capacities exist and they can be run without an increase in cost; at least not by the full amount of devaluation. The situation with respect to imports is different. Non-competitive imports have to be imported, may be at smaller quantities, but-except for luxury goods - at larger values. Competitive imports may be replaced by their national competitors, in so far as domestic capacities permit. In either case, there will be a tendency of domestic prices to rise. On the supply side the situation depends on the initial position on the cost curve. But the most important factor would be the new position of the cost curve itself. This curve is going to be affected by two forces. The first is the rise in the cost of imported inputs (especially the non-competitive among them). The second is the growing costs of domestic inputs due to direct and indirect effects of imports, and to the demand expansion.

If the expansion of domestic production needs new investments, and if investment goods have to be (partially) imported, two factors

I - THE PROBLEM :

For some time, a system of multiple exchange rates has been prevailing in the Egyptian economy. The so-called "parallel market" rate of exchange, determined 50 % below the official rate, created some balancing effects. More sources were forthcoming, especially on the side of invisibles; while a number of uses were easily directed towards the new market. However, with the relaxation of some administrative controls, both on internal domestic activity and on the foreign exchange market itself, a number of "free market" rates came into existence. This was taken as an indication that both the official and parallel market rates were exaggerated, and the latter was brought down by another 20 % and lately by an extra 9 %. The fact that the rates other than the official rate started to come closer to each other, was taken as an indication that some meaningful equilibrium could be reached in the exchange market if just one rate was left to be determined by free market play.

However it does not necessarily follow that such a partial result could be immediately generalized. Even if the present situation was balanced through administrative controls, the free play of the market may bring to the fore certain elements of repressed demand which may soon bring about a sharp disequilibrium in the balance of payments, in spite of the high premium on foreign exchange. If, as is the case, equilibrium is lacking, the immediate effects may be quite damaging.

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